

R13

Code No: 117JJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part- A

(25 Marks)

- 1.a) Give reason why the method of load equalization cannot be adopted with synchronous motors. [2]
- b) What are the essential requirements of rolling mill drive? [3]
- c) State the principle of Induction heating. [2]
- d) Why is it necessary to use welding transformer? [3]
- e) Define the following terms in connection with illumination.
i) Illumination ii) Luminous Intensity [2]
- f) State and explain the laws of illumination. [3]
- g) Define scheduled speed of a train? [2]
- h) What is regenerative braking? [3]
- i) Define tractive effort. [2]
- j) Define the following terms: (1) dead weight (2) effective weight and (3) adhesive weight in a locomotive. [3]

Part-B

(50 Marks)

- 2.a) What type of drive is being used in modern day industry, 'A group drive or 'an individual drive? Discuss the advantages of one over the other.
- b) A 50-hp, 400-volt, 500-rpm d.c shunt motor has a full-load current of 110-A. The armature has a moment of inertia of 20 kg-m^2 . Find the time taken to attain full speed against full load if the maximum and minimum currents during starting are 150A and 120A. State the assumptions made, if any. [5+5]

OR

- 3.a) Distinguish between the following loads:
i) Continuous rating ii) intermittent and iii) variable loads
- b) Assuming an exponential law of temperature rise, calculate the final steady state temperature on full load and the time constant for an electric motor whose temperature rise after one hour is 25°C and after two hours is 45°C . [6+4]
- 4.a) State the advantages of electrically produced heat by means of arc furnaces. Distinguish between the direct and indirect type of arc furnaces. State their field of application
- b) Explain the applications of dielectric heating. [6+4]

OR

- 5.a) Discuss the various characteristics required of welding generator sets (Both of the ac and of the dc types) and state how arc stabilization is achieved in practical welding generator sets.
- b) Explain the different welding processes under resistance welding. [6+4]
- 6.a) Describe what do you know about arc lamps? What are their advantages and disadvantages as light sources?
- b) A 250 volt lamp has a total flux of 3000 lumens and takes a current of 0.8 amperes. Calculate (i) lumen per watt (ii) M.S.C.P per watt. [6+4]

OR

- 7.a) Describe the construction and working of high pressure mercury vapour lamp.
- b) A factory space $33\text{m} \times 13\text{m}$ is to be illuminated with an average illumination of 72 lumens/m^2 , by 200watt lamps. The coefficient of utilization is 0.4 and the depreciation factor is 1.4. Calculate the number of lamps required, the lumens output of 200 watt is 2730 lumens. [5+5]
- 8.a) State the main features for an ideal traction system. Explain the various systems of track electrification in India.
- b) Explain how an actual speed-time curve for an electric train service can be replaced by a curve having a simple geometric shape. [5+5]

OR

- 9.a) A train is required to run between stations 1.2km apart a scheduled speed of 30 kmph, the duration of stops being 15 seconds. The braking retardation is 5kmphs. Assuming a trapezoidal speed-time curve, calculate the acceleration, if the ratio of maximum speed to average speed is to be 1.3.
- b) Explain the advantages of electric braking used in traction. [5+5]
- 10.a) State the factors that affect the specific energy consumption and their influence on it.
- b) Determine the maximum adhesive weight of a loco required to start a 2340 tonne (inclusive of loco) on 1:150 gradients and accelerate it at 0.1 kmphs. Assume coefficient of adhesion as 0.25, train resistance 4kg/tonne and rotary inertia as 8%. [5+5]

OR

11. Calculate the specific energy consumption if a maximum speed of 12.2 m/s and for a given run of 1525 meters, an acceleration of 0.366m/sec^2 is desired. Train resistance during acceleration is 52.6N/1000Kg and during coasting is 6.12N/1000Kg, 10% being allowable for rotational inertia. The efficiency of the equipment during the acceleration period is 50%. Assume a quadrilateral speed-time curve. [10]

--ooOoo--

R13

Code No: 117GP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What are the different coal handling and transfer equipments? [2]
- b) What is pulverization? Why is it done? [3]
- c) What are the various systems that form part of a diesel power plant? [2]
- d) What is meant by a gas turbine with reheating arrangement? [3]
- e) What is tidal energy? How tidal power can be generated? [2]
- f) What is catchment area? [3]
- g) What are fertile materials and fissile materials? [2]
- h) What is meant by critical mass (of fuel) in a reactor? [3]
- i) Define connected load and demand factor. [2]
- j) Define diversity factors and load factor. [3]

PART-B

(50 Marks)

- 2.a) Draw the line diagram and explain the different components used in steam power plant.
 - b) Describe different types of coal conveyors. [5+5]
- OR**
3. Draw a neat diagram of cyclone burner and explain its outstanding features. [10]
 4. What is meant by super charging diesel engines? Why it is used? Indicate the features of mechanical supercharging and turbo charging? [10]
- OR**
- 5.a) What are the various factors to be considered while selecting the site for diesel engine power plant?
 - b) What are the methods by which solar energy can be converted into electricity? [5+5]
 6. Explain the layout (showing the various components) and operation of a hydroelectric power plant. [10]
- OR**
7. What are the different types of hydroelectric power plants? Explain in brief. [10]

26 26 26 26 26 26 26

8. Explain briefly the construction and operation of a nuclear reactor. [10]

OR

9.a) Explain briefly the terms neutron flux, reaction rate and multiplication factor.

b) How are nuclear reactors classified? What is a fast breeder reactor? [5+5]

10.a) Write a note on "Pollution from atomic power station".

b) Discuss in detail the environmental hazards in respect of thermal power plants. [5+5]

OR

11.a) What are the different methods used to control SO₂ in the flue gases.

b) What you understand by thermal shielding? [5+5]

26 26 26 26 26 26 26

---ooOoo---

26 26 26 26 26 26 26

26 26 26 26 26 26 26

26 26 26 26 26 26 26

26 26 26 26 26 26 26

26 26 26 26 26 26 26

Code No: 117FE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

MICROWAVE ENGINEERING

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part- A

(25 Marks)

- 1.a) Mention the application of waveguides. [2]
- b) Write short notes on power transmission and power losses of rectangular waveguide. [3]
- c) List out the functions of various waveguide components and their applications. [2]
- d) Explain any one application of Magic Tee. [3]
- e) Classify microwave tubes. [2]
- f) Differentiate two cavity klystron and Reflex klystron. [3]
- g) Explain RWH theory. [2]
- h) Mention the application of TED's. [3]
- i) Explain the significance of scattering matrix. [2]
- j) What is the need for an isolator in MW measurements and where it is placed? [3]

Part-B

(50 Marks)

- 2.a) Explain why TEM mode does not exist in a circular wave guide.
- b) What is the significance of Q in resonant circuits? Derive a general expression Q for a series resonant circuit. What happens to Q when circuit is loaded? [5+5]

OR

- 3.a) Show that TM_{01} and TM_{10} modes does not exist in a rectangular waveguide.
- b) A rectangular wave guide with dimension of 8×4 cm operates in the TM_{11} mode at 10GHz. Determine the characteristic wave impedance. [5+5]

- 4.a) What is a cavity resonator? Discuss the applications of cavity resonator.
- b) Derive the expression for Q-factor of rectangular cavity. [5+5]

OR

5. Write short notes on:
 - a) Wave guide phase shifter
 - b) Hybrid ring
 [5+5]

- 6.a) Draw the mode curves of Reflex klystron and derive the relation between mode number and repeller in Reflex klystron.
- b) In a two-cavity klystron the parameters are, input power=10mW, voltage gain=20dB, R_{sh} of input cavity =25K Ω , R_{sh} of output cavity =35K Ω , load resistance = 40 K Ω . Find input voltage, output voltage and the power to the load. [5+5]

OR

- 7.a) Explain the significance of slow wave structure in the amplification process. List out the major differences between TWT and klystron.
- b) Explain how amplification takes place in Helix TWT? [5+5]

8. List and explain different types of magnetrons.

[10]

OR

9.a) With a neat sketch explain the structure and principle of operation of TWT amplifier.

b) How is bunching achieved in a cavity magnetron? Explain.

[5+5]

10.a) Give the measurement procedure for measuring Q factor of resonant cavity.

b) Define VSWR. Describe the methods for measuring high and low VSWR's.

[5+5]

OR

11.a) Explain the procedure for measuring VSWR < 10.

b) Explain the procedure for measuring attenuation with neat diagram.

[5+5]

---ooOoo---

R13

Code No: 117CF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

**DESIGN PATTERNS
(Common to CSE, IT)**

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is design pattern? [2]
- b) Explain design patterns in Smalltalk MVC. [3]
- c) Draw the structure Factory Method. [2]
- d) Explain about recursive composition. [3]
- e) Write intent of Proxy pattern. [2]
- f) Write motivation of Wrapper pattern. [3]
- g) What are known uses of Iterator pattern? [2]
- h) Write benefits and drawbacks of Mediator pattern. [3]
- i) What is the intent of Strategy pattern? [2]
- j) Describe patterns in software. [3]

PART-B

(50 Marks)

- 2.a) What are some common causes of redesign? Explain.
 - b) How to use a design pattern? Explain in detail. [5+5]
- OR**
- 3.a) Discuss about toolkits and frameworks.
 - b) Draw a diagram to describe design pattern relationships. [5+5]
- 4.a) Describe formatting in Lexi's design.
 - b) What are consequences of Builder pattern? Explain Builder pattern implementation. [5+5]
- OR**
- 5.a) Explain about encapsulating the analysis in Lexi's design.
 - b) Write sample code of Prototype pattern. [5+5]
- 6.a) Explain the sample code of Flyweight pattern.
 - b) Discuss about implementation issues of Decorator pattern. [5+5]
- OR**
- 7.a) Write about motivation and consequences of Façade pattern.
 - b) Write sample code of Composite pattern. [5+5]

8.a) Explain about Mediator pattern.

b) Explain about motivation of Mediator pattern.

[5+5]

OR

9.a) Briefly discuss about Memento pattern.

b) Describe implementation of Command pattern.

[5+5]

10.a) Write some of the benefits and liabilities of the Visitor pattern.

b) Discuss about the pattern community.

[5+5]

OR

11. Explain the following:

a) Discussion of behavioral patterns

b) Template method pattern.

[5+5]

--ooOoo--

R13

Code No: 117AV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

AUTOMOTIVE ELECTRICAL AND AUTOTRONICS

(Automobile Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) List the different types of batteries and testing methods. [2]
- b) What is working of alternator in charging system? [3]
- c) List various starting system troubles. [2]
- d) What are the benefits of electronic ignition system? [3]
- e) Write the merits of 12 volt battery system. [2]
- f) What is function of oil gauge in an automobile? [3]
- g) What are the components of Electric vehicle and Hybrid vehicles? [2]
- h) How are Hybrids classified based on architecture? [3]
- i) List the components of Power Train. [2]
- j) Classify DC and AC drives. [3]

PART-B

(50 Marks)

- 2.a) Describe the construction of a lead-acid battery.
- b) What are the major components of the automotive electrical system? [5+5]

OR

- 3.a) What are the different battery ratings? Explain each with suitable explanations.
- b) Describe the working of battery charging systems in a vehicle with suitable sketch. [5+5]

- 4.a) Explain the principle and working of battery coil ignition system.
- b) What is the purpose of solenoid in a starting circuit? [5+5]

OR

- 5.a) Explain Briefly Spark Advance and Retard Mechanism.
- b) Describe the construction and working of a starting motor. [5+5]

- 6.a) Draw a simple wiring diagram of the electrical system of a car.
- b) Give the advantages and disadvantages of positive and negative Earthing. [5+5]

OR

- 7.a) Explain with the help of neat diagram the working of oil pressure gauge. [5+5]
b) Explain the operation of wind screen wiper signaling device.

- 8.a) Write HEVs advantages and disadvantages compared to conventional vehicles. [5+5]
b) Discuss about performance, electric motor rating of Hybrid Electric Vehicles.

OR

- 9.a) Write short notes on Hybrids based on transmission assembly and architecture. [5+5]
b) Discuss about HEV powertrain sizing.

- 10.a) Write about different electric motor drives. [5+5]
b) Explain about gears, clutches in Electric vehicle powertrain.

OR

- 11.a) Explain about transmission and brakes in Electric vehicle powertrain. [5+5]
b) Write about Hybrid control strategy.

---ooOoo---

Code No: 57005

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

GIS AND REMOTE SENSING

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) Write about ground control aspect in aerial photography.
- b) Explain the procedure of determination of heights with parallax measurements. [7+8]
- 2.a) What is Remote Sensing? What are the applications of it?
- b) Write about active and passive remote sensing. [7+8]
- 3.a) Write about the sources of electromagnetic energy.
- b) Explain the concept of atmospheric scattering with a neat diagram. [7+8]
- 4.a) Explain the fundamental operations carried out in GIS.
- b) Explain the different components involved in GIS. [7+8]
- 5.a) Differentiate between Raster Data and Vector data with suitable examples
- b) Write about (i) Digitization of data, (ii) Geocoding of Data. [7+8]
- 6.a) Differentiate between Visual Analysis Methods and Computational Analysis Methods
- b) Explain any two Visual Analysis Methods. [8+7]
7. How do you apply the knowledge of GIS in the field of watershed management? Explain the detail with suitable examples. [15]
8. Write about the applications of GIS in the field of reservoir sedimentation and drainage morphology. [15]

--ooOoo--

R09

Code No: 57013

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) What are different classifications of load and how they affect the motor selection?
b) What are the merits and demerits of individual and group drive? [8+7]
- 2.a) Discuss in detail the causes of failure of heating elements.
b) A piece of insulating material is to be heated by dielectric heating. The size of the piece is 100 sq-cm area and 2.5 cm thick. A frequency of 25 mega cycles is used and the power absorbed is 350 W. Calculate the voltage necessary for heating and the current that flows in the material. The material has relative permittivity of 5 and a power factor of 0.05. [5+10]
- 3.a) Explain Seam welding.
b) Give the comparison between DC and AC welding. [7+8]
- 4.a) Define the terms plane angle, luminous flux, mean horizontal candle power, luminance and reflection factor.
b) What are polar curves? Explain. [8+7]
- 5.a) Compare fluorescent and filament lamps on the basis of quality of light, capital and running costs.
b) An area $300 \text{ m} \times 45 \text{ m}$ has to be illuminated by projector lamps 1000 W each. Illumination level required is 8 lux, efficiency of lamp 18 lumens/watt, beam factor 0.4, maintenance factor 0.67 and waste light factor 1.2. Find the number of projectors required. [7+8]
- 6.a) What are different systems of track electrification?
b) Explain rheostatic braking. [8+7]
- 7.a) How many types of train services railways have to cater for and what are their distinguishing features?
b) An electric train is to have a braking retardation of 3.2 kmph. If the ratio of maximum speed to average speed is 1.3, the time for stops is 26 seconds and acceleration is 0.8 kmph, find the schedule speed for a run of 1.5 km. Assume simplified trapezoidal speed curve. [7+8]
- 8.a) What is specific energy consumption and what are the factors that affect it?
b) A 250 tonne train with 10% rotational inertia effect is started with uniform acceleration and reaches a speed of 50 kmph in 25 seconds on level rail road. Find the specific energy consumption if the journey is to be made according to a simplified trapezoidal speed time curve. The acceleration is 2 kmph, braking retardation is 3 kmph, the distance between two stations is 2.4 km, efficiency of motors is 0.9 and track resistance is 5 kg-tonne. [7+8]

--ooOoo--

Code No: 57023

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions

All Questions Carry Equal Marks

- 1.a) Explain about sources of energy in detail?
b) Why ash and dust handling problem is more difficult than coal handling problems in steam power plant? [8+7]
- 2.a) Write the properties of coal and explain the pulverized fuel burning system and its components?
b) Write about corrosion and feed water treatment in brief. [10+5]
- 3.a) Explain the types of IC engines.
b) Describe the types of lubrication and cooling systems. [5+10]
- 4.a) Explain the construction, layout with auxiliaries of gas turbine plant?
b) Describe the working of a closed cycle gas turbine power plant. Mention its advantages and disadvantages. [8+7]
- 5.a) What are the different factors to be considered while selecting the site for hydroelectric power plant?
b) The catchment of the dam used for hydro electric station is 300 km². The annual rain fall is 135cm. If 75% of the water in the dam is used for power generation at a head of 50m, find the capacity of power plants in M.V. Assume the turbine efficiency of 90% and generator efficiency of 95%. Neglect all other losses. [5+10]
- 6.a) Explain the working of a vertical axis wind mill with neat sketch.
b) Describe about MHD generation with neat diagram. [7+8]
- 7.a) Explain about Boiling water reactor and fast Breeder Reactor with neat diagrams.
b) Give a brief description of nuclear waste disposal. [10+5]
- 8.a) Two electrical units used for same purpose compared for their economical working :
i) Cost of first unit is Rs.5000 and it takes 100KW.
ii) Cost of second unit is Rs.14000 and it takes 60KW.
Each of them has useful life of 40,000 hours. Which unit will prove economical if the energy is charged at Rs.80 per KW of maximum demand per year and 5 N.P per KWH.
b) The following data pertains to a power plant of 120MW capacity.
Capital cost = Rs.1500/KW.
Interest and depreciation = 10% on capital
Annual running charges = Rs.20 × 10⁶
Profit to be gained = 10% of the capital
Energy consumed by the Power plant auxiliaries = 5% of generated
Annual load factor = 0.6
Annual capacity factor = 0.5
Calculate i) The reserve capacity ii).Cost of generation per KW hr. [7+8]

R13

Code No: 217AA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

PHARMACOGNOSY-III

Time: 3 hours

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub-questions.

PART- A

(25 Marks)

- 1.a) What is the chemical nature of alkaloids? Give the source of two root drugs containing alkaloids. [2]
- b) Give the source, family and composition of Cinchona bark. [3]
- c) Mention two crude drugs containing Glycosides. [2]
- d) Give the chemical test for Anthraquinone glycosides. [3]
- e) Explain about callus culture. [2]
- f) Write a note on establishment of Plant tissue culture. [3]
- g) Give the source and uses of Artemisinin. [2]
- h) Give the source, identification tests and uses of Asiaticosides. [3]
- i) Mention the source and chemical nature of any one anticancer drug of marine origin. [2]
- j) Write the source, chemical constituents and uses of Garlic. [3]

PART- B

(50 Marks)

2. Write the source, chemical constituents, uses and identification testes of
 - a) Ephedra
 - b) Rauwolfia[10]
- OR**
3. Write the source, chemical constituents, uses and identification testes of
 - a) Catharanthus
 - b) Datura[10]
4. Define Glycosides and write in brief the Pharmacognostic study of
 - a) Strophanthus
 - b) Chirata[10]
- OR**
5. Give the source, chemical constituents, chemical tests and uses of
 - a) Liquorice
 - b) Gentian[10]
6. Write about various types of Plant tissue culture and add a note on nutritional requirements of culture. [10]
- OR**
7. Write the applications of Plant tissue culture in production of pharmaceutically important secondary metabolites. [10]

26 26 26 26 26 26 26

8. Give the source, chemical nature and uses of
a) Bacoposides b) Gymnemic acid [10]

26 26 26 26 26 26 26

9. Write a brief account on the following
a) Taxol b) Neem [10]

10. Write the source, phytoconstituents and collection of any two marine cardiovascular drugs. [10]

26 26 26 26 26 26 26

11. Write a brief account on
a) Spirulina b) Soya. [10]

--ooOoo--

26 26 26 26 26 26 26

26 26 26 26 26 26 26

26 26 26 26 26 26 26

26 26 26 26 26 26 26

26 26 26 26 26 26 26

R09

Code No: R9601

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

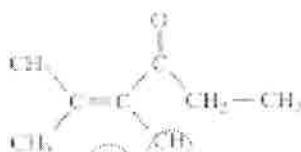
PHARMACEUTICAL ANALYSIS - II

Time: 3 hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- 1.a) Define and derive Beer Lambert's Law. Also discuss in detail the deviations of Beer Lambert's Law.
- b) Calculate the absorbance maxima of the given compounds using Woodward Fischer rule and enlist various stretching and bending vibrations. [10+5]



- 2.a) Write in detail the various factors affecting fluorescence.
- b) Define quenching. Explain in detail the types of quenching. [10+5]
- 3.a) Discuss in detail molecular vibrations.
- b) Write a note on various sample preparation techniques used in IR spectroscopy. [7+8]
4. Define chemical shift. Explain in detail the various factors affecting chemical shift value. [15]
5. With a neat diagrammatic representation explain in detail the various analyzers used in mass spectrometry. [15]
- 6.a) Define and derive Bragg's Law.
- b) Discuss in detail the instrumentation of Differential Thermal analysis and its applications in pharmacy. [7+8]
- 7.a) Write a note on ORD curves.
- b) Explain in brief the principle involved and applications of ELISA test. [5+10]
- 8.a) Discuss in detail the instrumentation of GC with special emphasis in detectors used.
- b) Write a note on factors affecting capillary electrophoresis. [10+5]

--ooOoo--

R13

Code No: 117EE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

LINUX PROGRAMMING

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What are shell responsibilities? [2]
- b) What are the applications of awk? [3]
- c) What are hard links? [2]
- d) Write about file locking? [3]
- e) What are reliable signals? [2]
- f) Differentiate threads and processes. [3]
- g) What is IPC? [2]
- h) Explain popen. [3]
- i) What are Berkeley sockets? [2]
- j) List the APIs for shared memory. [3]

PART-B

(50 Marks)

- 2.a) Explain associative arrays.
 - b) Write a shell script to find the factorial of a number. [5+5]
- OR**
- 3.a) Develop an AWK program to summarize from the list of all processes, a count of processes run by every user (including root).
 - b) Write about text processing utilities. [5+5]
4. Differentiate between the following terms:
 - a) getc() Vs fgetc()
 - b) stat() Vs fsat()
 - c) printf() Vs fprintf()
 - d) scanf() Vs fscanf(). [10]
- OR**
- 5.a) Explain the following system calls:
 - i) open()
 - ii) seek()
 - iii) read()
 - iv) link()
 - b) Explain directory handling system calls. [5+5]

- 6.a) Differentiate between `fork()` and `vfork()`.
b) Write the syntax of six versions of `exec` functions and also explain how these functions differ from each other. [5+5]

OR

7. Write a C program that accepts two small numbers as arguments and then sums the two numbers in a child process. The sum should be returned by child to the parent as its exit status and the parent should print the sum? [10]
8. Write a program and explain how to transfer a large amount of data between two processes using Message queues. [10]

OR

9. Explain the following concepts about pipes:
a) Pipes between two process
b) Pipes among three process in a shell. [5+5]
10. Explain with a program how to copy file data from server to client using shared memory. [10]

OR

- 11.a) Explain briefly about the following socket APIs with clear syntax:
i) `socket()` ii) `bind()` iii) `listen()` iv) `accept()` v) `connect()`
b) Compare various IPC mechanisms. [5+5]

---ooOoo---

R13

Code No: 117CK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

DIGITAL SIGNAL PROCESSING
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part- A

(25 Marks)

- 1.a) List out different realization forms of digital filters. [2]
- b) Define the frequency response of a discrete-time system. [3]
- c) Give the relation between z-transform and DTFT. [2]
- d) Draw the basic butterfly diagram for DIF FFT algorithm. [3]
- e) What is mean by bilinear transformation method of designing IIR Filter? [2]
- f) What are the parameters that can be obtained from the Chebyshev filter specification? [3]
- g) Under what condition an FIR filter will exhibit linear phase response. [2]
- h) Write the features of Hamming window. [3]
- i) What is overflow and truncation error? [2]
- j) Why the limit cycle problem does not exist when FIR digital filter is realized in direct form? [3]

Part-B

(50 Marks)

- 2.a) Define an LTI System and show that the output of an LTI system is given by the convolution of Input sequence and impulse response.
- b) Realize the following system in direct form I

$$H(Z) = \frac{1}{1 + a_1 z^{-1} + a_2 z^{-2}}$$

[5+5]

OR

- 3.a) Obtain the parallel realization of the system described by the difference equation

$$y[n] - \frac{13}{12}y[n-1] + \frac{9}{24}y[n-2] - \frac{1}{24}y[n-3] = x[n] + 2x[n-1]$$

- b) Find the frequency response $H(e^{j\omega})$ of the linear time-invariant system whose input and output satisfy the difference equation $y[n] - \frac{1}{2}y[n-1] = x[n] + 2x[n-1] + x[n-2]$.

[5+5]

4. Define DFT and then state and prove properties of DFT. [10]

OR

5. Find the DFT of a sequence $x[n] = \{1, 2, 3, 4, 4, 3, 2, 1\}$ using:

a) DIT algorithm b) DIF algorithm [10]

6. For the given specifications design an analog Butterworthy filter.

$$0.9 \leq |H(j\Omega)| \leq 1 \text{ for } 0 \leq \Omega \leq 0.2\pi$$

$$|H(j\Omega)| \leq 0.2 \text{ for } 0.4\pi \leq \Omega \leq \pi [10]$$

OR

7. Using the bilinear transform, design a high pass filter, monotonic in passband with cutoff frequency of 1000 Hz and down 10 dB at 350 Hz. The sampling frequency is 5000 Hz. [10]

8. Design an FIR low pass filter satisfying the following specifications.

$$\alpha_p \leq 1 \text{ dB}; \alpha_s \geq 44 \text{ dB}, w_p = 20 \text{ rad/sec}, \quad w_s = 30 \text{ rad/sec}, w_{sf} = 100 \text{ rad/sec}$$

[10]

OR

9. Design a low pass filter using Hanning window with a cutoff frequency of 0.9 radians/sec and $N=6$. Draw the filter structure and plot its spectrum. [10]

10.a) Define Multirate systems and Sampling rate conversion.

b) Discuss the sampling rate conversion by a factor I with the help of a neat block diagram. [3+7]

OR

11.a) What is overflow? When it occurs? What are the methods to prevent overflow? Explain.

b) What is meant by "dead band" of the filter? Explain dead band of first order filter. [5+5]

--ooOoo--

R13

Code No: 117BD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

CAD/CAM

(Common to AE, AME, MSNT, ME)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What are the computer peripherals of CAD? [2]
- b) What are the functions of Geometric Modelling in design? [3]
- c) What are the properties of B-spline curve? [2]
- d) Distinguish between Algebraic and Geometric form of a curve. [3]
- e) What are M03, M30 codes stands for in NC Programming? [2]
- f) What are the elements of NC system? [3]
- g) What are the various approaches available for CAPP? [2]
- h) What factors must be considered in selecting a classification and coding systems? [3]
- i) What are the benefits of CIM? [2]
- j) What are the inputs and outputs of FMS? [3]

PART-B

(50 Marks)

- 2.a) What are the requirements of geometric modeling?
- b) Describe with the help of neat sketches the major surfaces entities provided by the CAD/CAM systems. [5+5]

OR

- 3.a) What is the most commonly used graphics terminal? Explain its working?
- b) Define the cubic spline and bezier curves? Which of them is more popular in CAD and Why? [5+5]

4. Explain the following terms in detail with respect to surface modelling?

- a) Cylindrical surface
- b) Ruled Surface and
- c) Composite surface.

[10]

OR

- 5.a) Distinguish between surface modelling and wire frame modelling in detail?
- b) What is meant by sweep? Discuss in detail the various types of sweep techniques available for 3Dgeometric construction. [5+5]

26 26 26 26 26 26 26 2
6.a) Distinguish between ACO (Adaptive Control Optimization) and ACC (Adaptive control constraint) types of adaptive control systems?

b) With a neat sketch, explain the functioning of a NC machine. State two important differences between NC and CNC? [5+5]

OR

26 26 26 26 26 26 26 2
7.a) Discuss the basic feedback control system used in CNC machine tools.

b) Write the procedure for writing computer assisted part programming? [5+5]

8.a) Discuss how part classification is done in the context of GT. What are the essential attributes such a coding system should take care of?

b) Explain the various difficulties in traditional process planning in detail. [5+5]

OR

26 26 26 26 26 26 26 2
9.a) Distinguish between MRP and ERP with suitable examples.

b) Discuss how a company can benefit from a suitable classification and coding systems? [5+5]

10.a) Describe the Scheduling and Dispatching issues related to Flexible Manufacturing System.

b) Does CIM required for Indian industry? Discuss various issues of implementations, challenges in CIM. [5+5]

OR

26 26 26 26 26 26 26 2
11.a) Define computer aided quality control. Explain how it is implemented.

b) State the advantages of CIM in manufacturing industry in detail. [5+5]

--ooOoo--

R13

Code No: 117BY

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

COMPUTER NETWORKS
(Common to ECE, EIE, BME)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part- A

(25 Marks)

- 1.a) What is CRC checker? [2]
- b) Write the advantages of layered architecture of network. [3]
- c) Define exponential Back off. [2]
- d) What is piggy backing? How does it useful? [3]
- e) Write the functions of LLC. [2]
- f) Write the responsibilities of network layer. [3]
- g) What is multiplexing? Give different types of multiplexing? [2]
- h) Write about Tunneling. [3]
- i) What is DNS? Write its properties. [2]
- j) Explain MIME header [3]

Part-B

(50 Marks)

- 2.a) Compare TCP/IP and OSI reference model.
 - b) Explain about framing. [5+5]
- OR**
- 3.a) Explain stop and wait protocol.
 - b) Give a detail note on Hamming code. [5+5]
- 4.a) Explain CSMA/CD protocol and how does it detect collision?
 - b) Discuss about switched and fast Ethernet. [5+5]
- OR**
- 5.a) Explain MAC sub layer protocol in detail.
 - b) Discuss about spanning tree bridges. [5+5]
- 6.a) Explain link state routing algorithm in detail.
 - b) Write the optimality principle of routing algorithms. [5+5]
- OR**
- 7.a) Describe hierarchical routing algorithm in detail.
 - b) Write a note on load shedding. [5+5]

- 8.a) Explain IPV6 packet format.
b) Describe fragmentation in internet working with an example. [5+5]

OR

- 9.a) Explain Address resolution protocol in detail.
b) Write the principles of network layer in internet. [5+5]

- 10.a) Explain TCP sliding window protocol.
b) Give a detail note on HTTP request-response model. [5+5]

OR

- 11.a) Explain File transport protocol.
b) Compare TCP and UDP protocols. [5+5]

--ooOoo--

R13

Code No: 117DE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ESTIMATING AND COSTING

(Common to CE, CEE)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is meant by a detailed estimate? [2]
- b) Define Abstract estimate [3]
- c) What is Lead and Lift? [2]
- d) For an embankment 90m long of uniform gradient when the height of bank is 2.4m at one end and 1.8m at the other end the width of embankment at top is 8m and its side slopes 2 vertical to 1 Horizontal. Calculate the quantity of earth work by Mean sectional area method. [3]
- e) What is S.O.R.? Why it is periodically revised? [2]
- f) Explain in brief about M Book. [3]
- g) What information should a contract document contain? [2]
- h) Define 'Earnest money deposit (EMD)'. Why and when are they collected? [3]
- i) Define salvage value. [2]
- j) State the different types of specifications. [3]

PART-B

(50 Marks)

2. Prepare a preliminary estimate for a framed four storied office building having a carpet area of 250 sq m for each floor. Assume areas occupied by corridor, verandah, lavatories, staircase etc as 25% of built up area and that occupied by walls and columns as 8.5% of the same. The following details may be used for estimation
 - a) Built-up area rate for ground floor (excluding foundation) = Rs1,500/- per sqm
 - b) Built-up area rate for 1st and 2nd floor = Rs1,650/- per sq m
 - c) Built-up area rate for 3rd floor = Rs1,800/- per sq m
 - d) Extra for foundation = 20% of superstructure cost
 - e) Extra for special architectural treatment = 1% of building cost
 - f) Extra for water supply and sanitary = 7% of building cost.
 - g) Extra for electrical installation = 8% of building cost
 - h) Extra for contingencies = 4% of overall cost
 - i) Extra for other source = 5% of building cost. [10]

OR

- 3.a) Enumerate different methods for estimating building works along with a suitable example
 b) Prepare a detailed estimate of a septic tank with soak pit for 25 users. [5+5]

4. Explain in detail the methods for calculating earthwork for roads along with their merits and demerits. [10]

OR

5. Estimate the Quantity of earth work for a portion of road from the following data

Chainage	0	1	2	3	4	5	6	7	8	9
RL	7.50	7.70	7.50	7.25	6.85	6.95	6.70	6.45	6.30	5.95

The formation level at Chainage 0 is 8.0 and having falling gradient of 1 in 100. The top width is 12m and side slopes $1\frac{1}{2}$ horizontal to 1 vertical. Assuming the transverse direction is in level, calculate the quantity of earth work. By using Trapezoidal and Prismoidal formula Take 1 chain = 20m. [10]

- 6.a) Explain briefly the various factors affecting the rate analysis.
 b) Differentiate between 'Analysis of rates' and 'Schedule of rates'. [5+5]

OR

- 7.a) Describe the procedure for the calculation of rate per unit cu.m of RCC work in beams, slabs etc., 1:2:4 work excluding steel but including centering, shuttering, bending and binding.

- b) Describe the procedure for the calculation of rate per unit cu.m of Random Rubble stone masonry in foundation and plinth. [5+5]

8. Explain in detail the different types of civil engineering contracts with their merits and demerits. [10]

OR

9. Write a short note on the following with respect to contract document.

- a) Security deposit.
 b) Retention money
 c) Earnest money
 d) Tender and Contract.

[10]

- 10.a) Explain the following method of valuation of a building along with an example.

- i) Valuation based on profit
 ii) Depreciation method of valuation.

- b) Explain the general specification for a first class building. [5+5]

OR

- 11.a) What are the different purposes for which the valuation is undertaken?

- b) Explain the following method of valuation of a building along with an example.

- i) Rental method of valuation
 ii) Direct comparison with the capital value.

[5+5]

---ooOoo---

R09

Code No: 57043

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

EMBEDDED SYSTEMS
(Common to ECE, ETM)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Explain the formalisms for system design. [8+7]
b) Explain the characteristics of embedded computing applications.
- 2.a) Sketch the architecture of 8051 microcontroller and explain in detail. [10+5]
b) Explain in detail about the special function registers in 8051.
- 3.a) Describe the uses of branch instructions of 8051. [8+7]
b) Explain the assembly language programming process and its mnemonics.
- 4.a) Explain the functions of various blocks of PSoC. [8+7]
b) Discuss about the internal register organization of CPU block in PSoC.
- 5.a) Classify the modes used in serial shift register? Explain any one. [8+7]
b) Write an 8051 assembly program segment to read an analog signal through the ADC.
- 6.a) Explain in detail about process management and memory management in an embedded system. [8+7]
b) Explain how interrupt routines handled in an embedded system.
- 7.a) Explain in detail about various embedded software development tools. [8+7]
b) List and explain the various task service functions in VxWorks/MUCOS-II.
- 8.a) With a neat sketch describe the architectural features of ARM processor. [8+7]
b) Describe the data frame format of I2C bus.

--ooOoo--

R09

Code No: 57014

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INSTRUMENTATION
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Explain the difference between accuracy and precision with suitable examples.
b) Distinguish between systematic and random errors in a measurement and how they are usually minimized. [9+6]
- 2.a) What are the linear spectra of a signal and how they are represented?
b) Explain the techniques of pulse modulation and pulse coded modulation and their relative merits. [7+8]
- 3.a) Describe the different parts of CRT
b) The deflection sensitivity of an oscilloscope is 35V/cm. If the distance from the deflection plates to the CRT screen is 16 cm, the length of the deflection plates is 2.5 cm and the distance between the deflection plates is 1.2 cm. what is the acceleration anode voltage? [6+9]
- 4.a) Explain the principle and working of the following digital voltmeters with necessary diagrams dual slope integration type
b) Explain the successive approximation conversion techniques. [7+8]
- 5.a) What is a wave analyzer? Discuss about different types of wave analyzers. What are the applications of wave analyzers?
b) Write short notes on spectral displays. [9+6]
- 6.a) Describe the applications of any three types of temperature transducers.
b) Describe the construction, theory and working of thermocouple. [7+8]
- 7.a) Describe briefly about piezo electric accelerometer.
b) What is a Load cell? How do you measure force with the help of load cell? [7+8]
- 8.a) Explain the temperature measurement by thermocouples.
b) Explain the temperature measurement by resistance thermometers. [7+8]

--ooOoo--

R09

Code No: 57006

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

PAVEMENT DESIGN

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) Describe the classification of legal axle and gross weight on single & multiple units in detail.
- b) Explain briefly the concept of ADT and ESWL. [7+8]
- 2.a) What are the stress inducing factors in flexible pavements?
- b) Explain briefly about damping vibrations? [7+8]
- 3.a) Write down the stress solutions for one, two and three layered systems in flexible pavements?
- b) What are the factors influencing for fundamental design of flexible pavements? [7+8]
- 4.a) Explain the concept of westergaard's equation and its assumptions.
- b) What are the frictional stresses developed in rigid pavements. Explain briefly. [7+8]
- 5.a) Explain about the polymer modified bitumen in detail.
- b) Discuss about the soil-bitumen stabilization procedure in detail. [7+8]
- 6.a) What are the factors influencing the flexible pavement design?
- b) Write down the design of flexible pavements as per IRC. [7+8]
- 7.a) Briefly explain the rigid pavement design using PCA method.
- b) What are the factors involved in mechanistic design procedure? [7+8]
- 8.a) Explain briefly about the pavement design for rural roads.?
- b) What are the IRC specifications to be followed in design of low volume roads? [7+8]

---oo0oo---

Code No: 57024

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

CAD/CAM
(Common to AE, AME, ME)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) With a suitable example, explain the various steps involved in design process.
- b) From the working of refresh display and DVST bring out their capabilities, advantages and disadvantages. [8+7]

- 2.a) What is Raster scan graphics coordinate system? Explain.
- b) Explain how 2-D transformations are done on graphics element?
- c) Explain the concept of hidden surface removal processes. [4+4+7]

- 3.a) What are the basic requirements of geometric modeling?
- b) What do you understand by C_0 , C_1 , and C_2 continuity conditions of the curves?
- c) What are the various curve manipulation techniques used in wireframe modeling. [3+5+7]

- 4.a) What are the basic commands in drafting? Explain the use of any five commands with examples.
- b) How do you define a solid model? Explain various solid modeling schemes with their applications and limitations.
- c) Explain the various methods of dimensioning. [4+4+7]

- 5.a) Briefly discuss about the coordinate system in NC system.
- b) With suitable examples, briefly explain about the Machining centers.
- c) Discuss the G codes and M codes in NC systems. [4+4+7]

- 6.a) What is Group technology? List out its benefits.
- b) Discuss the basic code structures used in GT. [8+7]

- 7.a) Explain the Scanning Laser system used for CAQC.
- b) Explain the applications of machine vision in computer aided inspection. [8+7]

8. Write short Notes on:
 - a) Material handling systems
 - b) Benefits of CIM
 - c) Human Labour in manufacturing. [7+4+4]

--ooOoo--

R13

Code No: 217AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

PHARMACOLOGY - III

Time: 3hours

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10-marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define anti-emetics with example. [2]
- b) Define laxatives with example. [3]
- c) Write the mechanism of action of co-trimoxazole. [2]
- d) Write the side effects of chloramphenicol. [3]
- e) Classify drugs used in leprosy. [2]
- f) Name any two antifungal antibiotics. [3]
- g) Name two immune suppressive drugs. [2]
- h) What is the role of anti-metabolites in cancer? [3]
- i) Define the term poison. Name different types of poisons. [2]
- j) What are mutagenicity studies? [3]

PART - B

(50 Marks)

- 2.a) Classify drugs used in the therapy of constipation , add a note on the mechanism of their action.
 - b) Classify anti-emetics and explain their mechanism of action. [10]
- OR**
- 3.a) Classify anti-ulcer drugs. Explain the pharmacology, therapeutic uses and side effects of proton pump inhibitors and H2 blockers.
 - b) Add a note on the various laxatives used. Give a detailed note on irritant laxatives. [10]
- 4.a) Mechanism of action, spectrum of activity, adverse effects and uses of Fluroquinolones.
 - b) What are the various mechanisms of development of resistance to fluroquinolones. [10]
- OR**
- 5.a) Classify Beta lactum anti-biotics. Describe the mechanism of action, therapeutic uses and adverse effects of Amoxycillin.
 - b) What are beta lactamase inhibitors and what are their advantages. [10]

- 6.a) Classify drugs used for treating tuberculosis, explain the treatment regime. [10]
b) Mention the side effects of dapsone. [10]

OR

- 7.a) Explain the mechanism of action, therapeutic uses, drug interaction and adverse effect of INH and Rifampicin. [10]
b) Add a note on anti-malarial drugs. [10]

- 8.a) Classify anti-neoplastic agents. Discuss the mechanism of action, adverse drug reaction, therapeutic uses of alkylating agents.

- b) Give the mechanism of action and the adverse effects of anti-metabolites. [10]

OR

- 9.a) Describe the mechanism of action, therapeutic uses and adverse effects of chloroquine. [10]

- b) Write note on drugs used in prophylaxis of malaria. [10]

- 10.a) Outline the signs, symptoms and treatment of organophosphorus poisoning. [10]

- b) Give the symptoms and treatment of methyl alcohol poisoning. [10]

OR

- 11.a) Add a note on heavy metal poisoning. [10]

- b) General measures for the treatment of poisoning. [10]

--ooOoo--

R09

Code No: R9603

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

PHARMACOLOGY - III

Time: 3 hours

Max.Marks:75

Answer any five questions

All questions carry equal marks

- 1.a) Explain antimicrobial agents resistance.
b) Describe various measures for the prevention of antimicrobial agents resistance. [7+8]
- 2.a) Write the mechanism of action, resistance and uses of penicillins.
b) Explain the mode of action and uses of metoclopramide. [8+7]
3. Write note on:
a) Sulfonamide
b) Anti-ulcer drugs
c) Laxatives. [5+5+5]
- 4.a) Discuss the adverse effects and uses of aminoglycosides.
b) Write the mechanism of action, resistance and uses of fluoroquinolones activity. [8+7]
- 5.a) Discuss the mechanism of action and adverse effects of dapsone and clofazimine.
b) Explain the treatment of leprosy. [8+7]
- 6.a) Classify antifungal agents with suitable examples.
b) Write mechanism of action, adverse effects and uses of any two anti-fungal agents. [7+8]
- 7.a) Describe the treatment of syphilis.
b) Write the treatment of poisoning with atropine. [7+8]
- 8.a) Classify immunosuppressive agents with suitable examples. Write the pharmacology of cyclosporine.
b) Write the general principles in the chemotherapy of cancer. [8+7]

--ooOoo--

R13

Code No: 117JN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

WATER RESOURCES ENGINEERING-II

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Distinguish between a dam and reservoir. [2]
- b) What is meant by a detention dam? Explain. [3]
- c) Explain the purpose of providing galleries in dam. [2]
- d) What is meant by limiting height of a gravity dam? [3]
- e) Write down causes of failure of earth dam. [2]
- f) Write about Ogee spillway. [3]
- g) Distinguish between weir and barrage. [2]
- h) What is exit gradient? Explain. [3]
- i) When do we provide canal drop? [2]
- j) Explain the purpose of providing notches. [3]

PART-B

(50 Marks)

- 2.a) Define mass inflow curve and demand curve. Explain the procedure for finding storage capacity of a reservoir in order to meet a particular rate of demand.
- b) Discuss the factors which effect the selection of a particular type of dam. [5+5]

OR

- 3.a) What are the different pool levels in a reservoir. Explain with a neat sketch.
- b) How can water be lost from a reservoir? How can the losses are controlled. [5+5]

4. A concrete gravity dam has the following data:
Maximum water level = 300.00
Bed level = 220.00
R.L of top of dam = 304.00
The d/s slope of 0.67:1 starts at RL of 295.00
U/s face is vertical
Central line of the drainage gallery = 8.0 m from u/s face.
Consider only weight, water pressure and uplift.
Calculate the maximum vertical stresses at the toe and heel of the dam, assuming 100% uplift pressure at the heel and 50% at the gallery and zero at the toe. [10]

OR

- 5.a) Explain how uplift considerations affect the design of a gravity dam. What measures can be adopted to reduce the undesirable effects due to uplift in such cases.
- b) Explain the step by step method for analyzing the stability of gravity dam. [5+5]

- 6.a) What is meant by priming and depriming element of siphon? Discuss the devices used for early priming in a saddle siphon spillway.
- b) Define spillway gate. Discuss various methods used for energy dissipation. [5+5]

OR

- 7.a) Define chute spillway. Discuss the design principles involved in the chute spillway. Why is it preferred to ogee and other types of spillways?
- b) Describe Indian and USBR types of stilling basins with neat sketches. [5+5]

- 8.a) Discuss the principles of Lane theory.
- b) Write short notes on Inverted filter and Launching apron. [5+5]

OR

- 9.a) Discuss the corrections to be applied while determining the uplift pressure by Khosla's theory.
- b) Bring out the differences between Bligh's and Khosla's theories. [5+5]

- 10.a) Discuss the selection of suitable site for different types of CD works.
- b) Explain Syphon aqueduct and Super passage with neat sketches. [5+5]

OR

- 11.a) Explain different types of falls with neat sketches.
- b) Discuss the design principles of Sarda type fall. [5+5]

--ooOoo--

R13

Code No: 117GQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define incremental fuel cost and production cost. [2]
- b) What is a penalty factor? What is its importance in optimal operation of generators in thermal power stations? [3]
- c) What is a pumped storage plant? [2]
- d) Name various components of hydroelectric power plant. [3]
- e) What are the different components of speed governor mechanism? [2]
- f) Write the transfer function of turbine model and represent in a block diagram. [3]
- g) What are the assumptions made in dynamic response of uncontrolled case in single area load frequency control? [2]
- h) What is meant by tie-line bias control? [3]
- i) What is the need of reactive power control in a power system? [2]
- j) What is meant by load compensation? [3]

PART-B

(50 Marks)

- 2.a) Derive an expression for economic distribution of load between generating units including the effect of transmission losses.
- b) The fuel cost in Rs/h for a three thermal plants are given by
 $F_1 = 350 + 7.2P_{G1} + 0.004P_{G1}^2$, $F_2 = 500 + 7.3P_{G2} + 0.0025P_{G2}^2$, $F_3 = 600 + 6.74P_{G3} + 0.003P_{G3}^2$
 P_{G1} , P_{G2} , P_{G3} are in MW. Find the optimal schedule and compare the cost of this to the case when the generators share the load equally if i) $P_D=450$ MW ii) $P_D=800$ MW. [5+5]

OR

- 3.a) Derive general transmission line loss formula and state assumptions made for calculating B-coefficients.
- b) The fuel costs of two units are given by
 $F_1 = 1.5 + 20P_{G1} + 0.1P_{G1}^2$ Rs/h and $F_2 = 1.9 + 30P_{G2} + 0.1P_{G2}^2$ Rs/h
 P_{G1} , P_{G2} are in MW. Find the optimal schedule neglecting the losses, when the total demand is 200 MW. [5+5]

4. What is hydrothermal scheduling? Explain the hydro thermal economic scheduling problem. Derive the necessary equations. [10]

OR

5.a) Discuss the advantages of operation of power plants with hydro thermal combinations.

b) In a two plant operation system, the hydro plant is operate for 8 hrs. during each day and the steam plant is operate all over the day. The characteristics of the steam and hydro plants are

$$C_s = 20 + 30P_s + 0.04P_s^2 \text{ Rs/h and } W_H = 7.5P_H + 0.0012P_H^2 \text{ m}^3/\text{sec}$$

When both plants are running, power flow from steam plant to load is 190 MW and the total quantity of water is used for hydro plant operation during 8 hrs is $220 \times 10^6 \text{ m}^3$. Determine generation of hydro plant and cost of water used. Neglect transmission losses. [5+5]

6. Derive transfer function of speed governor and represent its block diagram. [10]

OR

7. What is an excitation system? What are its characteristics? Derive its transfer function and represent block diagram. [10]

8.a) Show that the steady change in frequency in load frequency control of an isolated power can be reduced to zero if the change in controlling force applied to the speed changer is equal to the change in load demand.

b) Distinguish between load frequency control and economic dispatch control. [6+4]

OR

9.a) Draw the block diagram of load frequency control in two area control system and explain.

b) Determine the primary ALFC loop parameters for a control area with the following data: Total generation capacity = 2500 MW; Normal operating load = 1500 MW; Inertia constant = 5 kW-seconds per kVA; Load damping constant, $B = 1\%$; Frequency, $f = 50 \text{ Hz}$; and Speed regulation, $R = 2.5 \text{ Hz / p.u MW}$. [5+5]

10.a) Explain briefly about the shunt and series compensation of transmission systems.

b) A short transmission line having an impedance of $(2+j3)$ ohms interconnects two power stations A and B both operating at 11 kV; equal in magnitude and phase. To transfer 25 MW at 0.8 p.f. lagging from A to B determine the voltage boost required at plant A. [5+5]

OR

11.a) Write short notes on compensated and uncompensated transmission lines.

b) A three-phase Induction motor delivers 500 hp at an efficiency of 0.91, the operating power factor being 0.76 lagging. A loaded synchronous motor with a power consumption of 100 KW is connected in parallel with the induction motor. Calculate the necessary kVA and the operating power factor of the synchronous motor if the overall power factor is to be unity. [4+6]

---ooOoo---

R13

Code No: 117EA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INSTRUMENTATION AND CONTROL SYSTEMS

(Common to AME, ME)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each

question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define Resolution and Threshold. [2]
- b) How errors are classified? Enumerate the various sources of errors. [3]
- c) State the difference between thermometer and thermistor. [2]
- d) Describe the constructional details and application of different types of Diaphragm pressure gauges. [3]
- e) State the principle of capacitive level indicator. [2]
- f) What is a turbine flow meter? [3]
- g) Define absolute humidity. [2]
- h) Explain strain gauge rosettes. [3]
- i) What is a servo mechanism? [2]
- j) Differentiate Open and closed loop control systems with a suitable examples. [3]

PART-B

(50 Marks)

2. Explain the following terms:
a) Range and span b) Resolution
c) Calibration d) Sensitivity. [10]
OR
3. Sketch and explain with a block diagram generalized measurement system and its elements with an example. [10]
4. State law of thermocouples. How are the laws useful in construction of thermocouple thermometers? [10]
OR
5. Discuss the application areas in which low pressures are maintained. List out various indirect methods for measurement of low pressure and explain any two methods. [10]
6. A Stroboscope projects 6000 flashes per minute on a disk mounted on the shaft of a machine. Find the speed of the machine if the disk appears stationary and has a single image of 10 points. [10]

OR

- 7.a) Explain the working of mechanical tachometer with a neat sketch.
b) State the difference between vibrometer and accelerometer. [8+2]
8. Describe the functioning of a stroboscope and explain how speed of a rotating shaft can be measured using a single pattern and multi-pattern disc. [10]
- OR
9. How does a mechanical load cell work? Explain the principle of measuring shaft torque using strain gauge torsion meter. [10]
10. Draw a block diagram of closed loop control system. Describe its working for motor speed control. [10]
- OR
11. What is a block diagram? Explain the steps involved in the preparation of block diagrams. [10]

---ooOoo---

R13

Code No: 117BN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

CLOUD COMPUTING

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Describe computational grids. [2]
- b) Explain any three services offered by cloud. [3]
- c) Explain Storage virtualization. [2]
- d) Explain high availability and data recovery. [3]
- e) Explain Open nebula. [2]
- f) What is lease scheduling? [3]
- g) What are the business benefits of cloud computing? [2]
- h) Explain Virtual administration in cloud. [3]
- i) Explain data Interoperability in cloud. [2]
- j) Explain software Vulnerability and Breaches in cloud. [3]

PART-B

(50 Marks)

- 2.a) Elucidate Network threats and data integrity. [5+5]
 - b) Briefly explain the design principles of computer clusters. [5+5]
- OR**
- 3.a) Explain system models for distributed and cloud computing. [5+5]
 - b) What are the design objectives of computer clusters? [5+5]
- 4.a) Describe various deployment models in cloud. [5+5]
 - b) Elucidate hardware virtualization. [5+5]
- OR**
- 5.a) Explain the functions and types of Hypervisors. [5+5]
 - b) Describe the features, challenges and risks in cloud computing. [5+5]
- 6.a) Elucidate Amazon Elastic cloud computing. [5+5]
 - b) Explain the architecture of Eucalyptus. [5+5]
- OR**
7. Explain the implementation of hybrid cloud. [10]

- 8.a) Explain a model for federal cloud computing.
b) Explain the best practices to build an application on cloud. [5+5]

OR

- 9.a) What are the External threats and Internal threats of virtualization infrastructure.
b) Elucidate SLA management in cloud. [5+5]

- 10.a) Elicit the pros and cons of content level security.
b) Distinguish Cloud Computing from outsourcing and provision of application services. [5+5]

OR

11. Elucidate Cloud service life cycle. [10]

---ooOoo---

Code No: 57007

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ESTIMATING AND COSTING

(Civil Engineering)

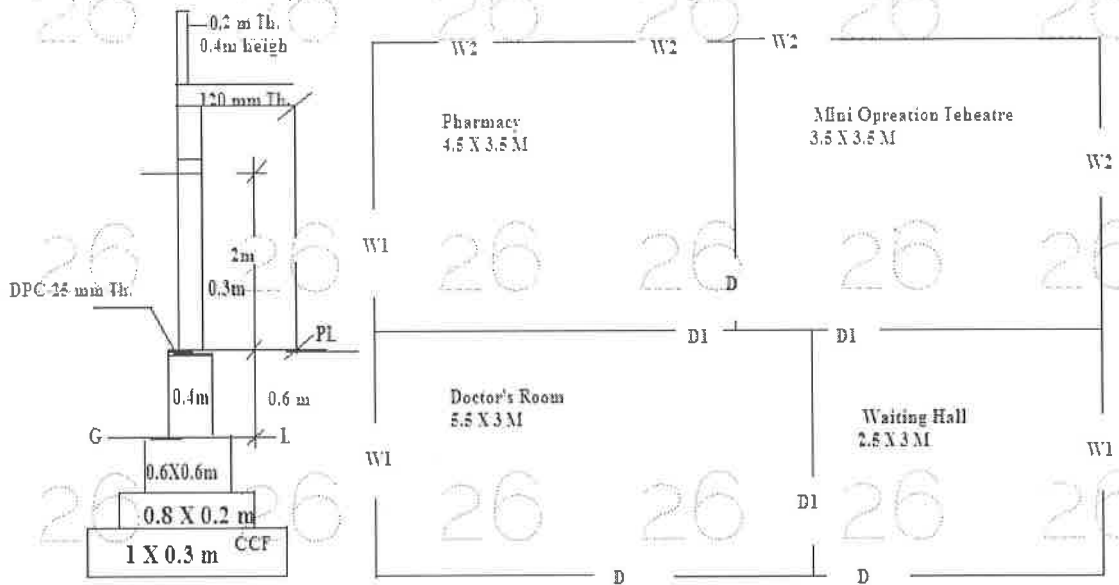
Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

1. a) Differentiate between Detailed estimate and Abstract estimates.
 b) Write the units of measurement and standard units measurement for the following items of works.
 i) Nosing for stairs ii) Damp proof course iii) Parapet walls
 iv) Masonry in basements v) Lime concrete in foundation.
 c) A building consists of 150 m² as plinth area in each floor. It consists of ground floor, whose heights are 3.6m and 3.2m respectively. Determine the cost of the building from the given data.
 Cubic rate of construction in 2012 is Rs.2500/ m² (In this rate 60% towards material and remain towards labour)
 The cost of material and labour is increased 5% per every year.
 Assume suitable percentages for Electrical, sanitary fittings, Water supply, unforeseen items of works and Petty supervision.
 Find out the cost building using above data in 2017. [5+5+5]

2. Prepare the detailed estimates for the following items of works using Long and short wall method as shown figure 1.
 a) Earthwork in exaction b) Masonry wall in super structure
 c) DPC over plinth walls. [5+5+5]



References:
 Door (D) - 2 X 2 M
 Door (D1) - 1.8 X 2 M
 Window (W1) - 1.5 X 1.5 M
 Window (W) - 2 X 1.5 M
 Thickness of lintel = 150 mm with 100 mm bearings on either sides
 Lintel = 75 mm avg. th. and 600 mm wide

Figure: 1

- 3.a) Explain different methods for calculation of earthwork with their limitations.
 b) Estimate the quantity of earth work for road surface with the following data:
 i) Trapezoidal Rule ii) Prismoidal rule

Chainage	20	21	22	23	24	25	26	27	28
RLF (m)	142.25	143	143.5	144.5	146	146.75	147.25	148	148.75
RLG (m)	150	Upward gradient 1: 100				Downward gradient 1 : 150			

If the length of chain is 30m, the formation width of road is 12 m, the side slopes are 2:1 both in cutting and banking. [7+8]

- 4.a) Explain the following terms with their uses:
 i) SSR and ii) SDB
 b) What is lead statement and draw the standard lead statement format?
 c) Calculate the quantity of material required for the following items of works:
 i) PCC (1 : 5 : 10) using 40 mm HBG (Unit – 1 m³)
 ii) R.R. Stone masonry (Unit – 1 m³). [5+5+5]

- 5.a) Estimate the quantity of steel required for the slab as shown in figure 2.
 b) Estimate the quantity of centering and shuttering under the given slab. [10+5]

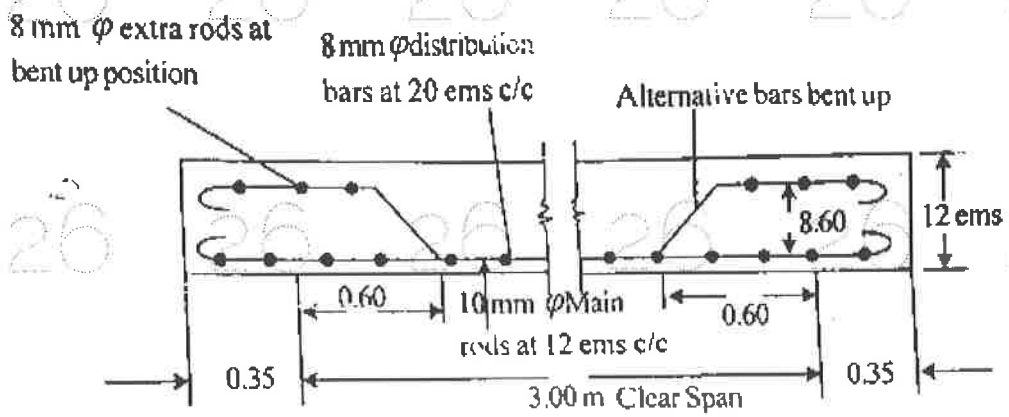


Figure 5.3 Cross Section

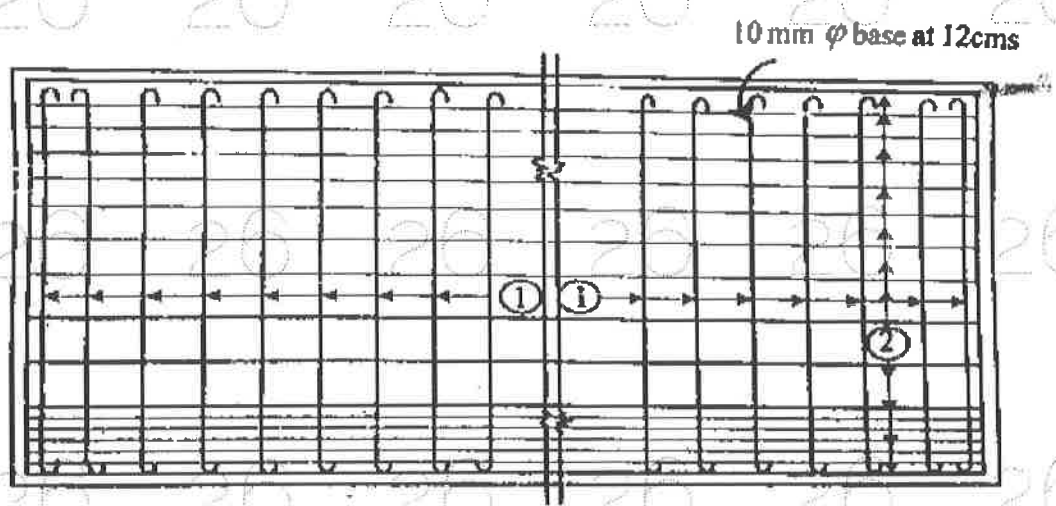


Figure: 2

- 6.a) Distinguish piece work system through K₂ agreement and Lump-sum contract system.
b) Write short on the following terms:
i) Short tender Notice ii) Negotiated tender
c) Explain the process of acceptance of tenders. [5+5+5]

- 7.a) What are the factors affecting the valuation?
b) Explain different methods of valuation.
c) A lift was purchased for Rs.1,50,000 in the year 2009. The salvage value of lift after 5 years is Rs.45,000. Calculate the depreciation and book value for each year up to 2017, using Constant percentage method and Sinking fund method (assuming 5% interest). [5+5+5]

- 8.a) Differentiate between general and standard specifications.
b) State the specifications for the following items of works:
i) DPC 25 mm in C.M. in 1 : 1.5 : 3 ii) Mosaic Tile flooring [5+10]

---ooOoo---

R09

Code No: 57015

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) What is meant by economic load dispatch?
b) Two units each of 210 MW in a thermal power plant are operating all the time throughout the year. The maximum and minimum load on each unit is 220 MW and 40 MW respectively. The incremental fuel characteristics for the two units are given as

$$\frac{dF_1}{dP_{G1}} = 18 + 0.06 P_{G1} \text{ Rs/ MWh}$$

$$\frac{dF_2}{dP_{G2}} = 12 + 0.5 P_{G2} \text{ Rs/ MWh}$$

Calculating the saving in fuel cost in Rs./ h for the economic distribution of total load of 150 MW between two units of the plant. Also compared with equal distribution of the same total load. [7+8]

- 2.a) Derive the expression for loss coefficient of two generators connected to the loads through transmission line. Also obtain general expression for 'n' generators.
b) A system consists of two plants connected by a transmission line. The load is at plant-2. If a load of 125 MW is transmitted from plant-1 to the load, there is a loss of 12.5 MW. Determine the generation schedule and the load demand if the cost of the receiving power is Rs70 Per MWh. Assuming the fuel cost characteristics Rs/h of two plants are given by:

$$F_1 = 0.03P_1^2 + 15P_1 + 1.0$$

$$F_2 = 0.04P_2^2 + 21P_2 + 1.4$$

[7+8]

- 3.a) Explain the hydro-thermal coordination and its importance.
b) Derive the condition for optimality of short term hydro thermal scheduling problem.

[7+8]

- 4.a) Derive the mathematical modeling of speed governing system with neat diagram.

- b) Draw and explain the block diagram representation of IEEE Type-1 Model.

[7+8]

- 5.a) Explain why it is necessary to maintain the frequency of the system constant.

- b) A 300MVA synchronous generator is operating at 1500 rpm, 50Hz. A load of 50MW is suddenly applied to the machine and the station valve to the turbine opens only after 0.25 sec due to the time lag in the generator action. Find the frequency to which the generated voltage drops before the steam flow commences to increase to meet the new load. Given that the valve of H of the generator is 3.5 kW-sec per kVA of the generator energy. [7+8]

26 26 26 26 26 26 26 2
6. Deduce the expression for static error frequency and tie line power in an identical two area systems with neat block diagram. [15]

26 26 26 26 26 26 26 2
7. For a single area system, show that the static change in error frequency can be reduced to zero using frequency control and comment on the dynamic response of controlled system. [15]

8.a) Explain the effects on uncompensated line under no load and load conditions.
b) What are the specifications of load compensation? [7+8]

26 26 26 26 26 26 26 2
---ooOoo---

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

Code No: 57025

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INSTRUMENTATION AND CONTROL SYSTEMS

(Common to ME, AME)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

1. What are basic principles of measurements? Discuss about different types of errors found in measuring instruments and the steps to be taken to minimize or avoid these errors. [15]
- 2.a) Explain how the transduction takes place in piezoelectric transducer.
b) Explain the temperature measurement using a thermistor. [8+7]
3. Describe the working of ionization pressure gauge. [15]
- 4.a) Explain the working of Bubbler level indicator.
b) Explain flow measurement with the help of a Hot-wire anemometer. [7+8]
- 5.a) Explain the working of a mechanical tachometer.
b) Describe the working of vibrometer. [8+7]
6. What is gauge factor? Explain the working of electrical strain gauges. [15]
- 7.a) Discuss about measurement of humidity using sling psychrometer.
b) Explain the working principle in torsion meters. [8+7]
8. What are the basic elements of control system? Discuss about the advantages of closed loop system over open loop system. [15]

--ooOo--

R13

Code No: 217AD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

MEDICINAL CHEMISTRY-II

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is pharmacophore? Write pharmacophore features. [2]
- b) Discuss the major phases of drug discovery and development? [3]
- c) Write the Classification of antibiotics? [2]
- d) Write the mechanism of action of beta-lactamase inhibitors? [3]
- e) Write the mechanism of action of aminoglycoside antibiotics? [2]
- f) Write about macrolide antibiotics? [3]
- g) What is the treatment regimen of tuberculosis? [2]
- h) Write about antiviral drugs with few examples. [3]
- i) What are alkylating agents give some examples? [2]
- j) Write a note on immunosuppressive agents? [3]

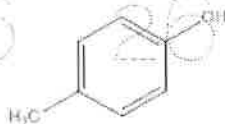
PART-B

(50 Marks)

2. Write about Free Wilson analysis and different validation methods of QSAR equation? [10]

OR

- 3.a) What is Hansch, Hammett and Taft analysis in developing QSAR? Explain the dependent and independent variables in a QSAR equation?
- b) Calculate the $\log P$ value for the structure shown; $\log P$ for benzene = 2.13; $\pi(\text{OH}) = -0.67$; $\pi(\text{CH}_3) = 0.52$? [7+3]



4. Discuss the method of synthesis of Penicillins from 6-APA? [10]

OR

- 5.a) Discuss the acid hydrolysis of cephalosporin C?
- b) Write the generations of cephalosporins and discuss the advantages over penicillins? [5+5]

6. Write the synthesis of chloramphenicol? [10]

OR

7. Write a brief note on Ciprofloxacin and norfloxacin? [10]

26 26 26 26 26 26 26 2

8. What are sulpha drugs and discuss the therapeutic importance with the mechanism of action? [10]

26 26 26 26 26 26 26 2

9. ~~Discuss in detail about antileprotic drugs?~~ **OR** [10]

10. Write a note on recombinant DNA technology? [10]

OR

11. Write about the various diagnostic and radioprotective agents with examples. [10]

26 26 26 ~~26~~ 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

R09

Code No: R9604

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

MEDICINAL CHEMISTRY - II

Time: 3 hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- 1.a) Write briefly about the different parameters in QSAR?
b) Explain the discovery of lead molecules. [8+7]
2. Define and classify antibiotics with suitable examples. Describe the general method of synthesis of penicillin and mechanism of action. [15]
- 3.a) Write the degradation of cephalosporin.
b) Explain the SAR of Cephalosporin. [8+7]
4. Write the structure, mechanism of action and uses of the following medicinal compounds
a) Chlortetracycline
b) Amoxicillin
c) Benzyl penicillin
d) Cephalexin
e) Neomycin. [15]
- 5.a) Write synthesis of chloramphenicol.
b) Define amino glycosides. Write their mechanism of action, uses and toxicity. [7+8]
6. Explain briefly recombinant DNA technology. [15]
7. Define radio protective agents. Explain the radio protective agents in the treatment of cancer. [15]
8. Define beta lactamase inhibitors. Classification with examples. Write the structure, Mechanism of action and uses of tetracycline, clavulanate potassium and eosin. [15]

--ooOoo--

27-11-2017 (AM)

R13

Code No: 117JN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

WATER RESOURCES ENGINEERING-II

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Distinguish between a dam and reservoir. [2]
- b) What is meant by a detention dam? Explain. [3]
- c) Explain the purpose of providing galleries in dam. [2]
- d) What is meant by limiting height of a gravity dam? [3]
- e) Write down causes of failure of earth dam. [2]
- f) Write about Ogee spillway. [3]
- g) Distinguish between weir and barrage. [2]
- h) What is exit gradient? Explain. [3]
- i) When do we provide canal drop? [2]
- j) Explain the purpose of providing notches. [3]

PART-B

(50 Marks)

- 2.a) Define mass inflow curve and demand curve. Explain the procedure for finding storage capacity of a reservoir in order to meet a particular rate of demand.
- b) Discuss the factors which effect the selection of a particular type of dam. [5+5]

OR

- 3.a) What are the different pool levels in a reservoir. Explain with a neat sketch.
- b) How can water be lost from a reservoir? How can the losses are controlled. [5+5]

4. A concrete gravity dam has the following data:

Maximum water level = 300.00

Bed level = 220.00

R.L of top of dam = 304.00

The d/s slope of 0.67:1 starts at RL of 295.00

U/s face is vertical

Central line of the drainage gallery = 8.0 m from u/s face.

Consider only weight, water pressure and uplift.

Calculate the maximum vertical stresses at the toe and heel of the dam, assuming 100% uplift pressure at the heel and 50% at the gallery and zero at the toe. [10]

OR

- 5.a) Explain how uplift considerations affect the design of a gravity dam. What measures can be adopted to reduce the undesirable effects due to uplift in such cases.
- b) Explain the step by step method for analyzing the stability of gravity dam. [5+5]

- 6.a) What is meant by priming and depriming element of siphon? Discuss the devices used for early priming in a saddle siphon spillway.
- b) Define spillway gate. Discuss various methods used for energy dissipation. [5+5]

OR

- 7.a) Define chute spillway. Discuss the design principles involved in the chute spillway. Why is it preferred to ogee and other types of spillways?
- b) Describe Indian and USBR types of stilling basins with neat sketches. [5+5]

- 8.a) Discuss the principles of Lane theory.
- b) Write short notes on Inverted filter and Launching apron. [5+5]

OR

- 9.a) Discuss the corrections to be applied while determining the uplift pressure by Khosla's theory.

- b) Bring out the differences between Bligh's and Khosla's theories. [5+5]

- 10.a) Discuss the selection of suitable site for different types of CD works.

- b) Explain Syphon aqueduct and Super passage with neat sketches. [5+5]

OR

- 11.a) Explain different types of falls with neat sketches.

- b) Discuss the design principles of Sardar type fall. [5+5]

--ooOoo--

R13

Code No: 117GQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define incremental fuel cost and production cost. [2]
- b) What is a penalty factor? What is its importance in optimal operation of generators in thermal power stations? [3]
- c) What is a pumped storage plant? [2]
- d) Name various components of hydroelectric power plant. [3]
- e) What are the different components of speed governor mechanism? [2]
- f) Write the transfer function of turbine model and represent in a block diagram. [3]
- g) What are the assumptions made in dynamic response of uncontrolled case in single area load frequency control? [2]
- h) What is meant by tie-line bias control? [3]
- i) What is the need of reactive power control in a power system? [2]
- j) What is meant by load compensation? [3]

PART-B

(50 Marks)

- 2.a) Derive an expression for economic distribution of load between generating units including the effect of transmission losses.
- b) The fuel cost in Rs/h for a three thermal plants are given by
 $F_1 = 350 + 7.2P_{G1} + 0.004P_{G1}^2$, $F_2 = 500 + 7.3P_{G2} + 0.0025P_{G2}^2$, $F_3 = 600 + 6.74P_{G3} + 0.003P_{G3}^2$
 P_{G1} , P_{G2} , P_{G3} are in MW. Find the optimal schedule and compare the cost of this to the case when the generators share the load equally if i) $P_D=450$ MW ii) $P_D=800$ MW. [5+5]

OR

- 3.a) Derive general transmission line loss formula and state assumptions made for calculating B-coefficients.
- b) The fuel costs of two units are given by
 $F_1 = 1.5 + 20P_{G1} + 0.1P_{G1}^2$ Rs/h and $F_2 = 1.9 + 30P_{G2} + 0.1P_{G2}^2$ Rs/h
 P_{G1} , P_{G2} are in MW. Find the optimal schedule neglecting the losses, when the total demand is 200 MW. [5+5]

4. What is hydrothermal scheduling? Explain the hydro thermal economic scheduling problem. Derive the necessary equations. [10]

OR

- 5.a) Discuss the advantages of operation of power plants with hydro thermal combinations.
b) In a two plant operation system, the hydro plant is operate for 8 hrs. during each day and the steam plant is operate all over the day. The characteristics of the steam and hydro plants are

$$C_s = 20 + 30P_s + 0.04P_s^2 \text{ Rs/h} \quad \text{and} \quad W_H = 7.5P_H + 0.0012P_H^2 \text{ m}^3/\text{sec}$$

When both plants are running, power flow from steam plant to load is 190 MW and the total quantity of water is used for hydro plant operation during 8 hrs is $220 \times 10^6 \text{ m}^3$. Determine generation of hydro plant and cost of water used. Neglect transmission losses. [5+5]

6. Derive transfer function of speed governor and represent its block diagram. [10]

OR

7. What is an excitation system? What are its characteristics? Derive its transfer function and represent block diagram. [10]

- 8.a) Show that the steady change in frequency in load frequency control of an isolated power can be reduced to zero if the change in controlling force applied to the speed changer is equal to the change in load demand.

- b) Distinguish between load frequency control and economic dispatch control. [6+4]

OR

- 9.a) Draw the block diagram of load frequency control in two area control system and explain.

- b) Determine the primary ALFC loop parameters for a control area with the following data: Total generation capacity = 2500 MW; Normal operating load = 1500 MW; Inertia constant = 5 kW-seconds per kVA; Load damping constant, $B = 1\%$; Frequency, $f = 50 \text{ Hz}$; and Speed regulation, $R = 2.5 \text{ Hz / p.u MW}$. [5+5]

- 10.a) Explain briefly about the shunt and series compensation of transmission systems.

- b) A short transmission line having an impedance of $(2+j3)$ ohms interconnects two power stations A and B both operating at 11 kV; equal in magnitude and phase. To transfer 25 MW at 0.8 p.f. lagging from A to B determine the voltage boost required at plant A. [5+5]

OR

- 11.a) Write short notes on compensated and uncompensated transmission lines.

- b) A three-phase Induction motor delivers 500 hp at an efficiency of 0.91, the operating power factor being 0.76 lagging. A loaded synchronous motor with a power consumption of 100 KW is connected in parallel with the induction motor. Calculate the necessary kVA and the operating power factor of the synchronous motor if the overall power factor is to be unity. [4+6]

---ooOoo---

R13

Code No: 117EA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INSTRUMENTATION AND CONTROL SYSTEMS

(Common to AME, ME)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each

question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define Resolution and Threshold. [2]
- b) How errors are classified? Enumerate the various sources of errors. [3]
- c) State the difference between thermometer and thermistor. [2]
- d) Describe the constructional details and application of different types of Diaphragm pressure gauges. [3]
- e) State the principle of capacitive level indicator. [2]
- f) What is a turbine flow meter? [3]
- g) Define absolute humidity. [2]
- h) Explain strain gauge rosettes. [3]
- i) What is a servo mechanism? [2]
- j) Differentiate Open and closed loop control systems with a suitable examples. [3]

PART-B

(50 Marks)

2. Explain the following terms:
a) Range and span b) Resolution
c) Calibration d) Sensitivity. [10]
OR
3. Sketch and explain with a block diagram generalized measurement system and its elements with an example. [10]
4. State law of thermocouples. How are the laws useful in construction of thermocouple thermometers? [10]
OR
5. Discuss the application areas in which low pressures are maintained. List out various indirect methods for measurement of low pressure and explain any two methods. [10]
6. A Stroboscope projects 6000 flashes per minute on a disk mounted on the shaft of a machine. Find the speed of the machine if the disk appears stationary and has a single image of 10 points. [10]

OR

- 7.a) Explain the working of mechanical tachometer with a neat sketch.
b) State the difference between vibrometer and accelerometer. [8+2]
8. Describe the functioning of a stroboscope and explain how speed of a rotating shaft can be measured using a single pattern and multi-pattern disc. [10]
- OR**
9. How does a mechanical load cell work? Explain the principle of measuring shaft torque using strain gauge torsion meter. [10]
10. Draw a block diagram of closed loop control system. Describe its working for motor speed control. [10]
- OR**
11. What is a block diagram? Explain the steps involved in the preparation of block diagrams. [10]

---ooOoo---

R13

Code No: 117BN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

CLOUD COMPUTING

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Describe computational grids. [2]
- b) Explain any three services offered by cloud. [3]
- c) Explain Storage virtualization. [2]
- d) Explain high availability and data recovery. [3]
- e) Explain Open nebula. [2]
- f) What is lease scheduling? [3]
- g) What are the business benefits of cloud computing? [2]
- h) Explain Virtual administration in cloud. [3]
- i) Explain data Interoperability in cloud. [2]
- j) Explain software Vulnerability and Breaches in cloud. [3]

PART-B

(50 Marks)

- 2.a) Elucidate Network threats and data integrity. [5+5]
 - b) Briefly explain the design principles of computer clusters. [5+5]
- OR**
- 3.a) Explain system models for distributed and cloud computing. [5+5]
 - b) What are the design objectives of computer clusters? [5+5]
- 4.a) Describe various deployment models in cloud. [5+5]
 - b) Elucidate hardware virtualization. [5+5]
- OR**
- 5.a) Explain the functions and types of Hypervisors. [5+5]
 - b) Describe the features, challenges and risks in cloud computing. [5+5]
- 6.a) Elucidate Amazon Elastic cloud computing. [5+5]
 - b) Explain the architecture of Eucalyptus. [5+5]
- OR**
7. Explain the implementation of hybrid cloud. [10]

- 8.a) Explain a model for federal cloud computing.
b) Explain the best practices to build an application on cloud. [5+5]

OR

- 9.a) What are the External threats and Internal threats of virtualization infrastructure.
b) Elucidate SLA management in cloud. [5+5]

- 10.a) Elicit the pros and cons of content level security.
b) Distinguish Cloud Computing from outsourcing and provision of application services. [5+5]

OR

11. Elucidate Cloud service life cycle. [10]

---ooOoo---

Code No: 57007

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ESTIMATING AND COSTING

(Civil Engineering)

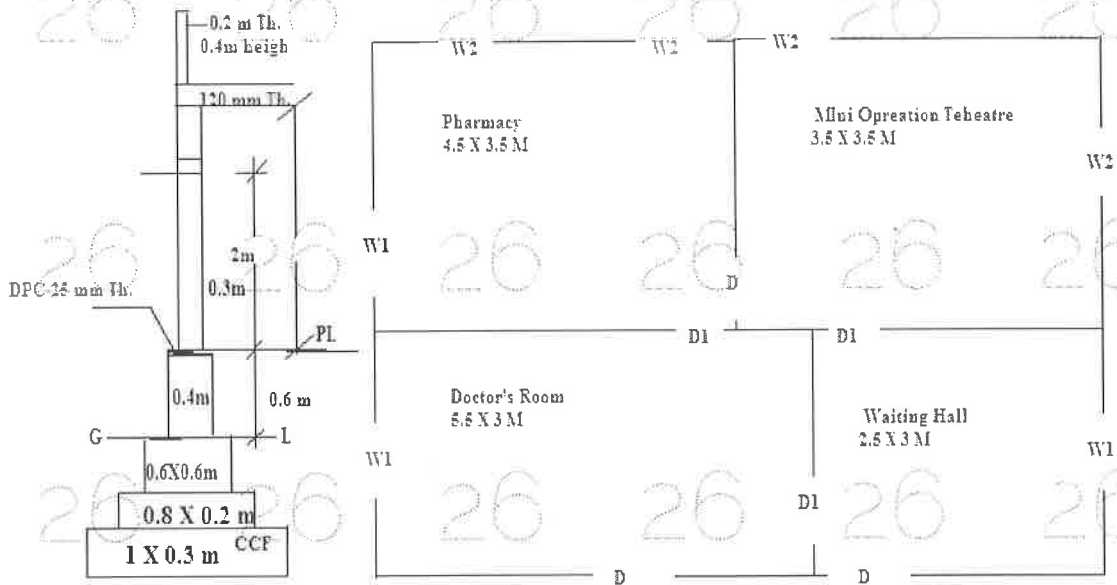
Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Differentiate between Detailed estimate and Abstract estimates.
 b) Write the units of measurement and standard units measurement for the following items of works.
 i) Nosing for stairs ii) Damp proof course iii) Parapet walls
 iv) Masonry in basements v) Lime concrete in foundation.
 c) A building consists of 150 m² as plinth area in each floor. It consists of ground floor, whose heights are 3.6m and 3.2m respectively. Determine the cost of the building from the given data.
 Cubic rate of construction in 2012 is Rs.2500/ m² (In this rate 60% towards material and remain towards labour)
 The cost of material and labour is increased 5% per every year.
 Assume suitable percentages for Electrical, sanitary fittings, Water supply, unforeseen items of works and Petty supervision.
 Find out the cost building using above data in 2017. [5+5+5]

2. Prepare the detailed estimates for the following items of works using Long and short wall method as shown figure 1.
 a) Earthwork in excavation b) Masonry wall in super structure
 c) DPC over plinth walls. [5+5+5]



References:
 Door (D) - 2 X 2 M
 Door (D1) - 1.8 X 2 M
 Window (W1) - 1.5 X 1.5 M
 Window (W) - 2 X 1.5 M
 Thickness of lintel = 150 mm with 100 mm bearings on either sides
 Lintel = 75 mm avg. th. and 600 mm wide

Figure: 1

- 3.a) Explain different methods for calculation of earthwork with their limitations.
 b) Estimate the quantity of earth work for road surface with the following data:
 i) Trapezoidal Rule ii) Prismoidal rule

Chainage	20	21	22	23	24	25	26	27	28
RLF (m)	142.25	143	143.5	144.5	146	146.75	147.25	148	148.75
RLG (m)	150	Upward gradient 1: 100				Downward gradient 1 : 150			

If the length of chain is 30m, the formation width of road is 12 m, the side slopes are 2:1 both in cutting and banking. [7+8]

- 4.a) Explain the following terms with their uses:
 i) SSR and ii) SDB
 b) What is lead statement and draw the standard lead statement format?
 c) Calculate the quantity of material required for the following items of works:
 i) PCC (1 : 5 : 10) using 40 mm HBG (Unit – 1 m³)
 ii) R.R. Stone masonry (Unit – 1 m³). [5+5+5]

- 5.a) Estimate the quantity of steel required for the slab as shown in figure 2.
 b) Estimate the quantity of centering and shuttering under the given slab. [10+5]

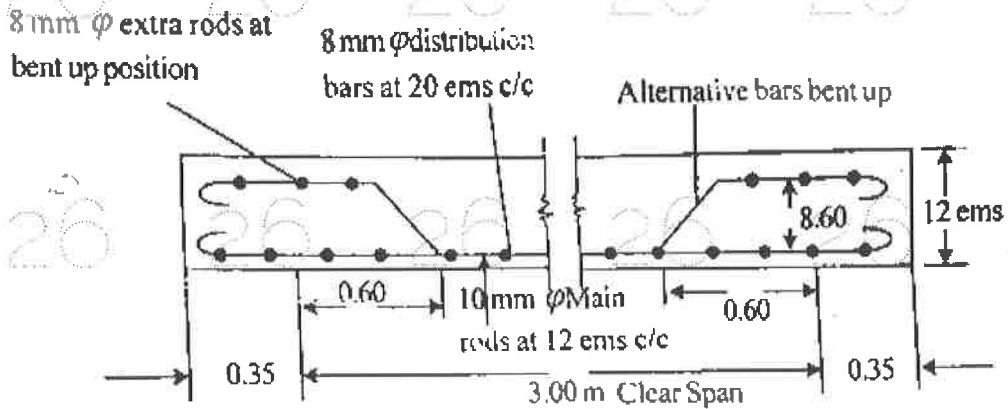


Figure 5.3 Cross Section

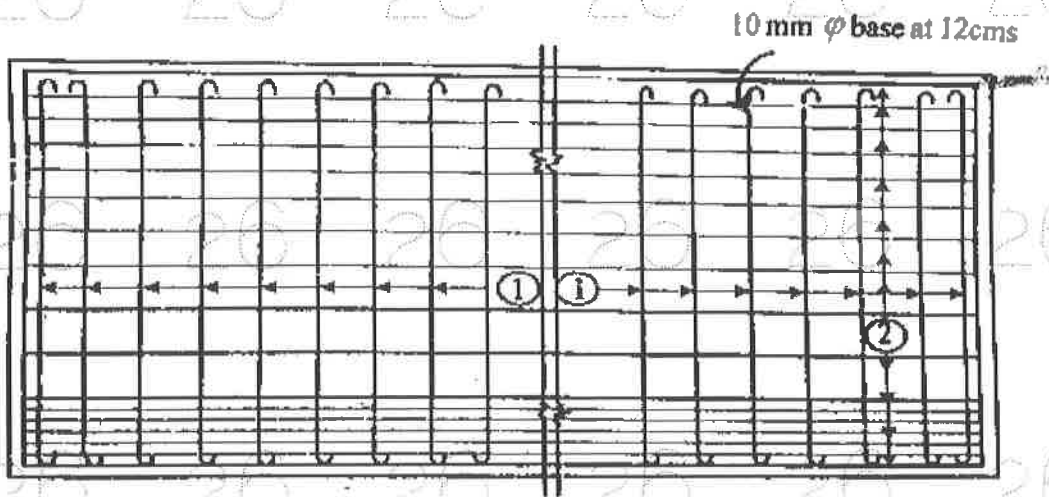


Figure: 2

- 6.a) Distinguish piece work system through K₂ agreement and Lump-sum contract system.
b) Write short on the following terms:
i) Short tender Notice ii) Negotiated tender
c) Explain the process of acceptance of tenders. [5+5+5]

- 7.a) What are the factors affecting the valuation?
b) Explain different methods of valuation.
c) A lift was purchased for Rs.1,50,000 in the year 2009. The salvage value of lift after 5 years is Rs.45,000. Calculate the depreciation and book value for each year up to 2017, using Constant percentage method and Sinking fund method (assuming 5% interest). [5+5+5]

- 8.a) Differentiate between general and standard specifications.
b) State the specifications for the following items of works:
i) DPC 25 mm in C.M. in 1 : 1.5 : 3 ii) Mosaic Tile flooring [5+10]

---ooOoo---

R09

Code No: 57015

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) What is meant by economic load dispatch?
b) Two units each of 210 MW in a thermal power plant are operating all the time throughout the year. The maximum and minimum load on each unit is 220 MW and 40 MW respectively. The incremental fuel characteristics for the two units are given as

$$\frac{dF_1}{dP_{G1}} = 18 + 0.06 P_{G1} \text{ Rs/ MWh}$$

$$\frac{dF_2}{dP_{G2}} = 12 + 0.5 P_{G2} \text{ Rs/ MWh}$$

Calculating the saving in fuel cost in Rs / h for the economic distribution of total load of 150 MW between two units of the plant. Also compared with equal distribution of the same total load. [7+8]

- 2.a) Derive the expression for loss coefficient of two generators connected to the loads through transmission line. Also obtain general expression for 'n' generators.
b) A system consists of two plants connected by a transmission line. The load is at plant-2. If a load of 125 MW is transmitted from plant-1 to the load, there is a loss of 12.5 MW. Determine the generation schedule and the load demand if the cost of the receiving power is Rs70 Per MWh. Assuming the fuel cost characteristics Rs/h of two plants are given by:

$$F_1 = 0.03P_1^2 + 15P_1 + 1.0$$

$$F_2 = 0.04P_2^2 + 21P_2 + 1.4$$

[7+8]

- 3.a) Explain the hydro-thermal coordination and its importance.
b) Derive the condition for optimality of short term hydro thermal scheduling problem.

[7+8]

- 4.a) Derive the mathematical modeling of speed governing system with neat diagram.

- b) Draw and explain the block diagram representation of IEEE Type-1 Model. [7+8]

- 5.a) Explain why it is necessary to maintain the frequency of the system constant.

- b) A 300MVA synchronous generator is operating at 1500 rpm, 50Hz. A load of 50MW is suddenly applied to the machine and the station valve to the turbine opens only after 0.25 sec due to the time lag in the generator action. Find the frequency to which the generated voltage drops before the steam flow commences to increase to meet the new load. Given that the valve of H of the generator is 3.5 kW-sec per kVA of the generator energy. [7+8]

6. Deduce the expression for static error frequency and tie line power in an identical two area systems with neat block diagram. [15]

7. For a single area system, show that the static change in error frequency can be reduced to zero using frequency control and comment on the dynamic response of controlled system. [15]

8.a) Explain the effects on uncompensated line under no load and load conditions.

b) What are the specifications of load compensation? [7+8]

---ooOoo---

Code No: 57025

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INSTRUMENTATION AND CONTROL SYSTEMS

(Common to ME, AME)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

1. What are basic principles of measurements? Discuss about different types of errors found in measuring instruments and the steps to be taken to minimize or avoid these errors. [15]
- 2.a) Explain how the transduction takes place in piezoelectric transducer.
b) Explain the temperature measurement using a thermistor. [8+7]
3. Describe the working of ionization pressure gauge. [15]
- 4.a) Explain the working of Bubler level indicator.
b) Explain flow measurement with the help of a Hot-wire anemometer. [7+8]
- 5.a) Explain the working of a mechanical tachometer.
b) Describe the working of vibrometer. [8+7]
6. What is gauge factor? Explain the working of electrical strain gauges. [15]
- 7.a) Discuss about measurement of humidity using sling psychrometer.
b) Explain the working principle in torsion meters. [8+7]
8. What are the basic elements of control system? Discuss about the advantages of closed loop system over open loop system. [15]

--ooOo--

R13

Code No: 217AD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

MEDICINAL CHEMISTRY-II

Time: 3 hours

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is pharmacophore? Write pharmacophore features. [2]
- b) Discuss the major phases of drug discovery and development? [3]
- c) Write the Classification of antibiotics? [2]
- d) Write the mechanism of action of beta-lactamase inhibitors? [3]
- e) Write the mechanism of action of aminoglycoside antibiotics? [2]
- f) Write about macrolide antibiotics? [3]
- g) What is the treatment regimen of tuberculosis? [2]
- h) Write about antiviral drugs with few examples. [3]
- i) What are alkylating agents give some examples? [2]
- j) Write a note on immunosuppressive agents? [3]

PART-B

(50 Marks)

2. Write about Free Wilson analysis and different validation methods of QSAR equation? [10]

OR

- 3.a) What is Hansch, Hammett and Taft analysis in developing QSAR? Explain the dependent and independent variables in a QSAR equation?
- b) Calculate the $\log P$ value for the structure shown; $\log P$ for benzene = 2.13; $\pi(\text{OH}) = -0.67$; $\pi(\text{CH}_3) = 0.52$? [7+3]



4. Discuss the method of synthesis of Penicillins from 6-APA? [10]

OR

- 5.a) Discuss the acid hydrolysis of cephalosporin C?
- b) Write the generations of cephalosporins and discuss the advantages over penicillins? [5+5]

6. Write the synthesis of chloramphenicol? [10]

OR

7. Write a brief note on Ciprofloxacin and norfloxacin? [10]

26 26 26 26 26 26 26 2

8. What are sulpha drugs and discuss the therapeutic importance with the mechanism of action? [10]

26 26 26 26 26 26 26 2

9. Discuss in detail about antileprotic drugs? [10]

10. Write a note on recombinant DNA technology? [10]

OR

11. Write about the various diagnostic and radioprotective agents with examples. [10]

26 26 26 ~~26~~ 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

R09

Code No: R9604

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

MEDICINAL CHEMISTRY - II

Time: 3 hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- 1.a) Write briefly about the different parameters in QSAR?
- b) Explain the discovery of lead molecules. [8+7]
2. Define and classify antibiotics with suitable examples. Describe the general method of synthesis of penicillin and mechanism of action. [15]
- 3.a) Write the degradation of cephalosporin.
- b) Explain the SAR of Cephalosporin. [8+7]
4. Write the structure, mechanism of action and uses of the following medicinal compounds
 - a) Chlortetracycline
 - b) Amoxicillin
 - c) Benzyl penicillin
 - d) Cephalexin
 - e) Neomycin. [15]
- 5.a) Write synthesis of chloramphenicol.
- b) Define amino glycosides. Write their mechanism of action, uses and toxicity. [7+8]
6. Explain briefly recombinant DNA technology. [15]
7. Define radio protective agents. Explain the radio protective agents in the treatment of cancer. [15]
8. Define beta lactamase inhibitors. Classification with examples. Write the structure, Mechanism of action and uses of tetracycline, clavulanate potassium and eosin. [15]

---ooOoo---

R13

Code No: 117DQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

HIGH VOLTAGE ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Why the temperature classification is not done for liquids and gases? [2]
- b) Discuss the different dielectric materials according to their physical nature. [3]
- c) What is paschen's law? [2]
- d) Explain how the temperature affects the breakdown strength of solid dielectrics? [3]
- e) Define wave front time and wave tail time. [2]
- f) Discuss the functions of trigatron gap. [3]
- g) What is the function of surge arrester? [2]
- h) List the characteristics of switching surges. [3]
- i) Define the terms creepage distance and impulse voltage? [2]
- j) State different tests to be conducted on H.V Insulators. [3]

PART - B

(50 Marks)

2. Briefly explain various numerical methods for estimation of electric field in dielectric materials. Discuss their relative advantages and disadvantages. [10]

OR

- 3.a) Explain different insulating materials used in rotating machines. [2]
- b) Define surge voltages. Explain how they are distributed in the windings of power apparatus. [5+5]

4. Define Townsend's first and second Ionization coefficients. Explain the procedure of Townsend's criterion for breakdown in detail. [10]

OR

- 5.a) What is meant by Intrinsic strength? Explain intrinsic breakdown mechanism in solid dielectrics. [2]
- b) What are commercial liquid dielectrics? How they differ from pure liquid dielectrics? [5+5]

- 6.a) Derive the expressions for voltage ripple and regulation in a voltage multiplier circuit. [2]
- b) Explain about tripping and control of impulse generators. [5+5]

OR

7. Explain how a sphere gap can be used to measure the peak value of voltages, and illustrate it with a neat sketch. What are the parameters and factors that influence such voltage measurement? [10]
8. Explain the different aspects of insulation design and insulation coordination adopted for EHV systems. [10]

OR

9. What are the mechanisms by which lightning strokes develop an induce over voltages on overhead power lines? Explain. [10]
10. Explain the different electrical tests done on isolators and circuit breakers. [10]

OR

- 11.a) Briefly explain how partial discharges in an insulation system can be detected and displayed.
- b) Define the terms:
- i) Loss factor
- ii) 50% Flashover voltage [5+5]

--ooOoo--

Code No: 117HA

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ROBOTICS
(Common to AME, ME)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Define the term robotics [2]
- b) Describe the relation between automation and robotics [3]
- c) What is manipulator kinematics? [2]
- d) What is homogenous transformations? [3]
- e) What is robot arm dynamics? [2]
- f) Write about Euler angles. [3]
- g) What is a hydraulic actuator? [2]
- h) Draw the block diagram of trajectory planning. [3]
- i) Define robot applications in manufacturing. [2]
- j) Describe material transfer applications. [3]

PART - B

(50 Marks)

- 2.a) Distinguish an automation and a robot.
 - b) Classification the robot by any two coordinate systems. [5+5]
- OR**
- 3.a) Explain the working principle of proximity sensors used in robots.
 - b) Discuss some of the important considerations in the design of grippers. [5+5]
- 4.a) Derive rotation in the y-z plane using the geometric approach.
 - b) For the point $a_{uvw} = (6, 2, 4)^T$ rotate 30° about the y-axis followed by translation of 6 units along X-axis. [5+5]
- OR**
- 5.a) For the point $a_{uvw} = (6, 2, 4)^T$ Translate 6 units along y-axis, followed by rotation of 30° about x-axis.
 - b) Write the forward kinematics for any manipulator based on D-H convention. [5+5]
- 6.a) Differentiate clearly with reference to 2-jointed manipulator of LL type.
 - b) Find the joint space singularities of the cylindrical coordinate robot. [5+5]
- OR**
- 7.a) Find the manipulator Jacobain matrix $J(q)$ of the five-axis spherical coordinate robot.
 - b) Describe newton-Euler formulation in dynamic modeling of robotics control. [5+5]

26 26 26 26 26 26 26 2

8.a) A manipulator with a single link is to rotate from 30° to 100° in 2 seconds. The joint velocity and acceleration are both zero at the initial and final positions. Determine the coefficient of a quadratic polynomial that accomplishes the motion.

b) Differences between open-loop and closed-loop control systems. [5+5]

26 26 26 26 26 26 26 2

9.a) Explain any one method of splitting a joint trajectory.

b) List the types of manipulators employed for travelling from point-to-point motion types. [5+5]

10.a) Describe the material handling operations.

b) Explain simple pick-and-place operation of the robot. [5+5]

26 26 26 26 26 26 26 2

11.a) Describe the pelletizing operation of material transfer application of a robot.

b) Explain loading and unloading of material handling in die casting process. [5+5]

--ooOoo--

R13

Code No: 117BX

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

COMPUTER GRAPHICS

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

Part - A

(25 Marks)

- 1.a) What are the hardware devices used for computer graphics? [2]
- b) What is aliasing and antialiasing? [3]
- c) What is covering (exterior clipping)? [2]
- d) Distinguish between uniform scaling and differential scaling? [3]
- e) What is Bezier Basis Function? [2]
- f) Differentiate between interpolation spline and approximation spline? [3]
- g) Classify the Visible Surface Detection Methods. [2]
- h) What are the Basic illumination Models. [3]
- i) Discuss about motion specifications. [2]
- j) What is raster animation? [3]

Part - B

(50 Marks)

- 2.a) Distinguish Raster and Random scan devices.
- b) List the input devices. Explain the functionalities of any one input device. [6+4]

OR

- 3.a) Illustrate the Bresenham line drawing algorithm, digitize the line with endpoints (20,10) and (30,18) and this has a slope of 0.8.
- b) Describe boundary fill algorithm? [6+4]

- 4.a) Rotate a triangle A(0,0), B(2,2), C(4,2) about the origin and about P(2,2) by an angle of 45° .
- b) Give a brief note on two dimensional viewing transformation pipeline? [5+5]

OR

- 5.a) Derive window to viewport coordinate transformation.
- b) Explain Cohen Sutherland and Cyrus-beck line Clipping algorithms. [4+6]

6. Explain in detail about B-Spline curves and surfaces? Derive parametric Bezier curve equation controlled by four points $\{(2,5,3), (3,-6,8), (1,-2,3), (-4,2,-2)\}$. [10]

OR

- 7.a) Explain the concept of parallel projections in 3D.
- b) Explain the 3D clipping algorithm for viewing volume. [5+5]

- 8.a) Explain area subdivision and A-Buffer method?
b) Write short notes on BSP-tree methods?

[5+5]

9. Explain polygon Rendering Methods. **OR**

[10]

- 10.a) What are the different tricks used in computer graphics animation?
b) What are the animation functions follow the computer animation system?

[5+5]

OR

- 11.a) Give any four real time animation techniques?
b) Mention the salient features of key frame systems?

[4+6]

---ooOoo---

R13

Code No: 117CJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

DIGITAL IMAGE PROCESSING

(Common to ECE, ETM)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part-A

(25 Marks)

- 1.a) Define Sampling and Quantization. [2]
- b) List the properties of Walsh Transform. [3]
- c) Define histogram. [2]
- d) What is the need of image enhancement? [3]
- e) What is the difference between image restoration and image enhancement? [2]
- f) Draw the model of Image Restoration process. [3]
- g) List different types of discontinuities in digital image. [2]
- h) What is global, Local and dynamic threshold? [3]
- i) What is the need of image compression? [2]
- j) Give the characteristics of lossless compression. [3]

Part-B

(50 Marks)

2. With mathematical expressions explain the Slant transform and explain how it is useful in Image processing. [10]

OR

- 3.a) List and explain the fundamental steps in digital image processing.
- b) Discuss briefly the following:
 - i) Neighbours of pixels
 - ii) connectivity. [5+5]

- 4.a) Explain the use of histogram statistics for image enhancement.
- b) How Gray level transformation helps in contrast enhancement? Discuss. [5+5]

OR

- 5.a) Compare and contrast spatial domain and frequency domain techniques of Image enhancement.
- b) Discuss any one frequency domain technique of Image smoothing. [5+5]

6. What is meant by image restoration? Explain the image degradation model. [10]

OR

7. Discuss in detail the image restoration using inverse filtering. [10]

- 8.a) Explain the basics of intensity thresholding in image segmentation.
b) Explain about morphological hit-or-miss transform.

[5+5]

OR

- 9.a) Discuss in detail the edge linking using local processing.
b) Discuss briefly the region based segmentation.

[6+4]

- 10.a) Discuss briefly the Image compression using Huffman coding.
b) What is the importance of compression in Image processing?

[7+3]

OR

- 11.a) Draw and explain the image compression model.
b) List and explain the steps involved in JPEG compression.

[6+4]

--ooOoo--

R13

Code No: 117HP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

SOFTWARE PROJECT MANAGEMENT

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART – A

(25 Marks)

- 1.a) What is meant by late risk resolution? [2]
- b) Explain about requirements driven functional decomposition. [3]
- c) Discuss the advantages of commercial components. [2]
- d) What is meant by round trip engineering? [3]
- e) What the phases of the life-cycle process? Explain. [2]
- f) Write brief notes on construction phase. [3]
- g) Discuss about initial operational capability milestone. [2]
- h) Write brief notes on major milestones. [3]
- i) What are the basic parameters of an earned value system? [2]
- j) Write brief notes on metrics automation. [3]

PART – B

(50 Marks)

2. Explain the waterfall model in large-scale system approach. Discuss five necessary improvements for this. [10]
- OR**
3. Explain the progress profile of conventional software project. [10]
 4. What are the key practices that improve over all software quality? Explain them. [10]
- OR**
5. Explain the top five principles of modern process. [10]
 6. Describe the primary objectives, essential activities and primary evaluation criteria of elaboration phase. [10]
- OR**
7. What is meant by artifact sets? Discuss about the engineering sets. [10]
 8. Explain the conventional WBS issues and evolution of planning fidelity in the WBS over the life cycle. [10]
- OR**
9. With a neat diagram explain the default roles in a software line of business organization. [10]
 10. Explain about seven core metrics. [10]
- OR**
11. Discuss in detail about life cycle expectations. [10]

---ooOoo---

R13

Code No: 117FX

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define one-dimensional array. [2]
- b) Describe finalize() method with example. [3]
- c) Define interface. [2]
- d) What is the necessity of overridden methods? [3]
- e) Describe the Main thread. [2]
- f) Discuss about multiple catch clauses. [3]
- g) What are sources of events? [2]
- h) Discuss about FlowLayout. [3]
- i) Describe applet architecture. [2]
- j) Discuss about the MVC connection. [3]

PART-B

(50 Marks)

- 2.a) Define constructor. Explain about parameterized constructors. [5+5]
- b) What are arithmetic operators? Explain. [5+5]

OR

- 3.a) Explain about multidimensional arrays with examples. [5+5]
- b) What is meant by overloading methods? Explain in detail. [5+5]

- 4.a) Discuss about Console class. [5+5]
- b) Describe uses of super keyword in inheritance. [5+5]

OR

- 5.a) Explain usage of final with inheritance. [5+5]
- b) How interfaces can be extended? Explain. [5+5]

- 6.a) Explain about interthread communications. [5+5]
- b) Explain string comparison functions with examples. [5+5]

OR

- 7.a) Discuss about generic class hierarchies. [5+5]
- b) Explain about the Java thread model. [5+5]

- 8.a) Discuss about handling keyboard events.
b) Explain about GridBagLayout.
- 9.a) Describe about applying check boxes.
b) Discuss about list panels.

[5+5]

- 10.a) Discuss about components and containers.
b) Explain about JTextField.

[5+5]

11. Explain the following:
a) JScrollPane
b) Combo Boxes.

OR

[5+5]

---ooOoo---

R13

Code No: 117EZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech IV Year I Semester Examinations, November/December - 2017****METROLOGY AND SURFACE ENGINEERING****(Automobile Engineering)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) Why it is necessary to give tolerance on engineering dimension? [2]
- b) Differentiate between End standards and line standards. [3]
- c) State the Taylor's principles of gauge design. [2]
- d) Explain the working principle of spirit level. [3]
- e) The heights of peak and valleys of 20 Successive points on a surface are 35, 25, 40, 22, 37, 19, 41, 21, 42, 18, 42, 24, 44, 25, 40, 18, 40, 18, 39, 21 microns respectively, measured over a length of 20mm. Determine CLA and RMS values of roughness surface? [2]
- f) Give the classification of coordinate measuring machines. [3]
- g) What instruments are generally used for alignment tests? [2]
- h) Explain the need for machine tool alignment tests. [3]
- i) What do you mean by surface integrity? [2]
- j) Explain the limitations of thermal spraying. [3]

PART-B**(50 Marks)**

- 2.a) Give the complete classification of clearance fit. Explain them with the help of suitable examples. [5+5]
- b) With the help of neat sketch explain the construction and working of a dial indicator. [5+5]

OR

- 3.a) Describe the principal features of International standard system of limits and fits for screwed work. [5+5]
- b) Explain the constructional features of a depth micrometer. [5+5]
- 4.a) Explain the steps involved in the determination of work piece angle using Sine bar. [5+5]
- b) A hole and shaft system had the following dimensions:
60 H 8 / c 8
The multiplier of grade 8 is 25. The fundamental deviation for 'C' shaft is $-(9.5 + 0.8 D)$. The diameter step is 50 to 80. Design the suitable 'GO' and 'NO-GO' gauges for shaft and hole. [5+5]

OR

- 5.a) What is a straight edge? Explain how it can be used to measure the straightness.
b) Explain the construction and working of NPL interferometer for flatness testing. [5+5]

- 6.a) Sketch and explain Taylor-Hobson talysurf surface roughness measuring instrument.
b) Explain the pitch errors and angle errors in connection with screw thread measurement? [5+5]

OR

- 7.a) With the help of a neat sketch explain the construction and working of a reed type of comparator.
b) Suggest a method and explain how tooth thickness of a gear is measured. [5+5]

8. With the help of suitable diagrams explain various alignment tests to be conducted on radial drilling machine. [10]

OR

- 9.a) Explain the steps involved in the preparation of acceptance charts.
b) Discuss about various reference planes used in alignment tests. [5+5]

- 10.a) What are the different modes of wear?
b) Discuss about various mechanical methods for surface treatment. [5+5]

OR

- 11.a) Explain the application of laser for surface modification.
b) Explain the steps involved in electro forming. [5+5]

R13

Code No: 117CG

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech IV Year I Semester Examinations, November/December - 2017****DIGITAL CONTROL SYSTEMS****(Common to EEE, EIE)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) What are differences between analog controllers and digital controllers? [2]
- b) What are the advantages of sampling process in control systems? [3]
- c) What do you mean by state space equations? Explain. [2]
- d) Define Eigen values, Eigen vectors and also write down the properties. [3]
- e) Explain Bounded Input Bounded Output stability and zero input stability. [2]
- f) Define positive definiteness, negative definiteness, positive semi-definiteness and negative Semi-definiteness of scalar functions. [3]
- g) Write the advantages and disadvantages of phase lag compensators. [2]
- h) Write the transient response specifications. [3]
- i) What are the sufficient conditions for design of state feedback controller through pole placement? [2]
- j) Explain linear quadratic regulators. [3]

PART-B**(50 Marks)**

- 2.a) What is meant by zero order hold? Derive the transfer function of zero order hold device.
- b) Solve the following difference equation

$$y(k+2) + 3y(k+1) + 2y(k) = r(k), \text{ given } r(k) = (1)^k, y(0)=1, y(k)=0, k < 0. \quad [5+5]$$

OR

- 3.a) State and prove the following properties/theorems of z-transforms.
 - i) Shifting theorem
 - ii) Complex translation theorem.
- b) Find the inverse Z-transform of the following function using inversion integral method

$$x(z) = \frac{(1 - e^{-aT})z}{(z-1)(z - e^{-aT})} \quad [5+5]$$

- 4.a) Write the state transition matrix and its properties.
- b) Find the Jordan canonical state variable models for the transfer function given below

$$T(z) = \frac{4z^3 - 12z^2 + 13z - 7}{(z-1)^2(z-2)} \quad [5+5]$$

OR

5.a) Explain the Duality between controllability and observability.

b) Determine $(zI - G)^{-1}$ and also obtain G^k for matrix $G = \begin{bmatrix} 0.1 & 0.1 \\ 0.3 & -0.1 \end{bmatrix}$ [4+6]

6.a) State and explain Jury's stability test.

b) A system is described by

$$y(k) - 0.6y(k-1) - 0.81y(k-2) + 0.67y(k-3) - 0.12y(k-4) = x(k)$$

Where $x(k)$ is the input and $y(k)$ is the output of the system. Determine the stability of the system. [5+5]

OR

7.a) Discuss the stability analysis of discrete control system using Routh stability criterion.

b) Using direct method of Lyapunov, determine the stability of the equilibrium state of the system

$$x(k+1) = Fx(k) \text{ with } F = \begin{bmatrix} 0 & 0.5 \\ -0.5 & -1 \end{bmatrix}. \quad [4+6]$$

8.a) What are digital controllers? What are the methods for their realization? Discuss.

b) Explain the design of digital controllers through deadbeat response method. [5+5]

OR

9.a) Explain the relation between the bilinear transformation and the w plane.

b) Explain the digital PID controllers with neat sketch. [5+5]

10.a) Explain the pole placement design by state feedback with multi input digital control System.

b) Discuss the design of full order observer with neat block diagram. [5+5]

OR

11. For the system described by $x(k+1) = \begin{bmatrix} 0 & -0.1 \\ 1 & -1 \end{bmatrix} x(k) + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(k)$, Design a full order state

$$y(k) = \begin{bmatrix} 0 & 1 \end{bmatrix} x(k)$$

observer with desired Eigen values at $z = 0.5 \pm j0.5$. [10]

---ooOoo---

R13

Code No: 117DV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INDUSTRIAL MANAGEMENT

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1. a) Why social responsibility has become an important facet of management in the present times? [2]
- b) What are the appreciations of Fayol's functional school of Management theory? [3]
- c) What is matrix organization? What are its strengths and weaknesses? [2]
- d) What do you understand by the term 'span of control' and 'unity of command'? [3]
- e) Give a comparative statement in the location study of a rural site and urban site. [2]
- f) List out Muther's principles of layout? [3]
- g) Give the basic aspects that work study takes care of. [2]
- h) Explain Ishikawa's Fishbone diagrams? What are its applications? [3]
- i) Define the terms Job Description and Evaluation [2]
- j) Explain the meaning and concept of 'crashing' in network technique. [3]

PART - B

(50 Marks)

2. a) What are the basic elements of hierarchical need approach? What are the effects of these elements on the management style?
 - b) Elton Mayo projected a new angle of Management. What is that angle? Explain. [5+5]
- OR**
3. a) What are managerial functions? How are they integrated? [5+5]
 - b) Examine the scientific nature in Taylor's scientific management.
4. a) Distinguish between a military organization and a functional organization.
 - b) What is a network organization structure? Give the areas where it is best suitable for adopting. Give its strengths and weaknesses. [5+5]
- OR**
5. Which organization, formal or informal, do you feel is the strengthener in executing industrial management? How? Give some exemplary situations in support of your answer. [10]
6. a) Define continuous production. List out its characteristics.
 - b) Design the best suitable layout plan for a cool drink/ beverage bottling factory. (assume the data and required operations arbitrarily). [5+5]

OR

- 7.a) Distinguish between cost and value. What are different types of values? Explain with examples.
- b) What facilities would influence (both favorable and/or unfavorable) the location decisions in the case of the following:
- i) city/urban sites,
 - ii) sub-urban sites, and
 - iii) rural/countryside sites.

[5+5]

- 8.a) With reference to method study, describe the effect of the following factors:
- i) Economic factors,
 - ii) Technical factors
 - iii) Human factors.

- b) Construct X and R-charts from the following information and state whether the process is in control. For each of the following, X has been computed from a sample of 5 units drawn at an interval of 2 hours from an ongoing manufacturing process. Given $A_2 = 0.577$ and $D_3 = 0$ and $D_4 = 2.114$

Sample	1	2	3	4	5	6	7	8	9	10
Mean X	23	37	34	13	29	26	39	45	34	20
Range R	10	30	11	21	17	20	5	14	38	34

Give your comments on the results.

[5+5]

OR

- 9.a) What are desirable characteristics of a sample taken for sampling plan? Explain.
- b) A job has been subdivided into 4 elements. The time for each element and respective ratings are given below: Calculate the normal time and standard time for each element and for the job if allowance is 5%.

[5+5]

Element no.	Observed time	Rating factor (%)
1	0.6	100
2	1	80
3	1.2	130
4	1.5	90

10. A workshop shed construction project is composed of five jobs as P (foundation and walls), Q (roofing), R (install electricity), S (plumbing), and T (connect services to finish). Activity P must precede all others while activity T must follow all others. Apart from this, jobs can run concurrently. The normal cost in thousands of rupees per day and crash cost in thousands of rupees per day for the activities are given in the form $X(N_c/N_t, C_c/C_t)$ where (N_c is Normal cost, N_t is Normal time; and C_c is Crash cost, C_t is Crash time) as P (60/10; 80/8), Q (24/12, 40/4), R (20/8, 36/6), S (24/10, 40/6), and T (32/6, 32/6). Draw the network and AON diagrams and identify the critical path. Also, crash the network fully to find out the minimum duration and optimum cost. Given is indirect costs as Rs. 6000/day.

[10]

OR

11.a) Describe briefly the factor comparison method of job evaluation.

b) A project PERT network has only three possible paths, P-R, P-S-U, and Q-T-U. The activities, along with their expected time and standard deviations, are represented in ordered pairs as P(8, 2), Q(16, 4), R(15, 3), S(14, 2), T(5, 2), and U(5, 1). Develop the network and find the probability of completing the project in 25 days. [5+5]

--ooOoo--

R13

Code No: 117AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ADVANCED FOUNDATION ENGINEERING

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) Give examples for footing subjected to eccentric loading. Also discuss about modified width of footing due to load eccentricity. [2]
- b) Write the assumptions of Mayerhof's theory of bearing capacity. [3]
- c) Define pile group and draw a pile group which is possible with minimum number of piles. [2]
- d) A 6m long and 0.3m diameter pile is fully embedded in soft clay where complete adhesion is possible. If the UCS of clay is 100 kPa, estimate the shaft friction load. [3]
- e) List assumptions of Rankine's theory of earth pressure. [2]
- f) Why shear key is provided beneath the base of the retaining wall? Discuss how its depth is estimated. [3]
- g) Draw the typical pattern of deformation of vertical walls: i) anchored bulk head, ii) Braced - cut and iii) Tieback - cut. [2]
- h) Define Strut and Wale. [3]
- i) Define swelling pressure. Comment whether a building can be lifted up or not when bearing capacity of soil is higher than the swelling pressure. [2]
- j) Write a note on sand cushion technique in swelling soils. [3]

PART-B**(50 Marks)**

- 2.a) Define and discuss the importance of Safe bearing capacity and Allowable bearing capacity in the design of foundation.
- b) A square footing is to be designed for a safe load of 350 kN. If the load is inclined at an angle of 15° to the vertical, determine the width of the foundation. Take a factor of safety of 3.0 and use Vesic's equation. The following are the soil properties: unit weight of soil = 19 kN/m^3 , angle of internal friction of soil is 35° and cohesion is 5 kPa. The depth of foundation is 1.25m. Assume no water table effect. The bearing capacity factors are: $N_c = 46.12$, $N_q = 33.3$, $N_\gamma = 48.03$. For square footing: Shape factors are: $s_c = 1 + (N_q/N_c)$, $s_q = 1 + \tan\phi$ and $s_\gamma = 0.6$. Depth factors are: $d_c = 1 + 0.4(D_f/B)$, $d_q = 1 + 2 \tan\phi(1 - \sin\phi)^2 (D_f/B)$, $d_\gamma = 1.0$; and Inclination factors are: $i_c = i_q = [1 - (\alpha/90)]^2$, $i_\gamma = [1 - (\alpha/\phi)]^2$ [3+7]

OR

- 3.a) Write a note on bearing capacity of layered clay soil.
 b) Square footing of size 5 x 5 m is founded at a depth of 1.5m below the ground surface in loose to medium dense sand with net load intensity of 135 kPa. Standard Cone Penetration tests conducted at the site gave the following data.

Depth below GL (m)	2	4	6	8	10	12	14	16	18
Cone Resistance, q_c (kPa)	800	800	800	800	1000	1000	1000	1200	1200

The water table is at the base of the foundation. Above and below the water table the unit weights of soil are 16.5 kN/m^3 , and 19 kN/m^3 . Compute the elastic settlement that can take place over a period of 4 years. Use the equation, $E_s = 4q_c \text{ kN/m}^2$, for computing the modulus of elasticity of the sand. Assume $\mu = 0.3$ and the depth of the compressible layer = $2B = 10 \text{ m}$ (= H). [3+7]

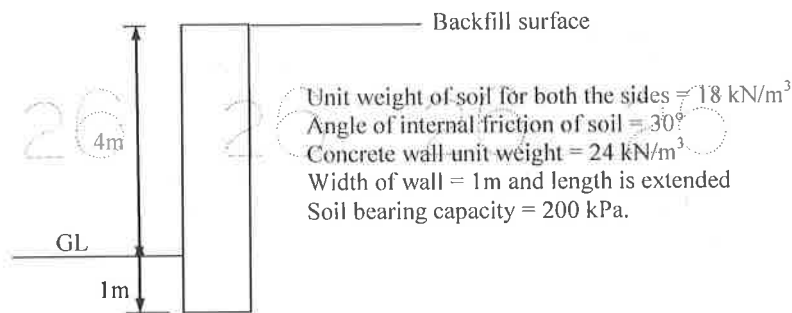
- 4.a) Discuss how settlement of pile group is controlled in clay soil.
 b) A raft footing is founded at a depth of 3.5 m below the ground level in a deep stratum of normally consolidated clay having the following properties: saturated unit weight of soil = 20 kN/m^3 , compression index of clay = 0.34, initial void ratio = 0.85. The raft carries a uniformly distributed load of 125 kPa. It is supported by a group of 81 piles arranged in a square formation such as 9x9 pile group. The length, diameter and spacing of the piles are 15m, 0.45m and 2.5 m respectively. The projection of the raft beyond the edges of the piles is 0.6 m. The water table is located at the ground level. Estimate the consolidation settlement of the piled raft exactly 5m below the pile group tip level. Assume that the load dispersion starts from a height of 1/3 of pile length from the pile tip. Assume also 2:1 distribution for vertical stress calculation. [3+7]

OR

- 5.a) Distinguish short and long pile. Explain with neat sketches the deflection and bending behaviour of laterally loaded free headed and fixed headed short and long pile.
 b) Discuss with charts and formulae the procedure of estimation of lateral capacity of piles in clay as per the Broms theory. [5+5]
- 6.a) Discuss how the surcharge or line load is accounted in Culman's method while estimating active earth pressure.
 b) A retaining wall 5m high with a vertical back supports a horizontal fill weighing 18 kN/m^3 . The backfill has angle of internal friction 30° , wall friction 18° , and cohesion is zero kPa. Determine the total active thrust on the wall by Culmann's graphical method. [4+6]

OR

- 7.a) What are the modes of failures in retaining walls explain them with neat sketches.
 b) Check the stability against overturning and bearing pressure of the retaining wall shown below. Consider the passive resistance also. [4+6]



- 8.a) Differentiate the cantilever sheet pile walls with anchored sheet pile walls and discuss the practical relevance of both.
- b) Discuss the formulations for depth of embedment of anchored sheet pile wall in granular soils using free earth support method. [4+6]

OR

- 9.a) Differentiate sheet pile walls with braced cuts and discuss the practical relevance of both.
- b) Discuss the Bjerrum and Eide method of stability analysis of braced-cuts. [4+6]
- 10.a) Discuss the effects of swelling soils on building foundations.
- b) Explain the importance of Sand Cushion and CNS techniques in controlling the damages of building foundations in swelling soils. [4+6]

OR

- 11.a) Define 'lime fixation point' for a soil. Discuss how it can be achieved?
- b) What are the recommended percentages of lime for different soils? Enunciate the effect of lime content and curing time on the properties of soil-lime mixes. [4+6]

---ooOoo---

R09

Code No: 57026

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ROBOTICS
(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) State and describe the general considerations in gripper selection and design.
b) Explain the various robot configurations with the aid of sketches.
c) State and relate robotics and industrial automation. [15]
- 2.a) What are the composite rotation matrices?
b) A Stanford robot arm has moved to the position shown in the Figure 1 below. The joint variables at this position are: $q = (90^0, -120^0, 22 \text{ cm}, 0^0, 70^0, 90^0)^T$. Establish the orthonormal link coordinate systems (x_i, y_i, z_i) for i is 1, 2, ..., 6, for this arm and complete the table. [7+8]

Stanford arm link coordinate parameters				
Joint i	θ_i	a_i	α_i	d_i
1				
2				
3				
4				
5				
6				

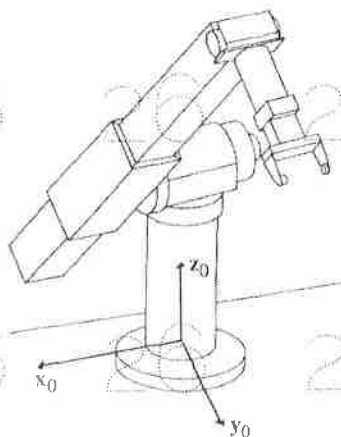


Figure 1

- 3.a) Distinguish joint and world coordinates.
 b) A two degree-of-freedom manipulator is shown in the Figure 2. Given that the length of each link is 1 m, establish its link coordinate frames and find 0A_1 and 1A_2 . Find the inverse kinematic solution for this manipulator. [7+8]

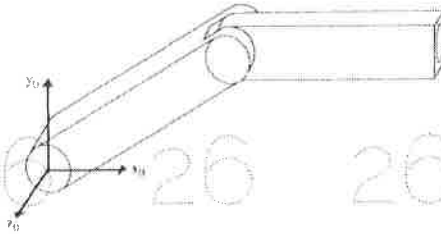


Figure 2

- 4.a) What do you understand by recursive equation of motion of a link about its own coordinate frame?
 b) With references to the cube of mass M and side $2a$ shown in the figure 3 below, (x_0, y_0, z_0) is the reference coordinate frame, (u, v, w) is the body-attached coordinate frame, and (x_{cm}, y_{cm}, z_{cm}) is another body-attached coordinate frame at the center of mass of the cube.
 i) Find the inertia tensor in the (x_0, y_0, z_0) coordinate system
 ii) Find the inertia tensor at the center of mass in the (x_{cm}, y_{cm}, z_{cm}) coordinates system. [7+8]

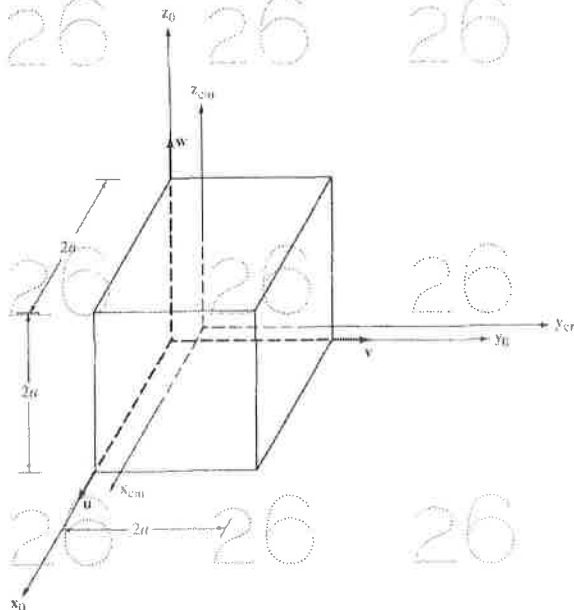


Figure 3

- 5.a) Distinguish moving and rotating coordinate systems.
 b) The two-link robot arm shown in the Figure 4 below is attached to the ceiling and under the influence of the gravitational acceleration $g = 9.8062 \text{ m/sec}^2$, (x_0, y_0, z_0) is the reference frame, θ_1, θ_2 are the generalized coordinates, d_1, d_2 are the lengths of the links and m_1, m_2 are the respective masses. Under the assumption of lumped equivalent masses, the mass of each link is lumped at the end of the link.
 i) Find the link transformation matrices ${}^{i-1}A_i, i = 1, 2$.
 ii) Find the pseudo-inertia matrix J_i for each link.
 iii) Derive the Lagrange-Euler Equations of motion by first finding the elements in the $D(\theta), h(\theta, \dot{\theta})$ and $c(\theta, \dot{\theta})$ matrices. [7+8]

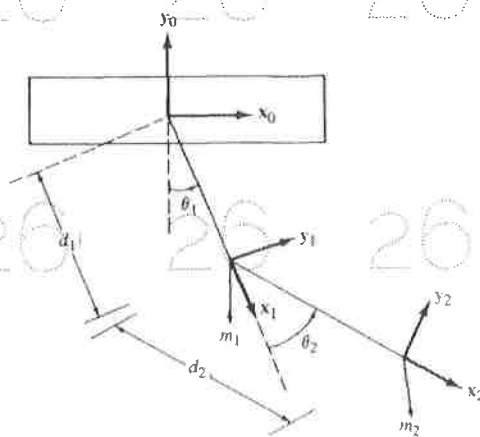


Figure 4

- 6.a) List the general considerations in trajectory planning.
 b) A manipulator is required to move along a straight line from point A to point B, where A and B are respectively described by

$$A = \begin{bmatrix} -1 & 0 & 0 & 5 \\ 0 & 1 & 0 & 10 \\ 0 & 0 & -1 & 15 \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 0 & -1 & 0 & 20 \\ 0 & 0 & 1 & 30 \\ -1 & 0 & 0 & 5 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

The motion from A to B consists of a translation and two rotations. Determine θ, ψ, ϕ and x, y, z for the drive transformation. Also find three intermediate transformations between A and B. [7+8]

7.a) How do you plan straight-line trajectories using quaternions?

b) A single link rotary robot is required to move from $\theta(0) = 30^\circ$ to $\theta(2) = 100^\circ$ in 2 s.

The joint velocity and acceleration are both zero at the initial and final positions.

i) What is the highest degree polynomial that can be used to accomplish the motion?

ii) What is the lowest degree polynomial that can be used to accomplish the motion?

iii) Determine the coefficients of a cubic polynomial that accomplishes the motion.

iv) Determine the coefficient of a quartic polynomial that accomplishes the motion.

v) Determine the coefficient of a quintic polynomial that accomplishes the motion.

You can split the joint trajectory into several trajectory segments.

[7+8]

8.a) State and explain the application of robots in an automated assembly lines.

b) How robot will be integrated in a spot welding facility?

[8+7]

--ooOoo--

R09

Code No: 57016

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

HIGH VOLTAGE ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Discuss the relative advantages and disadvantages of different numerical methods for solution of field problems.
- b) How is the electric stress/Electric Field intensity controlled? [7+8]
- 2.a) Describe the various factors that influence breakdown in a gas.
- b) Explain the effect of moisture content on breakdown strength of liquid dielectrics. [7+8]
- 3.a) How does the internal discharge phenomenon lead to breakdown in solid dielectrics?
- b) What is a composite dielectric and what are its properties? [7+8]
- 4.a) Why is a Cockcroft-Walton circuit preferred for voltage multiplier circuits? Explain its working with a schematic diagram.
- b) A 12 stage impulse generator has $0.126\mu\text{F}$ condensers. The wave front and the wave tail resistance connected are 800 ohms and 5000 ohms respectively. If the load condenser is 1000pF , find the front and tail times of the impulse wave produced. [7+8]
- 5.a) Explain how a sphere gap can be used to measure the peak value of voltages? Also discuss the parameters and factors that influence such voltage measurement?
- b) Rogowski coil is to be designed to measure impulse currents of 10kA having a rate of change of current of 10^{11}A/s . The current is read by a VTVM as a potential drop across the integrating circuit connected to the secondary. Estimate the values of mutual inductance, resistance and capacitance to be connected, if the meter reading is to be 10V for full scale deflection. [7+8]
- 6.a) What are the causes for switching and power frequency overvoltages? How are they controlled in power systems?
- b) Explain the importance of switching overvoltages in EHV power systems. How is protection against over voltages achieved? [7+8]
- 7.a) Explain how the volume resistivity of a solid dielectric is determined.
- b) Describe how a fault in a long cable can be detected and located using partial discharge technique. [7+8]
- 8.a) What is the significance of impulse tests? Briefly explain the impulse testing of insulators.
- b) What is an operating duty cycle test on a surge diverter? Why is it more significant than other tests? [7+8]

---ooOoo---

Code No: 57140

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

AUTOMOTIVE CHASSIS AND SUSPENSION

(Automobile Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

1. Describe the types of power plant location and drive with advantages and disadvantages using sketches. [15]
2. What are the different tests available for the vehicle frame? Explain in detail with neat sketches. [15]
3. A car with a wheel track of 147.2 cm and wheel base of 274 cm is fitted with an Ackerman's steering mechanism. The distance between the axis of the pivot pins is 122 cm and the tie-rod is 110.6 cm long. The track arm is 15.25 cm long. Find the turning circle radius of the car, so that true rolling motion is there for all the wheels. [15]
4. Explain with a neat sketch the working of a pneumatic brake used in automobiles. What are its merits and demerits compared to hydraulic brakes? [15]
5. A typical coil suspension spring has 10 effective coil of a mean diameter 125mm and made out of wires of 15mm diameter. The spring is designed to carry a maximum static load of 3531.6N. Calculate shear stress and deflection under these load conditions. If maximum shear stress of 637.65 MPa is allowable in the material, what is the possible clearance in the spring? Take value of $G=73.575$ GPa. [15]
- 6.a) Discuss in brief the requirements and various types of springs used in suspension system.
b) Write short notes on Engine Mountings. [8+7]
7. Discuss in detail the testing procedures, types of tests and chassis components for automobile system. [15]
- 8.a) Write the classification of two and three wheelers.
b) With neat sketches, explain the construction details of frames and forks. [7+8]

--ooOoo--

R09

Code No: 57048

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

DATA WAREHOUSING AND DATA MINING

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) Use these methods to normalize the following group of data:
{200, 300, 400, 600, 1000}
- i) Min-max normalization by setting min = 0 and max =1
 - ii) Z-score normalization
 - iii) Z-score normalization using the mean absolute deviation instead of standard deviation.
- b) Explain the architecture of Data mining. [7+8]
- 2.a) Consider a data -warehouse for a sales company. Implement
- i) The generation of a data warehouse aggregation,
 - ii) Roll-up
 - iii) Roll-down
 - iv) Slice and dice.
- b) Explain the fact constellation and snow flake schemas. [7+8].
- 3.a) Explain about constraint based association mining.
- b) Discuss the terms associations and correlations. [10+5]
4. Consider the following training data set to construct naïve Bayesian classifier and classify the test case: A=M, B=Q, C=? [15]

A	B	C
M	B	T
G	Q	T
H	S	T
M	S	T
G	Q	T
G	Q	F
G	S	F
H	B	F
H	Q	F
M	B	F

- 5.a) Differentiate between AGNES and DIANA methods.
- b) Describe deviation based outlier detection. [7+8]
- 6.a) Explain about mining sequential patterns in transactional databases.
- b) Briefly discuss similarity search in time-series analysis. [7+8]

- 7.a) Discuss about text mining, audio and video data mining.
b) Discuss briefly about various data mining applications. [7+8]

8.a) Explain one real time application of data mining in the domain of Health care. How data mining techniques can be applied on the health domain.

- b) What is meant by social network? How data mining can be applied to social networks? [7+8]

--ooOoo--

R09

Code No: 57028

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

MECHATRONICS
(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Explain the design and implementation of mechatronics case study for a pick and place robot.
- b) Explain the various control methods used in Mechatronics systems. [7+8]
- 2.a) What is the principle of ADC?
- b) Briefly explain about resistors, capacitors and amplifying signals. [5+10]
- 3.a) Explain the functions of relief valve and direction control valve.
- b) Discuss the relative advantages of Hydraulic systems and Pneumatic actuation systems for mechatronics applications. [7+8]
- 4.a) What is BJT? How are its terminal named.
- b) What is over current sensing? Explain the devices for over-current protection. [7+8]
- 5.a) Explain the principle and applications of Relays and solenoids.
- b) Explain the features of DC brushless motors. [10+5]
6. With a neat block diagram explain the architecture of 8051 microcontroller and also write its addressing modes. [15]
- 7.a) With a neat sketch, explain the architecture of PLC.
- b) Explain the following:
 - i) Shift registers
 - ii) Master and jump controls
 - iii) Data handling [8+7]
8. List the different types of internal and external sensors used in a mechatronics system and describe them briefly. [15]

---ooOoo---

R09

Code No: 57018

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

DIGITAL CONTROL SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

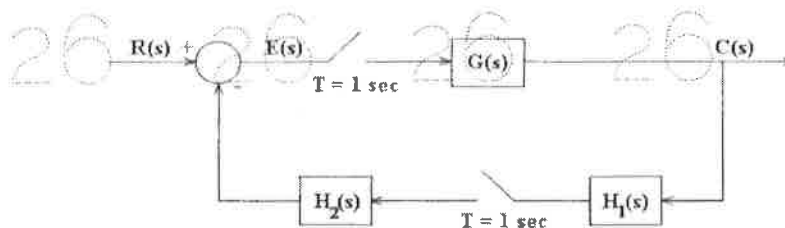
Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Explain clearly the configuration of basic digital control scheme with the help of a neat block diagram.
- b) Explain the following:
i) acquisition time ii) aperture time iii) settling time [9+6]

- 2.a) Obtain the Z-transform of
i) $f_1(t) = \frac{1}{a}(1 - e^{-at})$ where 'a' is a constant ii) $f(t) = t^2 e^{-at}$

- b) Obtain the inverse Z-transform of the following in the closed form.
i) $F_2(z) = \frac{2z^3 + z}{(z-1)^2(z-1)}$ ii) $F_3(z) = \frac{z+2}{z^2(z-2)}$ [7+8]

3. Obtain the closed loop pulse transfer function of the systems shown in figure below. [15]



- 4.a) Obtain the state equation and output equation for the system defined by:

$$\frac{Y(z)}{U(z)} = \frac{z^{-1} + 5z^{-2}}{1 + 4z^{-1} + 3z^{-2}}$$

- b) State the properties of a state transition matrix. [9+6]

- 5.a) Investigate the controllability and observability of the following system

$$\begin{bmatrix} x_1(k+1) \\ x_2(k+1) \end{bmatrix} = \begin{bmatrix} 1 & -2 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} x_1(k) \\ x_2(k) \end{bmatrix} + \begin{bmatrix} 1 & -1 \\ 0 & 0 \end{bmatrix} u(k)$$

- b) Discuss the duality between controllability and observability with reference to discrete time control systems. [9+6]

6.a) State and explain Jury stability analysis for the following:

$$P(z) = z^4 - 1.7z^3 + 1.04z^2 - 0.268z + 0.024 = 0$$

b) Write short note on complementary strips and primary strips.

[9+6]

7. Explain any one method on realization of digital PID controller.

[15]

8.a) Describe the reduced-order observer with suitable diagram.

b) Consider the system

$$X(k+1) = GX(k) + H u(k)$$

$$Y(k) = CX(k)$$

$$\text{Where } G = \begin{bmatrix} 0 & -0.16 \\ 1 & -1 \end{bmatrix}; H = \begin{bmatrix} 0 \\ 1 \end{bmatrix}; C = [0 \quad 1]$$

Design a full-order observer. The desired Eigen values of the observer matrix are $\lambda_1, \lambda_2 = 0.5 \pm j0.5$.

[6+9]

R13

Code No: 217AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

PHARMACY ADMINISTRATION

Time: 3hours

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is business. [2]
- b) What is Public enterprise. [3]
- c) What is acceptance sampling. [2]
- d) What is p Chart. [3]
- e) What is statistical quality control. [2]
- f) Define Efficacy. [3]
- g) What is Comparative cost effectiveness ratios. [2]
- h) What is sales promotion. [3]
- i) What is export trade. [2]
- j) What is import trade. [3]

PART-B

(50 Marks)

- 2.a) Discuss the Changing Business Environment in Post-Liberalisation scenario. [10]
 - b) Discuss the features of Joint Stock Company. [10]
- OR**
- 3.a) Discuss the evaluation of Joint Stock Company [10]
 - b) Discuss various types of Public Enterprises. [10]
- 4.a) Write note on various types of Plant Layout. [10]
 - b) Discuss briefly on Job production. [10]
- OR**
- 5.a) Write short note on Batch production. [10]
 - b) Write short note on Mass production. [10]
- 6.a) Write note on History of Pharmaceutical out comes movements in India [10]
 - b) Write note on History of Pharmaceutical out comes movements in abroad. [10]
- OR**
- 7.a) Discuss the prescribed format for reporting Adverse Drug Reactions. [10]
 - b) Write short note on CDSCO. [10]
- 8.a) Discuss the factors influencing sales promotion. [10]
 - b) Discuss the factors influencing sales organization. [10]
- OR**
9. Discuss Organization of Distribution and Marketing briefly. [10]

- 26 26 26 26 26 26 26 2
- 10.a) Write note on progress in the manufacture of basic drugs.
b) Write note on progress in the manufacture of synthetic drugs. [10]

OR

- 11.a) Write note on export and import of pharmaceuticals.
b) Write note on progress in the manufacture of drugs of vegetable origin. [10]

--ooOoo--

R09

Code No: R9605

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

PHARMACY ADMINISTRATION

Time: 3 hours

Max.Marks:75

**Answer any five questions
All questions carry equal marks**

1. Discuss the characteristic features of Business. [15]
2. Discuss the following
a) Principles and Types of Plant Layout.
b) Goals of Production Management. [15]
3. Discuss the following
a) Acceptance Sampling
b) Deming's contribution to quality. [15]
4. Discuss List of Drugs banned by Government of India and other State Governments. [15]
5. Discuss the following.
a) Channels of distribution
b) Sales organization
c) Sales promotion. [15]
6. Discuss the Structure of Pharma Industry in India. [15]
7. Discuss the various types of insurance including marine and health insurance. [15]
8. Discuss the following
a) General Principles of medical detailing.
b) Accounting records in drug stores. [15]

--ooOoo--

Code No: 117CD

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

**DATA WAREHOUSING AND DATA MINING
(Computer Science and Engineering)**

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Define data warehouse. [2]
- b) List the Data warehouse Characteristics. [3]
- c) How can you go about filling in the missing values for this attribute? [2]
- d) Why is the word data mining a misnomer? [3]
- e) Give a note on Closed Frequent Item Set. [2]
- f) Write the FP-graph algorithm. [3]
- g) How prediction is different from classification? [2]
- h) What is rule classification? [3]
- i) Give a note on k means algorithm. [2]
- j) List the Key Issues in Hierarchical Clustering. [3]

PART - B

(50 Marks)

- 2.a) Make a comparisons between the MOLAP and HOLAP.
 - b) Discuss the star and snowflake schema in detail with suitable example. [5+5]
- OR**
- 3.a) Write the difference between designing a data warehouse and an OLAP cube.
 - b) Give a brief note on ROLAP. [5+5]
4. Explain concept hierarchy generation for the nominal data. [10]
- OR**
- 5.a) Describe the Feature Subset Selection.
 - b) Illustrate the Data Transformation by Normalization. [5+5]

6. Make a comparison of Apriori and ECLAT algorithms for frequent item set mining in transactional databases. Apply these algorithms to the following data:

TID	LIST OF ITEMS
1	Bread, Milk, Sugar, TeaPowder, Cheese, Tomato
2	Onion, Tomato, Chillies, Sugar, Milk
3	Milk, Cake, Biscuits, Cheese, Onion
4	Chillies, Potato, Milk, Cake, Sugar, Bread
5	Bread, Jam, Mik, Butter, Chilles
6	Butter, Cheese, Paneer, Curd, Milk, Biscuits
7	Onion, Paneer, Chilies, Garlic, Milk
8	Bread, Jam, Cake, Biscuits, Tomato

[10]

OR

7. Briefly explain the Partition Algorithms.

[10]

8. Discuss K- Nearest neighbor classification-Algorithm and Characteristics.

[10]

OR

9. How does the Naïve Bayesian classification works? Explain in detail.

[10]

- 10.a) Give a brief note on PAM Algorithm;

- b) What is the drawback of k-means algorithm? How can we modify the algorithm to diminish that problem?

[5+5]

OR

11. What are the different clustering methods? Explain in detail.

[10]

--ooOoo--

R13

Code No: 117AU

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

AUTOMOTIVE CHASSIS AND SUSPENSION

(Automobile Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) New tyres are fitted to which wheels. Why? [2]
- b) What is the need of chassis in vehicles? [3]
- c) What are the causes of pulling vehicle to one side? [2]
- d) What is the cross-section of frame used for two wheelers? [3]
- e) What are the causes of fading of brakes? [2]
- f) What are the various types of brakes used on vehicles? [3]
- g) What are the causes of vibrations in the vehicle? [2]
- h) What is the need of helper spring? [3]
- i) What tests are performed for road working of vehicle? [2]
- j) How the engine is mounted? [3]

PART - B

(50 Marks)

- 2.a) How the engine and radiator are fixed on the chassis assembly?
- b) What is the importance of alignment of chassis frame and explain its importance? [5+5]

OR

- 3.a) Explain with a sketch the constructional features of automobile tyre and mention their advantages.
- b) Discuss the relative advantages and applications of tubed and tubeless tyres. [5+5]
- 4.a) Differentiate between coil springs and leaf springs used on vehicles and mention their advantages and applications.
- b) Explain the working of torsion bar and mention its applications. [5+5]

OR

- 5.a) How the cylinders are arranged on two and three wheeled vehicles?
- b) What are the various types of springs used on suspension system and mention their relative advantages? [5+5]

- 6.a) What are the various factors to be considered in the calculation of braking pressure for various applications?
b) Differentiate between servo-controlled brakes and electrical brakes, mentioning principle of working, advantages and applications. [5+5]

OR

- 7.a) Sketch and explain the construction and working of hydraulic braking system.
b) What are the effects of temperature and brake clearance on the performance of brake? [5+5]

- 8.a) What are the basic considerations in the development of suspension system?
b) Sketch and explain the construction and working of leaf springs used on vehicles. [5+5]

OR

- 9.a) What are the various materials used for springs and mention their relative advantages and applications?
b) Describe the advantages and applications of shock absorbers used for suspension system. [5+5]

- 10.a) What are the various types of pads used for engine mounting to avoid various loads and vibrations?
b) Differentiate between front wheel and rear wheel mounting and mention their relative advantages. [5+5]

OR

- 11.a) What are the various procedures to be considered in the selection of components to avoid vibrations and loads?
b) Describe the testing procedures to be adopted to find the performance of vehicle. [5+5]

---ooOoo---

R13

Code No: 117CT

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B: Tech IV Year I Semester Examinations, November/December - 2017

ELECTRICAL DISTRIBUTION SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as-sub questions.

PART- A

(25 Marks)

- 1.a) Define the loss factor and give its significance. [2]
- b) What is the importance of load factor and diversity factors in distribution systems? [3]
- c) What are the merits and demerits of radial type primary feeders? [2]
- d) How the rating of distribution system is decided? [3]
- e) What is the significance of power loss calculations in distribution systems? [2]
- f) What are the various types of non-three phase systems used in distribution system? [3]
- g) What is the principle of operation of circuit reclosures? [2]
- h) What are the main objectives of distribution system protection? [3]
- i) How line drop compensation control the voltage? [2]
- j) How do you determine the best capacitor location? [3]

PART-B

(50 Marks)

- 2.a) What is distribution system? Give and explain classification of load, with their characteristics.
- b) The annual input to a sub-transmission system is 87,000 MW. On the peak-load day of the year, the peak is 25 MW and the energy input that day is 300 MWh. Find the load factor for the year and for the peak load day. [5+5]

OR

- 3.a) Derive a relationship between the load factor and loss factor with different conditions.
- b) A substation supplied the following loads: 175MW, 100MW, 80MW, 50MW and 4 MW. The station has a maximum demand of 225MW. Find the following, if annual load factor of the station is 45%
 - i) Number of units supplied annually
 - ii) Diversity factor
 - iii) The demand factor. [5+5]

4.a) What are the various factors that are to be considered in selecting primary feeder rating with typical primary distribution feeder?

b) Draw and explain the single line diagrams of radial type and loop type primary feeders and mention the various components. [5+5]

OR

5.a) Draw and describe the basic design practice of the secondary distribution system.

b) Derive the expression for voltage drop of sub-station service area with 'n' primary feeders. [5+5]

6.a) Derive the expressions for voltage drop and power loss of non-uniformly distributed loads of three phase feeder.

b) Prove that the power loss due to the load currents in the conductors of single-phase lateral ungrounded neutral case is 2 times larger than one in the equivalent three-phase lateral. [5+5]

OR

7.a) Illustrate the computation of the voltage drop of a balanced three-phase feeder, supplied at one end, in terms of the load and the line parameters.

b) An unbalanced 3-phase star connected load is connected to a balanced 3-phase, 4-wire source. The load impedances Z_R , Z_Y and Z_B are given as $20\angle 30^\circ$, $35\angle -40^\circ$, and $15\angle 35^\circ$ ohms respectively and the phase to 'R' line voltage has an effective value of 11 kV. Use the line to neutral voltage of phase 'R' as the reference and determine the line and neutral currents and total real and reactive powers. [5+5]

8.a) Considering a typical example, describe the procedure for fault current calculations in a distribution system, mentioning the assumptions to be made for the analysis

b) Explain the difference between a fuse and circuit breaker, mentioning advantages of each of them. [5+5]

OR

9.a) Explain the general coordination procedure of protective devices in radial distribution systems.

b) Explain the principle of operation of line sectionalizers. [5+5]

10.a) Why Voltage control and p.f. correction are necessary in distribution systems? What are the disadvantages of low voltage and low p.f. of the system?

b) Explain how series capacitors control the voltage in the distribution systems. [5+5]

OR

11.a) Explain the effect of shunt capacitors in improving p.f.

b) A star connected 400 h.p., 3.5 kV, 50 Hz motor works at a power factor of 0.75 lagging. A bank of mesh connected condensers is used to raise the power factor to 0.93 lagging. Calculate the capacitance of each unit and total number of units required, if each is rated 500V, 50 Hz. The motor efficiency is 85%. [5+5]

R13

Code No: 117JH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

UNCONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is non-traditional machining methods? [2]
- b) What are the basic elements of ultrasonic machining? [3]
- c) List out the applications of water jet machining. [2]
- d) Give the electro-chemistry associated with electro-chemical machining. [3]
- e) What is wire EDM? [2]
- f) What factors are to be considered for the selection of tool material in electric discharge machining? [3]
- g) What are the limitations of laser beam machining? [2]
- h) Comment about accuracy of cut in electron beam machining. [3]
- i) What are the limitations of plasma arc machining? [2]
- j) What are the applications of chemical machining? [3]

PART-B

(50 Marks)

- 2.a) Give the complete classification of modern machining methods. [26]
- b) Describe the horn of an ultrasonic machine. [5+5]

OR

- 3.a) Comment about the applications of modern machining methods. [26]
- b) Explain the basic mechanism of metal removal in ultrasonic machining. [5+5]

- 4.a) Explain the influence of nature of abrasives on metal removal rate in abrasive jet machining. [26]

- b) Comment about surface finish and accuracy in electro-chemical machining. [5+5]

OR

5. Derive an equation for metal removal rate in electro-chemical machining. [10]

- 6.a) Explain how the pulses can be controlled in EDM using Relaxation circuit. [26]
- b) With the help of a line diagram explain the working of electric discharge grinding. [5+5]

OR

- 7.a) Explain the basic mechanism of metal removal in electric discharge machining. [26]
- b) Comment about the nature of spark eroded surfaces. [5+5]

26 26 26 26 26 26 26 2

8. With the help of line diagram explain the construction, working and applications of electron beam machining. [10]

OR

9.a) What materials are generally used for generation of laser? Explain. [5+5]
b) Discuss the thermal features of laser beam.

10. With the help of suitable diagrams explain the use of various modes of plasma for various purposes in industry. [10]

OR

11. What are the steps involved in the chemical machining? Explain. [10]

---ooOoo---

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

26 26 26 26 26 26 26 2

R13

Code No: 117CZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

EMBEDDED SYSTEM DESIGN

(Common to ECE, ETM)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) List the characteristics of an embedded system. [2]
- b) What is the difference between a system and an embedded system? [3]
- c) What is actuator? [2]
- d) What are the considerations for processor selection? [3]
- e) Explain the role of reset circuit in an embedded system. [2]
- f) What is the difference between real time clock and watchdog time. [3]
- g) When do you use cooperative scheduling? [2]
- h) What is the function of timer in RTOS? [3]
- i) What is Remote Procedure Call and explain its working? [2]
- j) What is meant by concurrency of task execution in real time system? [3]

PART-B

(50 Marks)

- 2.a) Explain the major application areas of embedded systems.
 - b) What are the components of Embedded System Hardware? [5+5]
- OR**
3. Discuss the purpose of embedded systems. List the design metrics used to compare them. [10]
 4. With a neat diagram, explain the architecture of a general purpose processor. [10]
- OR**
- 5.a) Write the difference between general purpose processors and domain specific processors.
 - b) Discuss the aspects of memory allocation and mapping in embedded domain. [5+5]
 - 6.a) What are the design criteria of external brown-out protection circuit.
 - b) How to design and implement firmware for embedded systems? [5+5]
- OR**
7. Explain with one example, how to change the bus frequency of the processor. [10]

8.a) How do we initiate round robin time series scheduling?

b) How lower priority task executes in a preemptive scheduler?

[5+5]

OR

9. Write the basic design principles when using an RTOS to design of sample RTOS.[10]

10. Explain in detail the following device drivers

a) Serial port device driver

b) Device drivers for internal programmable timing devices.

[5+5]

OR

11.a) Explain the inter task communication offered by RTOS.

b) Explain message-passing communication system in detail.

[5+5]

---ooOoo---

R13

Code No: 117BW

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December- 2017

COMPUTER FORENSICS

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What are the categories of computer investigations and forensics? Explain. [2]
- b) Enumerate the basic steps for investigating Attorney-Client Privilege investigations.[3]
- c) Explain the tasks to be completed before searching for evidence. [2]
- d) Enumerate the guidelines for seizing digital evidence at the computer incident or crime scene. [3]
- e) Why should companies appoint an authorized requester for computer investigations?[2]
- f) Explain in brief the three modes of protection of defense in depth. [3]
- g) Describe procedures for acquiring data from cell phones and mobile devices. [2]
- h) What are e-mail servers? Explain their role in forensic investigations. [3]
- i) List some third party and open source whole disk encryption tools. [2]
- j) What are the startup files of windows XP? Explain. [3]

PART-B

(50 Marks)

2. Which organization has guidelines on how to operate a computer forensics lab? What term refers to labs constructed to shield EMR emissions? [10]

OR

3. What are the guidelines for media leak investigations? Mention the steps for investigating media leaks. [10]

4. What do we need a technical advisor? What are the responsibilities of technical advisors? Explain. [10]

OR

5. What are the steps to create image files of digital evidence? How is digital evidence stored? Explain. [10]

6. What is the standard procedure used for network forensics? List the different network tools and explain any two. [10]

OR

7. What are the primary concerns in conducting forensic examination of virtual machines? Give an overview of network forensics. [10]

8. What is a personal digital assistant? What are the different types of peripheral memory cards used with PDAs? Explain in detail. [10]

OR
9. Explain the components found inside mobile device. Also explain iPhone readers. [10]

10. What are the metadata records in the master file table of NTFS? Explain the attributes in the master file table. [10]

OR
11. Enumerate the features of the current whole disk encryption tools. What are the hardware and software requirements of Microsoft's Bitlocker? Explain. [10]

--ooOoo--

Code No: 117EF

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

MACHINE LEARNING
(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define learning. [2]
- b) What is the influence of information theory on machine learning? [3]
- c) What is an active query? [2]
- d) List the characteristics of problems for which decision tree learning is best suited. [3]
- e) State Baye's theorem. [2]
- f) Differentiate between sample error and true error. [3]
- g) What are the disadvantages of instance-based methods? [2]
- h) What is the inductive bias of k-nearest neighbor? [3]
- i) What is analytical learning? [2]
- j) List the factors motivated the popularity of genetic algorithms. [3]

PART-B

(50 Marks)

2. What is meant by machine learning? What is its need to today's society? Explain successful applications of machine learning. [10]

OR

- 3.a) Illustrate general-to-specific ordering of hypotheses in concept learning. [5+5]
- b) Explain the key property of FIND-S algorithm for concept learning with necessary example. [5+5]
4. Present the basic ID3 algorithm for learning decision trees and illustrate its operation in detail. [10]

OR

- 5.a) Discuss the representational power of a perceptron. [5+5]
- b) Explain the gradient descent algorithm for training a linear unit. Implement stochastic approximation to this. [5+5]
- 6.a) Describe a general approach for deriving confidence intervals. [5+5]
- b) Explain the features of Bayesian learning methods. [5+5]

OR

- 7.a) With an illustrative example explain brute force MAP learning algorithm.
b) What are the applications of probably approximately correct model? Discuss in detail.

[5+5]

- 8.a) Demonstrate k-nearest neighbor algorithm for classification.
b) Discuss the significance of locally weighted regression.

[5+5]

OR

9. Explain how CADET system employs case based reasoning to assist in the conceptual design of simple mechanical devices.

[10]

10. Consider the two strings as initial population for genetic algorithm and generate all possible off springs using various operators.

String 1: 11101001000

String 2: 00001010101

[10]

OR

- 11.a) What are the main properties of PROLOG-EBG algorithm? Is it deductive or inductive? Justify your answer.

- b) Write KBANN algorithm to explain usage of prior knowledge to reduce complexity.

[5+5]

--ooOoo--

R13

Code No: 117AN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ARTIFICIAL INTELLIGENCE

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define State Space Search. [2]
- b) Why do we go for AI to solve a problem rather than conventional methods? [3]
- c) Define semantic nets. [2]
- d) Describe refutation in propositional logic. [3]
- e) What are the uses of certainty factors? [2]
- f) List down the applications of expert system. [3]
- g) Define supervised learning. [2]
- h) Discuss about recurrent networks. [3]
- i) Discuss the role of semantic analysis. [2]
- j) Discuss about case grammars. [3]

PART-B

(50 Marks)

2. Explain how to define a problem as a state space search, with a suitable example. [10]

OR

3. Explain A* algorithm with a suitable example. State the limitations in the algorithm. [10]

4. Consider the following facts and represent them in predicate form:

F1. There are 500 employees in ABC Company.

F2. Employees earning more than 5000 pay tax.

F3. Managers earns Rs. 10,000

F4. John is manager in ABC Company.

Converts the facts in predicate form to clauses and then prove by resolution "John pays tax". [10]

OR

5. Give an example to explain the various approaches used for knowledge representation. [10]

6. Explain the use of expert system shells. What are the different ways (support for explanation) to make the expert system effective? [10]

OR

7. Give an example to explain the concept of Bayesian belief network for measuring the uncertainty. [10]

8. Write short note on the following:

a) Learning by taking advice

b) Learning in problem solving – learning by parameter adjustment, learning by chunking. [5+5]

OR

9. Describe in detail about the concept of single layer feed forward networks. [10]

10. With an example explain the steps used for processing a natural language sentence. [10]

OR

11. Draw a neat sketch to explain universal networking knowledge. [10]

---ooOoo---

R13

Code No: 117JK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

VEHICLE BODY ENGINEERING AND SAFETY

(Automobile Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Distinguish FRP and Metal matrix composites. [2]
- b) Write short note on: "Cushion Materials". [3]
- c) Define the term yawing. [2]
- d) Indicate the seating dimensions of a normal control vehicle. [3]
- e) What are the various tests for driver's visibility? [2]
- f) What are the various forces and moments that act on a vehicle body, illustrate with relevant equations? [3]
- g) Distinguish the terms noise and vibration clearly. [2]
- h) What are the different safety equipments used in vehicle? [3]
- i) How the inclination of the steering column varies the force applied by the driver on steering? [2]
- j) Differentiate a double decker bus with that of an articulated bus. [3]

PART-B

(50 Marks)

2. Explain the austenitic, ferritic stainless steels and alloy steels used as structural materials for vehicle body components quoting with one example for each. [10]

OR

- 3.a) Discuss the applications of sandwich panels in vehicle body construction and also give their advantages. [5]
- b) Distinguish between thermoplastics and load bearing plastics as vehicle body materials. [5]

4. What are the ergonomical considerations adapted in seat design of an automobile? [10]

OR

- 5.a) Represent the various aerodynamic forces on a vehicle with the help of a neat sketch. [5]
- b) Explain the following phenomenon: i) Rolling ii) Pitching [5]
- 6.a) What types of loads act on the car body and loading conditions in car. [5]
- b) Draw the free body diagram of car body. [5]

OR

7. Explain the central door locking mechanism and electronically controlled driver's seat adjustment mechanism. [10]

8.a) A compressor and electric motor are mounted on an undamped vibration isolation platform and produce a static deflection of 10 mm. Calculate the natural frequency of the assembly.

b) The transmissibility the percentage isolation if the working compressor/motor produces a forcing frequency of 30 Hz. The lowest forcing frequency for which the isolation is 95%. [5+5]

OR

9.a) Describe the technique to measure the vehicle noise level with an instrument.

b) Discuss the design considerations for reducing fatigue. [5+5]

10.a) List out the advantages and disadvantages of an Integral bus.

b) Explain the design and construction of Integral bus. [5+5]

OR

11. Derive the expression for the stability of vehicle on curvilinear path. [10]

---ooOoo---

R09

Code No: 57011

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

ADVANCED FOUNDATION ENGINEERING

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

1. Square footing of size 5 x 5 m is founded at a depth of 1.5 m below the ground surface in loose to medium dense sand with $q_u = 150 \text{ kN/m}^2$. Standard penetration tests conducted at the site gave the following corrected N_{60} values.

Depth below GL (m)	2	4	6	8	10	12	14	16	18
N_{cor}	10	10	14	14	12	14	16	20	20

The water table is at the base of the foundation. Above and below the water table the unit weights of soil are 16.5 kN/m^3 , and 18 kN/m^3 . Compute the elastic settlement. Use the equation $E_s = 250 (N_{cor} + 15)$ for computing the modulus of elasticity of the sand. Assume $\mu = 0.3$ and the depth of the compressible layer = $2B = 10 \text{ m}$ ($= H$). [15]

2. Calculate the ultimate bearing capacity, according to the Brinch Hansen's method, of a rectangular footing $2.5 \text{ m} \times 3.5 \text{ m}$, at a depth of 2 m in a soil for which unit weight 18 kN/m^3 , cohesion 30 kN/m^2 , and angle of internal friction is 20° . The ground water table is far below from the footing base. The total vertical load is 1300 kN and the total horizontal load is 60 kN at the base of the footing. Hansen's factors for $\phi = 20^\circ$ are $N_c = 14.83$, $N_q = 6.40$, and $N_\gamma = 3.54$. Determine also the factor safety.

$$\begin{aligned}
 s_c &= 1 + 0.2 b/L & d_c &= 1 + 0.35 D_f/b \\
 s_q &= 1 + 0.2 b/L & d_q &= 1 + 0.35 D_f/b \\
 s_\gamma &= 1 - 0.4 b/L & d_\gamma &= 1.0 \\
 i_c = i_q &= \left(1 - \frac{H}{V + A c \cot \phi} \right)^2 & i_\gamma &= (i_q)^2
 \end{aligned}$$

[15]

- 3.a) Define negative skin friction. Discuss negative skin friction estimation for pile groups.
 b) Explain with the principles how the settlement of group of piles is estimated in cohesionless soil. [7+8]

- 4.a) A square group of 16 piles was driven into soft clay extending to a large depth. The diameter and length of the piles were 45 cm and 10 m respectively. If the unconfined compression strength of the clay is 70 kPa, and the pile spacing is 1.0m centre to centre, what is the capacity of the group? Assume a factor of safety of 3 and adhesion factor of 0.70.
- b) What is the basis on which the dynamic formulae are derived? Mention two well known dynamic formulae and explain the symbols involved. [7+8]
- 5.a) With neat sketches explain the specifications and limitations of various retaining walls used in the practice.
- b) Explain in detail the Culman's graphical method for active earth pressure on a retaining wall with vertical back and for inclined backfill surface. [7+8]
- 6.a) List the types of sheet pile walls. Differentiate between free earth support and fixed earth support.
- b) Discuss the formulations for depth of embedment of anchored sheet pile wall in granular soils using free earth support method. [7+8]
- 7.a) What are the circumstances under which a well foundation is more suited than other types? Sketch and describe the various components of a well foundation, indicating the function of each.
- b) What is 'Grip Length' of well? What are the considerations in the determination of the grip length? [8+7]
- 8.a) Discuss in detail the swelling behavior of expansive soils and associated consequences. And also write any two approaches of their identification.
- b) Define swelling pressure. Explain with possible sketches how to estimate swelling pressure of clay by using constant volume method in the laboratory. [8+7]

--ooOoo--

R09

Code No: 57030

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

UNCONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions

All Questions Carry Equal Marks

- 1.a) Enumerate the classifications of Unconventional machining process? Explain.
- b) Explain the reasons for the development of Unconventional Machining Process in detail. [8+7]
- 2.a) What are the basic requirements of tool feed mechanism in USM process? Explain.
- b) Briefly discuss about the mechanisms involved in material removal by USM. [8+7]
- 3.a) Discuss in detail about the AJM process variables that influence the rate of material removal and accuracy in the machining
- b) State the working principle of Abrasive Water Jet Machining with a neat sketch with limitations and applications. [8+7]
- 4.a) Explain the mechanism of material removal in EDM with the help of a neat sketch in detail.
- b) What are the specific advantages of using chemical machining over electro chemical machining? Give some of the practical applications. [8+7]
- 5.a) Explain the principles, equipments, applications and advantages of Electro Discharge Wire cutting.
- b) Describe with a neat sketch the working principle of Wire EDM in detail with applications. [8+7]
- 6.a) Explain the construction and working of Electron beam machining process with a neat sketch.
- b) Explain in detail the various thermal aspects in machining using laser beam method. [8+7]
- 7.a) What are the various Etchants used in chemical machining? Mention their characteristics?
- b) Explain the metal removal mechanism, process parameters, accuracy, surface finish of Plasma Machining. [8+7]
- 8.a) Distinguish between Magnetic abrasive finishing and Abrasive flow finishing in terms of working principle and application.
- b) With the help of a line diagram explain the working principle and application of shaped tube electrolytic machining. [8+7]

--ooOoo--

R13

Code No: 117GA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

OPTICAL COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is Snell's law? [2]
- b) A step index fiber has a normalized frequency $V = 26.6$ at 1300 nm wavelength. If the core radius is 25 nm, find the numerical aperture. [3]
- c) Mention any two causes of intra-modal dispersion. [2]
- d) Why do we prefer step index single mode fiber for long distance communication? [3]
- e) What is the structure of surface emitting LED? [2]
- f) Define external quantum efficiency of a laser diode? [3]
- g) Define responsivity of a photo diode. [2]
- h) What are the materials used for detectors in FO communication? [3]
- i) Define Bit Error Rate. Is it same for any bit rate. [2]
- j) List the key requirements needed in analyzing a link. [3]

PART-B

(50 Marks)

- 2.a) Compare Single mode fibers and Graded index fibers. List the characteristics of materials suitable for optical fibers.
- b) Determine the normalized frequency at 0.82 μm wavelength for a step index fiber having 25 μm core radius, $n_1 = 1.48$ and $n_2 = 1.46$. How many modes propagate in this fiber at 0.82 μm ? What percentage of optical-fiber power flows in cladding? [5+5]

OR

- 3.a) Describe the basic block diagram of a optical communication system and explain how it differs from conventional co-axial cable communication system.
- b) The velocity of light in the core of a step index fiber is $2.01 \times 10^8 \text{ m s}^{-1}$, and the critical angle at the core-cladding interface is 80° . Determine the numerical aperture and the acceptance angle for the fiber in air, assuming it has a core diameter suitable for consideration by ray analysis. The velocity of light in a vacuum is $2.998 \times 10^8 \text{ m s}^{-1}$. [5+5]

- 4.a) Distinguish between the different types of signal distortion in optical fibers.
- b) What are the principal requirements of a good fiber optic connector? [5+5]

OR

- 5.a) Discuss how bending introduces attenuation in optical fibers.
b) Determine the pulse spreading per km and maximum allowable bit rate through a multimode step index fiber due to inter modal dispersion for following specifications.
Fiber core diameter = $100 \mu\text{m}$; core R.I=1.50; cladding R.I =1.48; length of the fiber = 3 km. [5+5]

- 6.a) Generate an expression for the power coupled from a lambertian source into a multimode step index fiber.
b) Establish a relation between the separation between resonating modes of an injection laser diode for a given dimensions of Fabry- Perot cavity and a specified source spectral width. [5+5]

OR

- 7.a) Establish threshold condition for a laser diode to start oscillations.
b) Explain the factors, which reduces the lifetime and internal quantum efficiency of the source. [5+5]

- 8.a) Draw structure of Avalanche photo diode and describe its working as optical detector.
b) Express Noise due to photocurrent generation process as an equation. Describe the significance of such noise on overall SNR of the receiver. [5+5]

OR

- 9.a) Define sensitivity of a fiber optic receiver.
b) Describe the dependency of BER on Signal-to-Noise Ratio at the output of a receiver. [5+5]

- 10.a) Describe optical fiber link power Budget for a repeater less system.
b) A single-mode cascaded fiber communication link is specified by:
Operating wavelength: $1.30 \mu\text{m}$ Total system length: 80 km
Power launched at transmitter: 2 dBm Fiber cable loss: 0.40 dB km^{-1}
Fiber splice losses: 0.02 dB per splice No. of splices in the link = 8
No. of connectors = 2 (at ends) Connector loss = 1 dB.
Estimate the Minimum power received for a system margin of 6 dB. [5+5]

OR

- 11.a) Explain the system considerations in simplex optical point to point links.
b) Discuss the principle, requirement and applications of WDM. [5+5]

--ooOoo--

R09

Code No: 57047

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

SOFTWARE TESTING METHODOLOGIES

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) Compare software testing and debugging.
- b) With a neat diagram, explain a model for testing. [7+8]
- 2.a) Discuss the consequences of bugs which will range from mild to catastrophic.
- b) Explain about structural bugs and data bugs. [8+7]
3. What is meant by transaction flow testing? Discuss in detail about transaction flow testing techniques. [15]
- 4.a) Explain about path sensitization and path instrumentation.
- b) What are the properties of a nice domain? Explain them. [8+7]
- 5.a) Discuss about convex domain, concave domain and simply connected domains.
- b) Write brief notes on domain and interface testing. [8+7]
6. What is meant by decision tables? Discuss with a suitable example how they will help in logic based testing. [15]
- 7.a) State and explain the rules of Boolean algebra.
- b) Discuss about KV charts and their usage. [8+7]
8. Write short notes on the following:
 - a) Software testing tools
 - b) Regular expressions
 - c) State bugs. [15]

---ooOoo---

Code No: 117DW

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

INDUSTRIAL WASTE WATER TREATMENT

(Civil Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- | | | |
|------|---|-----|
| 1.a) | Define pollution. | [2] |
| b) | Explain the characteristics municipal waste water. | [3] |
| c) | Define equalization. | [2] |
| d) | What do you mean by strength reduction? | [3] |
| e) | Define air stripping. | [2] |
| f) | What do you mean by absorption process? | [3] |
| g) | Define characterization of waste water. | [2] |
| h) | What is the composition of waste water from petroleum refinery? | [3] |
| i) | Define CETP. | [2] |
| j) | What are the problems associated with CETP. | [3] |

PART - B

(50 Marks)

- | | | |
|-----------|---|-------|
| 2.a) | Explain different properties of industrial wastes. | |
| b) | What are the various sources of pollution? | [5+5] |
| OR | | |
| 3.a) | How can we classify municipal waste water? | |
| b) | Explain in detail about Natural water bodies. | [5+5] |
| 4.a) | Explain the pre and primary treatment of waste water. | |
| b) | Explain the oil separation by floatation. | [5+5] |
| OR | | |
| 5.a) | How can you justify volume reduction of waste water? | |
| b) | Explain the strength reduction of waste water. | [5+5] |
| 6.a) | Explain the disposal of treated waste water. | |
| b) | What are the various ways of membrane separation process? | [5+5] |
| OR | | |
| 7.a) | How the process of nitrification is performed in waste water treatment. | |
| b) | Explain in detail about phosphorus removal. | [5+5] |

- 8.a) What are the various characteristics of sugar industry?
b) Explain in detail about the food processing industries.

[5+5]

OR

- 9.a) Explain the treatment methods in steel industry.
b) What are the various In-plant Control Measures of petroleum industries?

[5+5]

- 10.a) Explain in detail about the CETP's working condition in India.
b) Illustrate the Composition of food industry.

[5+5]

OR

- 11.a) Explain the Characteristics and Composition of Textiles industry.
b) Classify the treatment procedure in CETP.

[5+5]

--ooOoo--

R13

Code No: 117HX

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

SWITCH GEAR AND PROTECTION

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) List the major components of circuit breakers. [2]
- b) What is the difference between a circuit breaker and a disconnecting switch? [3]
- c) What is an induction relay? [2]
- d) What is a mho relay? [3]
- e) What is the need for protection equipment in generators? [2]
- f) What is a current transformer? Explain its use. [3]
- g) What is a carrier current distance relay? [2]
- h) Explain the need for neutral grounding. [3]
- i) List different types of surge arresters. [2]
- j) What is voltage surge? Explain. [3]

PART-B

(50 Marks)

- 2.a) What is meant by recovery voltage and restriking voltage? What is RRRV? How to obtain RRRV? Give the expressions for average and Maximum RRRV.
- b) What is a circuit breaker? Explain the operation of Oil Circuit Breakers. [5+5]

OR

- 3.a) What is the role of circuit breakers in substations? Explain the specifications of circuit breakers.

- b) Explain the operation and applications of Air-Blast Circuit Breakers. [5+5]

- 4.a) What are static relays? Discuss the advantages of static relays over electromagnetic relays.

- b) Discuss the construction and operation of attracted armature relay. [5+5]

OR

- 5.a) With a neat diagram, explain the operation of balanced beam type relay.

- b) Explain the working of IDMT relay with a neat circuit diagram. [5+5]

- 6.a) Discuss the protection of generators against stator faults.

- b) A 50 MVA, 3 phase, 33 kV synchronous generator is protected by the Merz-Price protection using 1000/5 ratio C.T.s. It is provided with restricted earth fault protection with the earthing resistance of 7.5Ω . Calculate the percentage of winding unprotected in each phase against earth faults if the minimum operating current of the relay is 0.5 A.

[5+5]

OR

- 7.a) Explain the Buchholtz relay operation with a neat sketch.
b) The primary of a transformer winding has 1000 turns while secondary has 500 turns. If the primary CT ratio is 100:5, find the CT ratio required in the secondary side to establish circulatory current scheme. [6+4]

- 8.a) Discuss the principles of distance relays?
b) Explain the measurement of distance between the fault and the distance relay. [4+6]

OR

- 9.a) What are various methods commonly used for neutral grounding?
b) Explain in detail the solid grounding scheme for three-phase systems. Also mention its advantages and disadvantages. [4+6]
10. What is lightning? List its properties. Discuss the methods of protection against lightning. [10]

OR

- 11.a) What is insulation coordination? Explain its principle.
b) Discuss the following terms related to insulation coordination.
i) BIL
ii) With stand voltage
iii) Chopped wave insulation level
iv) Critical flashover voltage
v) Impulse ratio [5+5]

--ooOoo--

Code No: 117BG

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

**CELLULAR AND MOBILE COMMUNICATIONS
(Electronics and Communication Engineering)**

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) What are the limitations of conventional mobile telephone system. [2]
- b) Explain real time Co- Channel interference. [3]
- c) Define the General formula for noise limited system. [2]
- d) Draw the antenna equivalent circuit. [3]
- e) What is the commonly used formula for interference limited system? [2]
- f) What are the advantages of sectorized cells? [3]
- g) Define frequency reuse distance [2]
- h) Explain the phase difference between direct and reflected paths. [3]
- i) Explain about paging channels. [2]
- j) Define Handoff. [3]

PART - B

(50 Marks)

- 2.a) Describe the digital cellular land mobile systems and the limitations of AMPS standard.
 - b) Distinguish between permanent splitting and dynamic splitting. [5+5]
- OR**
- 3.a) Mention the two frequency reuse schemes and explain N-Cell reuse pattern in detail for four and seven cell reuse with illustrative diagrams.
 - b) Discuss the performance criteria of the basic cellular system? [5+5]
- 4.a) Explain about the co-channel interference reduction factor and derive the general formula for C/I.
 - b) Briefly explain the multiple knife edge diffraction. [5+5]
- OR**
- 5.a) Compare and contrast Near end and Far end interferences.
 - b) Briefly discuss different diversity techniques. [5+5]
- 6.a) Explain the concept of diversity antenna spacing in cell site with a simple Diagram.
 - b) Compare the symmetrical and asymmetrical patterns. [5+5]

OR

- 7.a) Explain about High gain antennas
b) Explain the role of directional antennas for interference reduction. [5+5]

- 8.a) What do you understand by non-fixed channel assignment? Describe the corresponding algorithms.
b) Explain about the Underlay-Overlay Arrangement. [5+5]

OR

- 9.a) Describe the concept of frequency management concern to the numbering the Channels and grouping into the subset.
b) Explain in detail access channels and operational techniques. [5+5]

- 10.a) Explain how the handoffs implemented based on signal strength.
b) How the dropped call rate is related to the capacity and voice quality. [5+5]

OR

- 11.a) What are the various methods of delaying the handoff? Explain briefly.
b) What is meant by handoff initiation? Explain the different methods of handoff initiation with suitable diagrams. [5+5]

--ooOoo--

R09

Code No: 57035

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

VLSI DESIGN
(Common to ECE, EIE, IT)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Compare CMOS and BiCMOS technologies.
- b) Explain how the resistors and capacitors are fabricated. [7+8]
- 2.a) Draw and explain the voltage transfer characteristics of CMOS inverter.
- b) What is pass transistor? Explain the applications of pass transistor. [7+8]
3. Explain the VLSI design flow in detail. [15]
- 4.a) Discuss fan-in and fan-out in detail.
- b) Differentiate basic gates and complex gates. [7+8]
- 5.a) Draw and explain 4-bit serial adder and 4-bit parallel adder with a neat circuit diagram.
- b) Realize 1-bit Full Adder using CMOS logic. [8+7]
- 6.a) Draw and explain 1-bit DRAM cell with a neat sketch.
- b) Compare SRAM and DRAM. [7+8]
- 7.a) What are the various simple PLDs? Explain in detail.
- b) Explain the blocks present in a CPLD. [7+8]
- 8.a) Explain the need for CMOS testing.
- b) Discuss the principles of CMOS testing. [7+8]

---ooOoo---

Code No: 57046

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

LINUX PROGRAMMING
(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) What are file handling utilities and processing utilities?
- b) Describe the file access permissions in UNIX. [8+7]
- 2.a) Explain various Meta characters in shell with an example script.
- b) Explain with an example the Process of Creation and Execution of a Shell Script. [7+8]
- 3.a) Explain the following System Calls with an Example.
i) Create () ii) write ()
iii) Stat () iv) font ()
- b) Discuss clearly the Low Level File I/O System Calls. [8+7]
- 4.a) What is a zombie process? Write a sample program to explain about zombie process.
- b) Define Signals. What do you mean by Unreliable Signals? Explain. [8+7]
5. Compare the IPC functionality provided by message queues and FIFOs. What are the advantages and drawbacks of each? Explain briefly. [15]
- 6.a) Explain in detail how to control a shared-memory segment.
- b) Explain how to attach and detach a shared-memory segment. [7+8]
- 7.a) Explain the differences between Threads and Processes.
- b) Write a short note on Thread structure and uses.
- c) Explain briefly POSIX Thread APIs. [15]
8. Explain in detail how Client and Server programs can be developed in C using UDP based System calls. [15]

--ooOoo--

RA

Code No: S9606

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, December - 2017

DATABASE MANAGEMENT SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

- 1.a) List the advantages of using Database Management system and mention the applications of it.
b) Write and explain the roles of a DBA. [8+7]
- 2.a) Define entity set, strong entity set, instance, schema and attributes. Give examples for each.
b) Draw E – R diagram for customer in a bank. [8+7]
- 3.a) With the help of suitable example explain various aggregate functions.
b) Give brief description about the PROJECT operation in Relational Algebra. [7+8]
- 4.a) List and explain the different SET operations supported by SQL.
b) Discuss in detail about dynamic SQL. [7+8]
- 5.a) What are the Problems related to decompositions? List them.
b) With the help of a suitable example explain 1NF and 2NF. [7+8]
- 6.a) What is a transaction? List and explain the properties of it.
b) Discuss View Serializability. [7+8]
- 7.a) What are ACID properties? Explain them with example.
b) Give brief description about buffer management. [7+8]
- 8.a) Explain in detail about storage structure.
b) Give brief information about linear hashing. [7+8]

---ooOoo---

R13

Code No: 117DU

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech IV Year I Semester Examinations, November/December - 2017

IMAGE PROCESSING AND PATTERN RECOGNITION

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part-A (25 Marks)

- 1.a) What is meant by m- connectivity? [2]
- b) What are different sources for degradation of image? [3]
- c) Write a mask for gradient operation. [2]
- d) Which morphological operation is equivalent of logic AND operation. [3]
- e) What is fidelity in image processing? [2]
- f) Compare statistical and spatial compression of image. [3]
- g) What is meant by representation in an image? [2]
- h) List the principle components of descriptors. [3]
- i) What are the applications of pattern recognition? [2]
- j) How are patterns classified based on likelihood function? [3]

Part-B (50 Marks)

2. What is histogram? Explain the method of histogram equalization and how histogram is used to enhance the image? [10]

OR

- 3.a) Explain how sharpening low pass filter is used in image processing?
- b) What are the limitations of inverse filter while using for image restoration? [5+5]

4. Explain the following morphological operations on an image:
a) Dilation b) Erosion c) Opening d) Closing e) Hit or miss [10]

OR

5. Explain the region based segmentation methods and also write the necessary conditions. [10]

- 6.a) How are image compression methods classified? Explain them.
- b) Explain how contour coding is used for image compression? [5+5]

OR

7. Explain how predictive codes are used for both lossy and lossless image compression? [10]

8. How are skeletons used to represent image and explain with neat diagrams. [10]

OR

9. Why are descriptors used in image processing? Explain boundary descriptors. [10]

10.a) Explain basic concepts of pattern recognition with suitable examples. [5+5]
b) Draw a simple pattern recognition model and explain it.

OR

11. Write k-means algorithm and explain how it is used in pattern recognition. [10]

--ooOoo--

R13

Code No: 117EG

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

MANAGEMENT SCIENCE
(Common to ECE, ETM, MMT)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1. Answer briefly in about 5 sentences each:
- a) Hygiene factors theory. [2]
 - b) Cellular Organization Structure. [3]
 - c) Bin Card and Invoice. [2]
 - d) Product Mix Decision. [3]
 - e) Types of Internal Recruitment. [2]
 - f) CMM. [3]
 - g) Features of Network Analysis. [2]
 - h) PERT vs CPM. [3]
 - i) Strategic Deviation. [2]
 - j) Generic Strategies. [3]

PART-B

(50 Marks)

- 2.a) Give explanation on outcome of Elton Mayo Experiments
b) Explain line & Staff Organization structure and Functional Organization Structure. [5+5]

OR

- 3.a) What is formal and informal organization? Explain principles of Organization.
b) Explain roles and skills of a manager based on the levels of management. [5+5]
- 4.a) Explain marketing strategies for saturation and decline stages of PLC with examples.
b) Explain about BPR, JIT and Six Sigma. [5+5]

OR

- 5.a) Illustrate 14 Principles of Deming for Quality.
b) Describe product and process layout with examples. [5+5]

- 6.a) What is recruitment and selection? Explain various types of interviews with examples
b) Define training. Explain the types of the job training methods. [5+5]

OR

- 7.a) What is job evaluation? Explain various methods in Job evaluation.
b) Define compensation management. Explain various methods of wage payment. [5+5]

- 8.a) What is PERT? Explain its history and importance in Network Analysis.
 b) Find the duration of the project, Variance of Critical Path, Probability of completing the project in 30 days. [5+5]

Activity	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
$T_O(T_1)$	3	5	2	1	8	6	3	4	6
$T_M(T_2)$	7	9	5	3	12	9	6	7	9
$T_P(T_3)$	9	13	7	6	14	8	11	9	11

OR

- 9.a) Explain the procedure for measuring floats.
 b) The following table gives the activities of a construction project. Indirect cost is Rs.1300. Find the minimum duration of the project and the project cost associated. [5+5]

Activity	Normal		Crash	
	Time	Cost	Time	Cost
1-2	9	8000	7	10000
1-3	5	5000	3	8000
2-3	7	7000	5	8600
2-4	8	6000	6	7000
3-4	6	9000	4	11,400

- 10.a) Define Corporate planning. Explain various types of plans in the corporate world.
 b) What is SWOT analysis? What is the significance of SWOT analysis for strengthening an organization? [5+5]
- OR
- 11.a) What is balanced score card? How it is useful for a company?
 b) Explain the concept of value chain analysis. [5+5]

--ooOoo--

R13

Code No: 117FZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

OPERATIONS RESEARCH

(Common to ME, CSE, IT, MCT, AME, MIE, MSNT, AGE)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is Operations research? [2]
- b) What is a model? List the various classification schemes of Operations Research models. [3]
- c) How the assignment problem can be viewed as a linear programming problem? [2]
- d) Formulate the travelling – Salesman problem as an assignment problem. [3]
- e) Define the problem of sequencing. [2]
- f) What are the situations which make the replacement of items necessary? [3]
- g) What are the characteristics of game theory? [2]
- h) What is inventory management? Write the major decisions concerning inventory? [3]
- i) What are major limitations of simulation? [2]
- j) What do you understand by a queue? Give some important applications of queuing theory? [3]

PART-B

(50 Marks)

2. What do you mean by LPP? What are its limitations? Use penalty (or Big-M) method to maximize $z = 3x_1 - x_2$
Subject to the constraints
 $2x_1 + x_2 \geq 2$; $x_1 + 3x_2 \leq 3$; $x_2 \leq 4$
 $x_1, x_2 \geq 0$. [10]

OR

3. What is a simplex? Describe simplex method of solving linear programming problem. [10]

4. Find the optimal solution for the assignment problem with the following cost matrix.

	I	II	III	IV	V
A	11	17	8	16	20
B	9	7	12	6	15
C	13	16	15	12	16
D	21	24	17	28	26
E	14	10	12	11	15

[10]

OR

5. There are three sources or origins which store a given product. These sources supply these products to four dealers. The capacities of the sources (S_i) and the demands at dealers (D_j) are as given below.

$$S_1 = 150, S_2 = 40, S_3 = 80$$

$$D_1 = 90, D_2 = 70, D_3 = 50, D_4 = 60.$$

The cost of transporting the product from various sources to various dealers is shown in the table below.

	D_1	D_2	D_3	D_4
S_1	27	23	31	69
S_2	10	45	40	32
S_3	30	54	35	57

Find out the optimum solution for transporting the products at a minimum cost. [10]

6. Find the sequence that minimizes the total elapsed time required to complete the following jobs.

No. of jobs	Processing times in hours					
	1	2	3	4	5	6
Machine A	4	8	3	6	7	5
Machine B	6	3	7	2	8	4

[10]

OR

7. A truck owner finds from his past records that the maintenance cost per year of a truck whose purchase price is Rs.8000, are given below:

Year	:	1	2	3	4	5	6	7	8
Maintenance cost (Rs):	:	1000	1300	1700	2200	2900	3800	4800	6000
Resale Price	:	4000	2000	1200	600	500	400	400	400

Determine at what time it is profitable to replace the truck?

[10]

8. The payoff matrix of a game is given. Find the solution of the game to the player A and B.

		B				
		I	II	III	IV	V
A	I	-2	0	0	5	3
	II	3	2	1	2	2
	III	-4	-3	0	-2	6
	IV	5	3	-4	2	-6

[10]

OR

9. Find the optimal order quantity for a product for which the price breaks are as follows:

Quantity	Unit cost (Rs.)
$0 \leq q_1 < 500$	10.00
$500 \leq q_2 \leq 750$	9.25
$750 \leq q_3$	8.75

The monthly demand for a product is 200 units, the cost of storage is 2% of the unit cost and the cost of ordering is Rs. 350.

[10]

- 26 26 26 26 26 26 26 2
10. A supermarket has two girls ringing up sales at the counters. If the service time for each customer is exponential with mean 4 minutes, and if people arrive in a Poisson fashion at the counter at the rate of 10 per hour, then calculate:
- a) The probability of having to wait for service;
 - b) The expected percentage of idle time for each girl;
 - c) If a customer has to wait, find the expected length of his waiting time. [10]

OR

- 26 26 26 26 26 26 26 2
- 11.a) State the Bellman's principle of optimality in dynamic programming and give a mathematical formulation of a dynamic programming problem?
- b) Define simulation. Why is simulation used? Give one application area where this technique is used in practice? [6+4]

26 26 26 26 26 26 26 2

---ooOoo---

R13

Code No: 117GY

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

REMOTE SENSING AND GIS

(Common to CE, CEE)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part- A (25 Marks)

- 1.a) What is a Photo Mosaic? [2]
- b) What are the various types of Photo Mosaic? [3]
- c) What is a Polar Synchronous Satellite? [2]
- d) Give notes on Active sensors and Passive sensors used in remote sensing. [3]
- e) Explain the term 'Datum'. [2]
- f) What are the types of Spatial elements in GIS? [3]
- g) What is a 'Topology'? [2]
- h) How to define 'coverage' in Vector data format? [3]
- i) Define the term 'Grid' in a Raster data. [2]
- j) Explain 'on screen digitizing'. [3]

Part-B (50 Marks)

- 2.a) What is Relief displacement? How to measure Height from an aerial photo. [5+5]
 - b) Explain the parallax measurement using fiducial line over a stereopair images. [5+5]
- OR**
- 3.a) Explain the types of Aerial photographs and their use in photogrammetry. [6+4]
 - b) Explain 'Scale' based on the geometry of vertical aerial photograph. [6+4]
- 4.a) Explain the components of remote sensing with a neat sketch. [5+5]
 - b) Explain energy interactions with atmosphere. [5+5]
- OR**
- 5.a) Explain briefly the types of Resolutions of a Sensor used in Remote sensing [6+4]
 - b) List the Indian Satellite and Sensor resolution characteristics. [6+4]
- 6.a) Explain the types of Map projections with necessary diagrams. [6+4]
 - b) Compare Spatial data and Non Spatial data. [6+4]
- OR**
- 7.a) Compare Geographic Projected System with Projected Coordinate System. [5+5]
 - b) List and explain commonly used Map Projections along with its significance. [5+5]

- 8.a) Explain the Relationships among spatial elements in GIS.
b) What are the advantages of Vector data formats over Raster data format? [6+4]

OR

- 9.a) Briefly explain Object based Vector Data model.
b) What is a 'Shape file'? Explain its significance? [6+4]

- 10.a) What are the elements of Raster Data model? Explain.
b) Explain the steps involved to integrate Raster data and Vector data. [6+4]

OR

- 11.a) Explain any two Raster data models used in GIS.
b) What are the errors observed in the conversion of the data? [6+4]

--ooOoo--

Code No: 57022

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

OPERATIONS RESEARCH

(Common to ME, AME)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

1. Solve the following LPP problem by two phase method

$Max Z = 4x_1 + 3x_2 + 5x_3$, subject to

$$x_1 + 3x_2 + 2x_3 \leq 10$$

$$2x_1 + 2x_2 + x_3 \geq 6$$

$$x_1 + 2x_2 + 3x_3 = 14, \quad x_i \geq 0$$

[15]

- 2.a) State the optimality and reduction theorems for solving the assignment problems.

- b) A company has a team of four salesmen and there are four districts where the company wants to start its business. After taking into account the capabilities of salesmen and the nature of districts, the company estimates that the profit per day in rupees for each salesman in each district is as below.

16	10	14	11
14	11	15	15
15	15	13	12
13	12	14	15

Find the assignment of salesmen to various districts which will yield maximum profit?

[5+10]

3. State the optimal replacement policies when the time value of money is a) considered and b) not considered.

The cost of new machine is Rs.5000. The maintenance cost of n^{th} year is given by $R_n = 500(n-1)$ for $n=1,2,\dots$. Suppose that the discount rate is 0.05, after how many years will it be economical to replace the machine by new one.

[15]

- 4.a) Explain the terms: i) Payoff matrix ii) saddle point iii) value of the game.

- b) Solve the following game graphically where pay off matrix for player A has been prepared.

[6+9]

8	-6
7	-4
-7	6
-4	-2

5. Customers arrive at one –window drive-in bank according to a Poisson distribution with mean of 10 per hour. Service time per customer is exponential with a mean of 5 minutes. The space in front of the window, including that for the serviced car, can accommodate a maximum of 3 cars. The other cars can wait outside this space.

- What is the probability that an arriving customer can drive directly to the space in front of the window
- What is the probability that an arriving customer will have to wait outside the indicated space?
- How long is an arriving customer expected to wait before starting service? [15]

6. Alpha industry estimates that it will sell 12000 units of its product for the forthcoming year. The ordering cost is Rs. 100 per order and the carrying cost per unit per year is 20% of the purchase price per unit. The purchase price per unit is Rs.50. Find:

- Economic Order quantity
- No. Of orders per year
- Time between successive orders. [15]

7. Find the shortest path from vertex A to K along arcs joining various vertices lying between A to K .Length of each path is given. [15]

	B	E	H
A	7	6	5

	C	F	I
B	3	4	-
E	6	7	10
H	-	7	10

	D	G	J
C	9	7	-
F	7	6	5
I	-	4	3

	K
D	3
G	9
J	8

8. A newspaper boy buys paper for Rs 3 and sells them for Rs.5 each. He cannot return unsold newspapers. Daily demand has the following distribution.

No. of customers: 23 24 25 26 27 28 29 30 31 32

Probability: 0.01 0.03 0.06 0.1 0.20 0.25 0.15 0.10 0.05 0.05

Simulate the system for 12 days and estimate average profit per day if he orders 28 papers per day. Take random numbers as 82 89 78 24 53 61 18 45 04 23 50 77. [15]

R09

Code No: 57012

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

SWITCHGEAR AND PROTECTION
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Discuss the effects of current chopping on the system and explain how it is avoided.
b) In a 220 kV system, the reactance and capacitance up to the location of the circuit breaker are 8Ω and $0.025 \mu\text{F}$ respectively. A resistance of 600Ω is connected across the contacts of circuit breaker. Calculate the following: (i) natural frequency of oscillations (ii) damped frequency of oscillations (iii) critical value of resistance which will give transient oscillations (iv) value of resistance which will give damped frequency of oscillation one-fourth of natural frequency of oscillations. [8+7]
- 2.a) Explain the construction, principle and working of minimum oil circuit breaker with neat sketch.
b) Explain the principle of operation of vacuum circuit breaker with neat sketch? [8+7]
- 3.a) Explain about MHO relay and OFF SET MHO relays with their characteristics.
b) Show that torque on a disc of an induction disc relay is maximum when the phase difference between two fluxes is 90° . Indicate the direction of rotation of the disc with reference to the fluxes under the poles. [7+8]
- 4.a) Describe the protection scheme of an alternator against inter-turn fault.
b) A 11kV, 100MVA alternator is grounded through a resistance of 5Ω . The CT's have a ratio of 1000/5. The relay is set to operate when there is an out of balance current of 1A. What percentage of the generator winding will be protected by the percentage differential scheme of protection? [8+7]
- 5.a) Describe the construction and working of a Buchholz relay and its use.
b) A 3 phase, 11/33KV star delta connected power transformer is protected by differential protection. The CTs on the LV side have a current ratio of 300/5. What must be the ratio of CTs on the HV side? Draw the connection diagram? [8+7]
- 6.a) Describe in detail the protection of parallel feeder and ring mains.
b) Describe the protection scheme of a single feeder using Translay relay. [8+7]
- 7.a) Explain the resistance grounding with circuit diagram and phasor diagrams? List out its merits and demerits.
b) Explain the effects of ungrounded neutral on system performance. [8+7]
- 8.a) What are the causes of over voltages arising in a power system? Why is it necessary to protect the lines and other equipment of the power system against over voltages?
b) Describe the construction, principle of operation and application of valve type lightning arrester? [8+7]

R13

Code No: 217AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

BIOPHARMACEUTICS AND PHARMACOKINETICS

Time: 3hours

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) Define pharmacodynamics and pharmacokinetics. [2]
- b) Significance of drug pH and pKa in drug absorption. [3]
- c) What is protein binding of drug? Give one example. [2]
- d) Explain the significance of tissue protein binding during drug distribution [3]
- e) What is meant by Glomerular filtration? How will you calculate? [2]
- f) Add a note on role of cytochrome P450 enzymes in metabolism of drugs. [3]
- g) Difference between absolute and relative bioavailability. [2]
- h) How will you perform *in vitro* dissolution studies? [3]
- i) What is mean by peripheral and central compartment? [2]
- j) Discuss about statistical moment theory. [3]

PART-B

(50 Marks)

- 2.a) Draw the structure of biological membrane. [10]
 - b) Explain about the laws involved in the drug absorption. [10]
- OR**
3. Define drug absorption. Explain in detail about dosage forms and biological related factors affecting drug absorption. [10]
 4. Write the Factors affecting drug distribution. [10]
- OR**
5. Different plots to calculate the association constant (K_a) and number of binding sites (N) from kinetics of protein binding model. [10]
 6. Define biotransformation. Write in detail about Phase II reactions with examples. [10]
- OR**
7. Explain in detail about non-renal excretion of drugs with suitable example. [10]
 8. Discuss about Bioavailability testing procedure and protocol. [10]
- OR**
9. Write the different types of Bioavailability studies. [10]
 10. Derive pharmacokinetic methods for determination of Elimination constant (K_E) from urinary excretion data. [10]
 11. Derive the Michaelis Menten equation for nonlinear kinetics drugs. [10]

--ooOoo--

R09

Code No: R9602

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Pharmacy IV Year I Semester Examinations, November-2017

BIOPHARMACEUTICS AND PHARMACOKINETICS

Time: 3 hours

Max.Marks:75

**Answer any five questions
All questions carry equal marks**

1. Write different mechanism of GI absorption. Explain in detail. [15]
2. Write the factors of drug distribution and write briefly on volume of distribution. [15]
3. What is enzyme induction and inhibition? Write with examples. [15]
4. Write briefly on Glomerular filtration, tubular secretion and reabsorption. [15]
5. Write the different methods of assessment of bioavailability. [15]
6. Write the determination of absorption rate constant by different methods. [15]
7. What is non linear kinetics and non compartment models? Explain with suitable examples. [15]
8. Write short note on the following:
a) Hydrolytic reactions
b) Kinetics of protein binding. [7+8]

--ooOoo--