Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE4101

IV B.Tech I Semester Regular&Supple Examinations, January-2022

ESTIMATION COSTING AND VALUATION

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define Estimation [CO1,K1,2M]

(b) Write about EMD [CO2,K1,2M]

(c) What is the difference between Banking and Cutting [CO3,K2,2M]

(d) Write the general specification of first class building [CO4,K1,2M]

(e) List out the purposes of rate analysis [CO5,K1,2M]

(f) What is Carpet Area? [CO6,K2,2M]

[2+2+2+2+2+2]

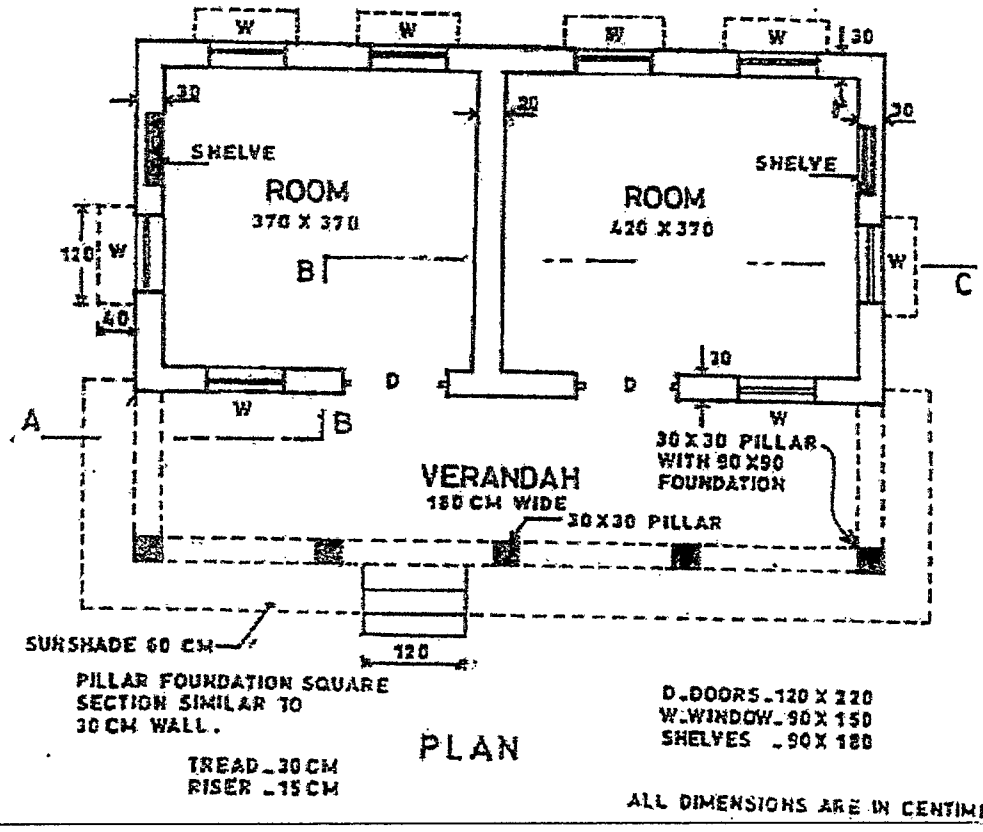
PART-B

4 X 12 = 48

2. (a) Explain any four general items of a building? in detail with sketch [CO1,K2,6M]

(b) What are the different methods of estimation? Discuss [CO1,K2,6M]

3. Detailed Estimate of a Building by Centre line method shown in fig – 1? Assume suitable data [CO2,K3,12M]



4. Estimate the quantity of earth work for an embankment, 120 m long, 8 m wide at crest and whose side slopes are 2 to 1. The central height from 0 to at every 30 m intervals are 0.60 m, 1.2 m, 1.6 m, 2.0 m and 1.3 m calculate the earth work using mid-section formula and trapezoidal formula. [CO3,K3,12M]

5. (a) What is Depreciation ? Explain the different methods of Depreciation [CO4,K2,6M]
(b)) Define valuation ? Explain the purpose of valuation and write about Sinking fund [CO4,K2,6M]

6. Describe the procedure for the calculation of rate for the following
a). C.C 1:5:10 in foundation with brick ballast 40mm thick unit 1cum [CO5,K3,6M]
b). R.C.C. brick work on slab 1:3mortar unit 1cum [CO5,K3,6M]

7. (a) What is Contract? Explain in detail about conditions of contract? [CO6,K2,6M]
(b) Write the types of Tenders and requirement of Tendering [CO6,K2,6M]

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE4102

IV B.Tech I Semester Regular&Supple Examinations, January-2022

ENVIRONMENTAL ENGINEERING–II

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define population equivalent. [CO2,K1,2M]
   (b) Give the various sources of wastewater. [CO1,K1,2M]
   (c) What is the significance of time of concentration? [CO2,K1,2M]
   (d) Define the term activated sludge. [CO3,K1,2M]
   (e) What are the advantages of using circular section in sewers?[CO1,K1,2M]
   (f) What is an oxidation pond?[CO3,K1,2M]

PART-B

4 X 12 = 48

2. (a) Discuss the comparative merits and demerits of combined system and separate system. [CO1,K2,8M]
   (b) Give an account of factors affecting the quantity of stormwater. [CO2,K2,8M]

3. (a) A combined sewer was designed to serve an area of 60 sq. km with an average population density of 185 persons/hectare. The average rate of sewage flow is 350 L/capita/day. The maximum flow is 50% in excess of the average sewage flow. The rainfall equivalent of 12 mm in 24 h can be considered for design, all of which is contributing to surface runoff. What will be the discharge in the sewer? Find the diameter of the sewer if running full at maximum discharge. [CO1,K3,12M]

4. (a) Design a suitable primary sedimentation tank to treat wastewater of 10 MLD. [CO3,K3,8M]
   (b) Explain the grit chamber and detritus tank and what is the difference between them? [CO3,K2,4M]

5. (a) Explain the configuration of manhole with a nest sketch. [CO4,K2,6M]
   (b) Define and explain BOD with its significance? How will you determine the BOD? [CO4,K2,6M]

6. (a) Explain "Bacteria-algae" symbiosis in oxidation pond. [CO4,K2,6M]
   (b) What is solid waste? Explain solid waste disposal method in details. [CO4,K2,6M]

7. (a) Describe the fire protection system to be adopted for a residential building. [CO3,K2,6M]
   (b) Define trap? Classify the different types of traps used in a building. [CO3,K2,6M]

***

NEC Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE4103

IV B.Tech I Semester Regular&Supple Examinations, January-2022

CONSTRUCTION TECHNOLOGY AND MANAGEMENT

(CE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What do you understand by critical path? [CO1,K1,2M]
   (b) Write the Process of updating [CO2,K1,2M]
   (c) What is direct cost? [CO1,K1,2M]
   (d) Explain briefly about Resource levelling [CO2,K2,2M]
   (e) What is Total quality management? [CO3,K1,2M]
   (f) Write the classification of construction equipment [CO4,K1,2M]

[2+2+2+2+2+2]

PART-B

2. (a) What are different elements present in PERT network and explain with an example[CO1,K1,6M]
   (b) What are the different types of floats involved in CPM?[CO1,K1,6M]

3. The network of a certain project is shown in Figure.1 with the estimated durations of various activities. Determine the following: i) Earliest event time and latest event time
ii) Earliest and latest start and finish times of each activity.
iii) Total and free floats for each activity. iv) Critical path for the network. [CO2,K5,12M]

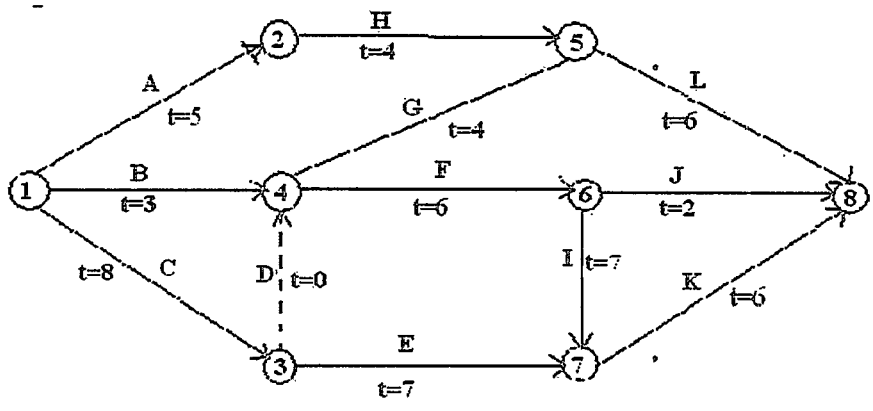


Figure 1

4. (a) Write the Steps involved in optimization of cost [CO2,K1,6M]
   (b)Explain about Optimization of cost through networks [CO2,K2,6M]

5. (a) Discuss importance of safety in construction sites [CO3,K2,6M]
   (b) State and describe various causes of accidents at the construction site [CO3,K2,6M]

6. (a) Explain about the Prevention of fires in construction industries [CO3,K2,6M]
   (b) Write about the immediate attention in case of accident [CO3,K1,6M]

7. Discuss the role of tractors in earth moving. What considerations govern the selection of wheel type or crawler type tractor on a job? Compare their applications [CO4,K2,12M]

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE4108

IV B.Tech I Semester Regular&Supple Examinations, January-2022

OPEN CHANNEL HYDRAULICS

(CE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) write down the uniform flow formulae used in open channel flow. [K1,CO1,2M]
   (b)Distinguish between rapidly varied flow and gradually varied flow. [K2,CO2,2M]
   (c)Define hydraulic jump. [K1,CO3,2M]
   (d) Define cavitation. [K1,CO5,2M]
   (e) what is negative slip in reciprocating pump. [K1,CO4,2M]
   (f)what do you understand by a partially penetrating well. [K1,CO6,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a)Show that for a trapezoidal channel of given area of flow, condition of maximum flow requires that hydraulic mean depth is equal to one half the depth of flow. [K3,CO1,6M]
   (b)Water flows at a uniform depth of 2 m in a trapezoidal channel having a bottom width 6m, side slopes 2 horizontal to 1 vertical. If it has to carry a discharge of 65 m^3/sec, compute the bottom slope required to be provided. [K3,CO1,6M]
3. (a)Explain the characteristics of surface profile in mild slope channels. [K3,CO2,6M]
   (b)Find the slope of the free water surface in a rectangular channel of width 20m, having depth of flow 5m. The discharge through the channel is 50 m^3/sec. the bed of the channel is having a slope of 1 in 4000. Take the value of Chezy's constant C=60. [K3,CO3,6M]
4. (a) Derive an expression for loss of energy in a hydraulic jump.[K3,CO3,6M]
   (b)In a rectangular channel there occurs a jump corresponding to Fr_1 =2.5, determine the critical depth and head loss in terms of the initial depth y_1.[K3,CO3,6M]
5. (a)Explain working principle of Kaplan turbine with a schematic diagram. [K2,CO4,6M]
   (b)A turbine is to operate under a head of 25m at 200 r.p.m. The discharge is 9 cumec. If the efficiency is 90%, determine the specific speed of the turbine and power generated.

[K3,CO4,6M]

6. (a)Draw and discuss the operating characteristics of a centrifugal pump. [K2,CO5,6M]
   (b)What is reciprocating pump? Describe the principle and working of a reciprocating pump with a neat sketch. [K2,CO5,6M]
7. (a)Explain Darcy's law, what are its assumptions? Discuss its validity. [K2,CO6,6M]
   (b)Explain main features of Jacob's method for analysis of time drawdown data of pumping tests to determine aquifer parameters *S* and *T* *[K2,CO6,6M]*

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE4114

IV B.Tech I Semester Regular&Supple Examinations, January-2022

PHOTOGRAMMETRY AND REMOTE SENSING

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Explain about terrestrial photographs. [K2,CO3,2M]
   (b) Give the principle of Aero-triangulation. [K2,CO2,2M]
   (c) State the theory of parallax. [K1,CO3,2M]
   (d) What is atmospheric window? What are its uses? [K2,CO1,2M]
   (e) Differentiate between along-track and across-track scanners. [K2,CO1,2M]
   (f) List the different elements of visual interpretation. [K1,CO2,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Derive an expression for scale of vertical photograph over flat terrain with figure. **[K2,CO3,8M]**
   (b) Distinguish between map and aerial photographs. **[K2,CO3,4M]**

3. (a) Explain mosaics. List the uses of mosaics. **[K2,CO1,4M]**
   (b) An area 20km x 15km is to be photographed using a camera of focal length 30cm. The photograph size is 20cm x 20cm. The average scale of photograph is to be 1:15,000, at an elevation of 300m above datum. Longitudinal overlap is to be 60% and side lap is 30%. Speed of aircraft is 360 kmph. Determine the following: (i) Flying height. (ii) Effective ground area covered by each photograph (iii) No. of photographs required. (iv) Exposure interval. **[K3,CO3,8M]**

4. (a) What are stereoscoper? Name any two stereoscoper. **[K2,CO3,4M]**
   (b) Derive an expression for parallax equation for determining elevation and ground co-ordinate of a point. **[K3,CO3,8M]**

5. (a) Explain the terms: Electromagnetic energy and electromagnetic spectrum. **[K2,CO1,6M]**
   (b) Explain the interaction mechanism of EM radiation with earth atmosphere. **[K2,CO1,6M]**

6. (a) Explain the different types of platforms used in remote sensing. **[K2,CO1,6M]**
   (b) What are sensors? How are they classified? **[K2,CO1,6M]**

7. (a) What do you mean by image enhancement? Explain any two types. **[K2,CO3,6M]**
   (b) What is meant by image classification? Explain the supervised classification. **[K2,CO3,6M]**

***

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet-522601, Guntur District, AP.

Subject Code: R16CC41OE22

IV B.Tech I Semester Regular & Supple Examinations, January-2022

WATER SHED MANAGEMENT (OPEN ELECTIVE-III)

(CE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is the function of a watershed? [CO1,K1,2M]
   (b) Explain watershed delineation. [CO1,K2,2M]
   (c) List the different types of erosion. [CO2,K1,2M]
   (d) What are the benefits of rain water harvesting? [CO2,K1,2M]
   (e) List out the different objectives of Land capability classification. [CO3,K2,2M]
   (f) What is reservoir routing? [CO2,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain in detail about the integrated watershed management approach. **[CO2,K2,08]**
   (b) Bring out the role of people's participation in watershed management. **[CO1,K2,04]**

3. (a) Classify the various watershed characteristics & its importance in watershed management. **[CO1,K2,08]**
   (b) Explain different methods of geometric representation of watersheds. **[CO1,K2,04]**

4. (a) What are the effects of erosion on land fertility and land capability. **[CO2,K2,04]**
   (b) Discuss in detail about Erosion control methods: (i) Furrowing (ii) ploughing (iii) rock fill dams. **[CO2,K2,08]**

5. (a) Write a short note on Check dams and Farm ponds. **[CO1,K1,08]**
   (b) What are the basic steps to begin the process of Rain Water Harvesting? **[CO1,K1,04]**

6. Define land capability. Explain classification of land under several categories and their purpose. **[CO3,K2,12]**

7. Explain in detail anyone application of GIS in watershed management. **[CO3,K2,12]**

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EE4101

IV B.Tech I Semester Regular&Supple Examinations, January-2022

POWER SYSTEM OPERATION AND CONTROL

(EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is a penalty factor in economic scheduling? Give its significance.[CO1,K1,2M]
   (b) What are the important methods of hydro – thermal coordination?[CO2,K1,2M]
   (c) What is the need of solution methods for unit commitment problem?[CO3,K1,2M]
   (d) What is the necessity of keeping frequency constant?[CO4,K1,2M]
   (e) What is the need of integral control in single area LFC system?[CO5,K1,2M]
   (f) What is the need of load compensation?[CO6,K1,2M]

PART-B

2. (a) What is a penalty factor in economic scheduling? Explain its significance?[CO1,K2,6M]
   (b) The fuel input per hour of plant 1 and 2 are given as [CO1,K3,6M]

   $C_1=0.2P_1^2+40P_1+120$ Rs/h

   $C_2=0.25P_2^2+30P_2+150$ Rs/h

   Determine the economic operating schedule and the corresponding cost of generation if the max and min loading on each unit is 100MW and 25MW, the demand is 180 MW and transmission losses are neglected. If the load is equally shared by both the units, determine the saving obtained by loading the units as per equal incremental production cost.
3. A two plant system having a steam plant near the load centre and hydro plant at a remote location. The load is 4500MW for 16hrs a day. The characteristics of the units are

   $C_1= 0.075\ P_T^2 + 45P_T+120$,

   $W_2=0.0028\ P_H^2+0.6P_H$,

   $B_{22}=0.001MW^{-1}$.

   Find the generation schedule, daily water used by the hydro plant and daily operating cost of thermal plant for γ_j=85.5 Rs/m^3-hr. [CO2,K3,12M]
4. (a) What are the merits and demerits of DP method over priority list scheme?[CO3,K4,6M]
   (b) Using the dynamic programming approach, how do you find the most economical combination of the units to meet a particular load demand? [CO3,K4,6M]
5. (a) With a neat diagram explain briefly different parts of turbine speed governing system? [CO4,K2,6M]
   (b) Two control areas have the following characteristics [CO4,K3,6M]

   Area 1:R_1=0.011p.u., B_1=0.85p.u., Base MVA=1000

   Area 2: R_2=0.018 p.u., B2=0.95p.u., Base MVA=1000

   A load change of 200MW occurs in area 1. Determine the new steady state frequencies?
6. (a) Draw the block diagram of load frequency control and economic load dispatch? Explain its combined operation.[CO5,K2,6M]
   (b) Explain clearly about proportional plus integral load frequency control with a block diagram. [CO5,K2,6M]
7. (a) What are the merits and demerits of different types of compensating equipment for transmission system? [CO6,K4,6M]
   (b) Explain the uncompensated and compensated transmission lines.[CO6,K4,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EE4102

IV B.Tech I Semester Regular&Supple Examinations, January-2022

SWITCHGEAR AND PROTECTION

(EEE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What are the main functions of circuit breaker? [CO1,K1,2M]
   (b) What are the functions of protective relays? [CO2,K1,2M]
   (c) What are the uses of Buchholz's relay? [CO3,K1,2M]
   (d) What are the types of graded used in line of radial relay feeder? [CO4,K1,2M]
   (e) How does the over voltage surge affect the power system? [CO5,K2,2M]
   (f) What is static relay? [CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) What is meant by circuit breaker? Discuss the phenomenon of arc formation in a CB. [CO1,K2,6M]
   (b) The following data refers to a 3 phase, 50 Hz generator. EMF between the lines 7.5 kV, reactance of generator and connected systems 4 Ohm, distributed capacitance to neutral 0.01microfarad, calculate the frequency of restricking voltage transient.[CO1,K3,6M]
3. (a) Explain the operation of a non directional induction relay with neat sketch?[CO2,K2,6M]
   (b) Explain the importance of under voltage/ over voltage relays with an example for each. [CO2,K2,6M]
4. (a) Explain the protection of a generator against loss of excitation and stator inter turn fault [CO3,K2,6M]
   (b) With aid of neat schematic diagram describe the percentage differential protection scheme of a transformer. [CO3,K2,6M]
5. (a) Discuss in detail about the three zone protection of transmission lines[CO4,K2,6M]
   (b) Explain about the over current protection of bus bars with relevant connection diagram [CO4,K2,6M]
6. (a) Discuss and compare the various methods of neutral earthing [CO5,K2,6M]
   (b) Describe the construction, principle of operation and application of valve type lightning arrester? [CO5,K2,6M]
7. (a) What are the merits and demerits of static relays over electromagnetic relays also mention its applications? [CO6,K1,6M]
   (b) Explain the Microprocessor based reactance relay [CO6,K2,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EE4103

IV B.Tech I Semester Regular&Supple Examinations, January-2022

UTILIZATION OF ELECTRICAL ENERGY

(EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What do you mean by "Individual drive" and" Group drive". [CO1,K1,2M]

(b) Define Horizontal polar curve and vertical polar curve. [CO3,K2,2M]

(c) What are the advantages of radiant heating? [CO2,K1,2M]

(d) Give some applications of induction heating. [CO2,K2,2M]

(e) What are the requirements of an ideal traction system? [CO5,K1,2M]

(f) Define specific energy output and specific energy consumption. [CO6,K1,2M]

PART-B

2. (a) Explain what do you mean by "Individual drive" and "Group drive ". Discuss their relative merits and demerits. [CO1,K2,6M]

(b) A 500 V d.c. series motor runs at 500 r.p.m. and takes 60 amps. The resistances of the field and the armature are 0.3 and 0.2 Ohms, respectively. Calculate the value of the resistance to be shunted with the series field winding in order that the speed may be increased to 600 r.p.m., if the torque were to remain constant. Saturation may be neglected. [CO1,K3,6M]

3. (a) What are the factors to be considered for inductor design in induction heating?[CO2,K1,6M]

(b) Give some applications of induction heating.[CO2,K2,6M]

4. (a) Explain with sketches the constructional features of a filament lamp.[CO3,K1,6M]

(b) A lamp of 500 candle power is placed at the centre of a room, 20m x 10m x 5m. Calculate the illumination in each corner of the floor and a point in the middle of a 10m wall at a height of 2m from floor. [CO3,K3,6M]

5. (a) Explain the various types of lighting schemes with relevant diagrams. [CO4,K2,6M]

(b) Briefly explain the various laboratory standards used in Illumination. [CO4,K1,6M]

6. (a) For a trapezoidal speed-time curve of an electric train, derive expression for maximum speed and distance between stops.[CO5,K2,6M]

(b) A train is to be run between two stations 5kms apart at an average speed of 50km/hr. If the maximum speed is to be limited to 70km/hr, acceleration to 2km/hr/sec, braking retardation to 4km/hr/sec and coasting retardation to 0.1km/hr/sec, determine the speed at the end of coasting, duration of coasting period and braking period. [CO5,K3,6M]

7. (a) Write short notes on sub-traction for single-phase A.C systems. [CO6,K2,6M]

(b) An electric locomotive is required to haul a train of 12 coaches each weighing 30 tonne on the main line service requiring an initial acceleration of 0.8km/hr/sec up a gradient of 1 in 100. Estimate the adhesive weight and hence the number of driving axles the locomotive must have, if the permissible axle loading is 20 tonne per axle. Assuming for rotational inertia to be 4%, for the coaches and 15% for the locomotive. Maximum coefficient of adhesion is 0.2 and the tractive resistance 5kg/tonne.[CO6,K3,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EE4107

IV B.Tech I Semester Regular&Supple Examinations, January-2022

POWER QUALITY

(EEE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define waveform distortion and mention the primary types of waveform distortion. [CO1,K1,2M]

(b)Define Electromagnetic Compatibility.[CO2,K1,2M]

(c)What do you mean by capacitor switching?[CO3,K1,2M]

(d)Define voltage and current distortion.[CO4,K1,2M]

(e)What are the Power quality issues which affect the electrical system interface?[CO5,K1,2M]

(f)Define power quality monitoring. [CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Discuss the following characteristics of power quality events. [CO1,K2,12M]
   (a) Short duration variations.
   (b) Long duration variations.
   (c) Discuss in detail about transients.

3. (a)What are the different voltage sag mitigation techniques? Explain in detail. [CO,K2,6M]
   (b)Explain the principles of over voltage protection and what are the various methods to protect the power system from over voltages? [CO2,K2,6M]

4. (a)Explain the principles of regulating the voltage and list out the devices used for voltage regulation. [CO3,K2,6M]
   (b)What is static VAR compensator and explain it's role in power factor improvement. [CO3,K2,6M]

5. (a)Explain the process of locating harmonic sources. [CO4,K2,6M]
   (b) Discuss briefly about active and passive filtering for controlling harmonic distortion. [CO4,K2,6M]

6. Write a brief note on various distributed generation technologies. [CO5,K2,12M]

7. (a)Write a short note on power quality monitoring considerations. [CO6,K2,6M]
   (b)Explain briefly the application of intelligent systems for power quality monitoring. [CO6,K2,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EE4109

IV B.Tech I Semester Regular&Supple Examinations, January-2022

PLC AND AUTOMATION

(EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a. Define PLC system? [CO3, K1]
   b. Explain about typical PLC input devices? [CO2, K2]
   c. Explain about input registers used in PLC? [CO1, K2]
   d. What are the characteristics of PLC registers? [CO1, K1]
   e. What is Matrix functions? [CO6, K1]
   f. Write the analog output application examples? [CO4, K1]

[2+2+2+2+2+2M]

PART-B

4 X 12 = 48

2. Briefly explain the CPU processor and construction of PLC ladder diagrams? **[CO2,K2,12M]**

3. a) Explain the programming examples using contacts and coils in PLC? **[CO2, K2,6M]**
   b) Explain the ladder diagram construction and flow chart for spray process system? **[CO3,K3,6M]**

4. Briefly explain the characteristics of registers and holding registers in PLC's? [CO1,K2,**12M]**

5. a) Explain different counter instructions in PLC with suitable examples.**[CO4, K3,6M]**
   b) Write about arithmetic functions. **[CO5, K1,6M]**

6. Explain the FAL, ONS, CLR, Sweep functions and their applications? **[CO5, K2,12M]**

7. Discuss the PID tuning and PID functions? **[CO6, K2 12M]**

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC41OE7

IV B.Tech I Semester Regular & Supple Examinations, January-2022

INTERNET OF THINGS (IOT) (OPEN ELECTIVE-II)

(EEE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What are the components of IoT? [CO1,K1,2M]
   (b) Write the differences between Zigbee and Bluetooth. [CO2,K1,2M]
   (c) What is System on Chip? [CO1,K1,2M]
   (d) List mostly used sensors types in IoT. [CO2,K1,2M]
   (e) What are GPIO pins used in Raspberry Pi boards? [CO3,K1,2M]
   (f) Define Smart Agriculture. [CO3,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What are the main challenges of an Internet of Things (IoT)? [CO1,K1,6M]
   (b) What kind of information do Internet of Things (IoT) objects communicate? [CO1,K1,6M]

3. Discuss in detail the IoT Design methodology for Home automation System.[CO2,K2,12M]

4. (a) Compare Raspberry Pi and Arduino. [CO3,K2,6M]
   (b) How is application development done for Arduino? Explain. [CO2,K2,6M]

5. (a) Write the Difference between Raspberry Pi and Beaglebone Black board.[CO3,K2,6M]
   (b) How to Connect a Monitor or TV to Your Raspberry Pi. Explain. [CO3,K2,6M]

6. (a) What is role of Cloud Computing in Internet of Things? [CO4,K1,6M]
   (b) Discuss in detail about WAMP. [CO4,K2,6M]

7. (a) How does IoT influence the development of smart cities? [CO3,K2,6M]
   (b) Explain in detail application of IoT in Agriculture. [CO3,K2,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16ME4101

IV B.Tech I Semester Regular&Supple Examinations, January-2022

FINITE ELEMENT METHODS

(ME)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is the difference between Finite Element Method (FEM) and Finite Difference Method (FDM)? (CO1,K3,2M)
   (b) Define the Primary node and secondary node. (CO2,K3,2M)
   (c) Why polynomial terms are preferred for shape functions in FEM? (CO3,K3,2M)
   (d) What is the importance of element aspect ratio in the accuracy of analysis? (CO4,K42M)
   (e) Explain the elimination method of imposing boundary conditions. (CO5,K5,2M)
   (f) Discuss the plane stress and plane strain case. (CO1,K3,2M)

PART-B

4 X 12 = 48

2. Find the nodal displacements and element stresses for the bar shown in figure 1. Take E = 200 GPa. [CO2,K4,12M]

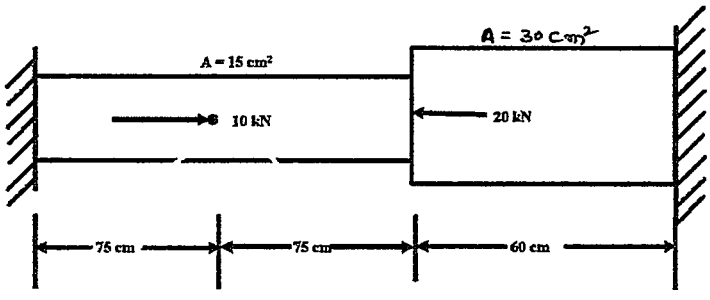


Figure 1

3. For the three – bar truss shown in figure 2, determine the nodal displacements and the stress in each member. Find the support reactions also. Take modulus of elasticity as 200 GPa. [CO3,K4,12M]

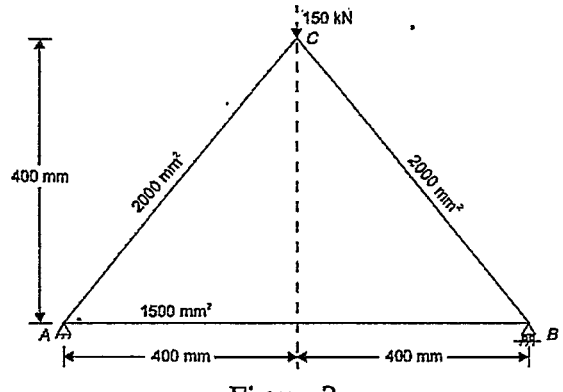


Figure 2

4. Calculate the element stresses for the element shown in figure 3 for the plane stress and plane strain condition when nodal displacements are as given below. Take [CO1,K4,2M]

$q_1 = 0$; $q_2 = 0$

$q_3 = 0.001$; $q_4 = 0.002$

$q_5 = (-)0.003$ $q_6 = 0.002$

E = 200 GPa; $\nu = 0.25$; Thickness = 20 mm; $\alpha = 2\times10^{-6}/\ ^{o}C$

$\Delta T = 50\ ^{o}C$

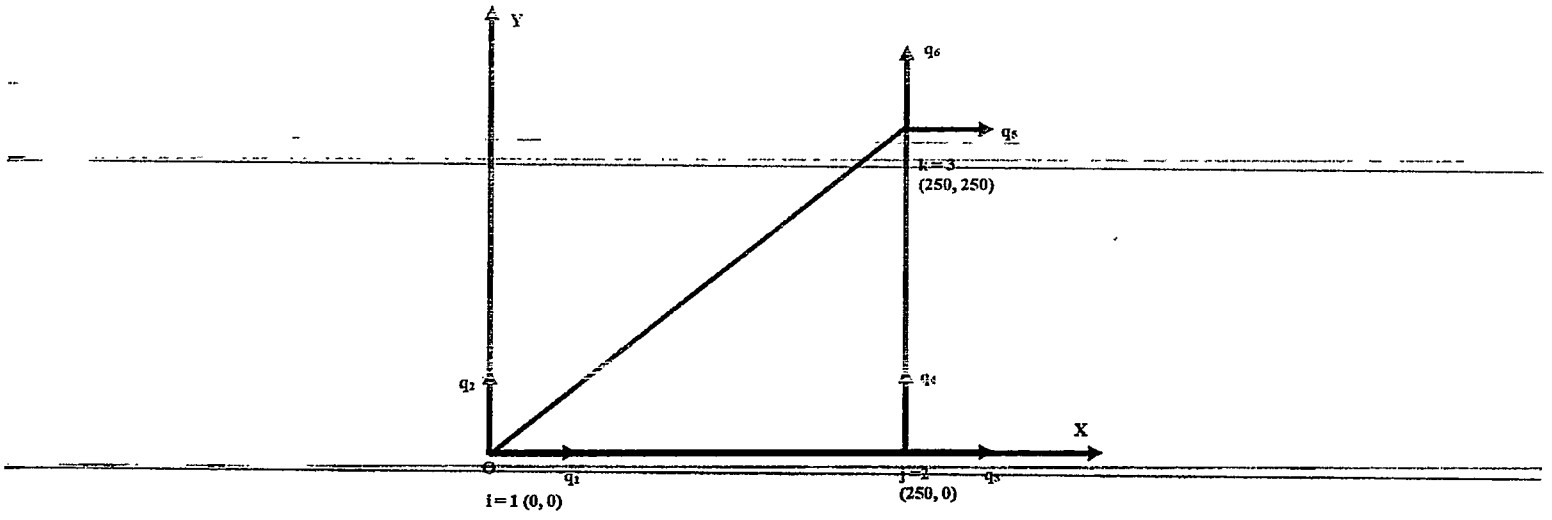


Figure 3

5. (a) Write the governing equations of steady state conduction heat transfer? [CO5,K3,02M]

(b) Determine the temperature T at the point P located at (4, 7) where $T_i = 40\ ^{o}C$, $T_j = 35\ ^{o}C$ and $T_k = 45\ ^{o}C$ as shown in figure 4. [CO5,K4,10M]

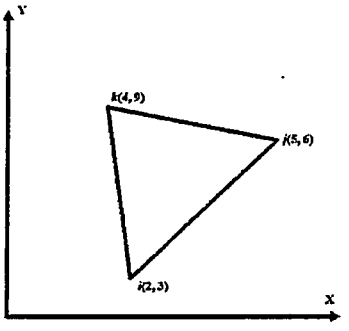


Figure 4

6. Find the Eigen values and Eigen vectors for the beam shown in the figure 5 [CO6,K4,12M]

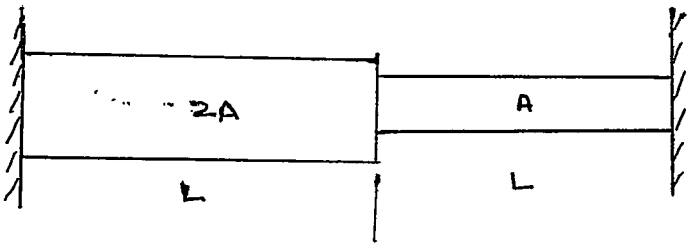


Figure 5

7. (a) Write note on Galerkin's method. [CO1,K3,06M]

(b) Explain the Rayliegh – Ritz method. [CO1,K3,06M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16ME4102

IV B.Tech I Semester Regular&Supple Examinations, January-2022

CAD/CAM

(ME)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What are the different types storage devices used in computers? [CO1,K1,2M]
   (b) Write a about on B-spline [CO2,K1,2M]
   (c) What is meant by sweep technique for 3D geometric constructions [CO3,K1,2M]
   (d) Explain CNC part programming. [CO4,K2,2M]
   (e) What is Cellular Manufacturing [CO5,K1,2M]
   (f) Define the machine vision [CO4,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. a) What are the input devices more commonly employed for general graphics application? [CO1,K1,6M]
   b) Specify the various steps present in computer assistance for the design cycle.[CO1,K1,6M]
3. a) How do you classify the various geometric modelling systems based on this capabilities[CO2,K1,6M]
   b) Compare Bezier curve and B-splines for CAD applications [CO2,K2,6M]
4. a) What are the facilities that are useful for editing geometric entrities in a drafting system? [CO3,K1,6M]
   b) Briefly explain the modelling using a CAD system [CO3,K2,6M]
5. a) Give the advantages and disadvantages of numerical control of machine tools [CO4,K1,6M]
   b) Write notes on Adaptive Control. [CO4,K1,6M]
6. a) Explain the types of coding systems possible for group technology [CO5,K2,6M]
   b) Give a brief description of production flow analysis [CO5,K2,6M]
7. a) Explain about production flexibility and routing flexibility in FMS. [CO6,K2,6M]
   b) Mention the advantages of CMM [CO6,K1,6M]

***

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16ME4103

IV B.Tech I Semester Regular&Supple Examinations, January-2022

ADVANCED MANUFACTURING PROCESSES

(ME)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is ceramic shell casting? State its applications. [CO1,K1,2M]
   (b) Distinguish between EBW and LBW. [CO2,K2,2M]
   (c) What are the limitations of hydro and magnetic forming processes? [CO3,K1,2M]
   (d) State the working principle of Abrasive water jet machining and Abrasive flow finishing. [CO4,K2,2M]
   (e) Enlist the types of reactions in Electro Chemical Machining (ECM). [CO5,K1,2M]
   (f) How work table is protected from getting damaged by EBM while machining of workpiece? [CO6,K1,2M]

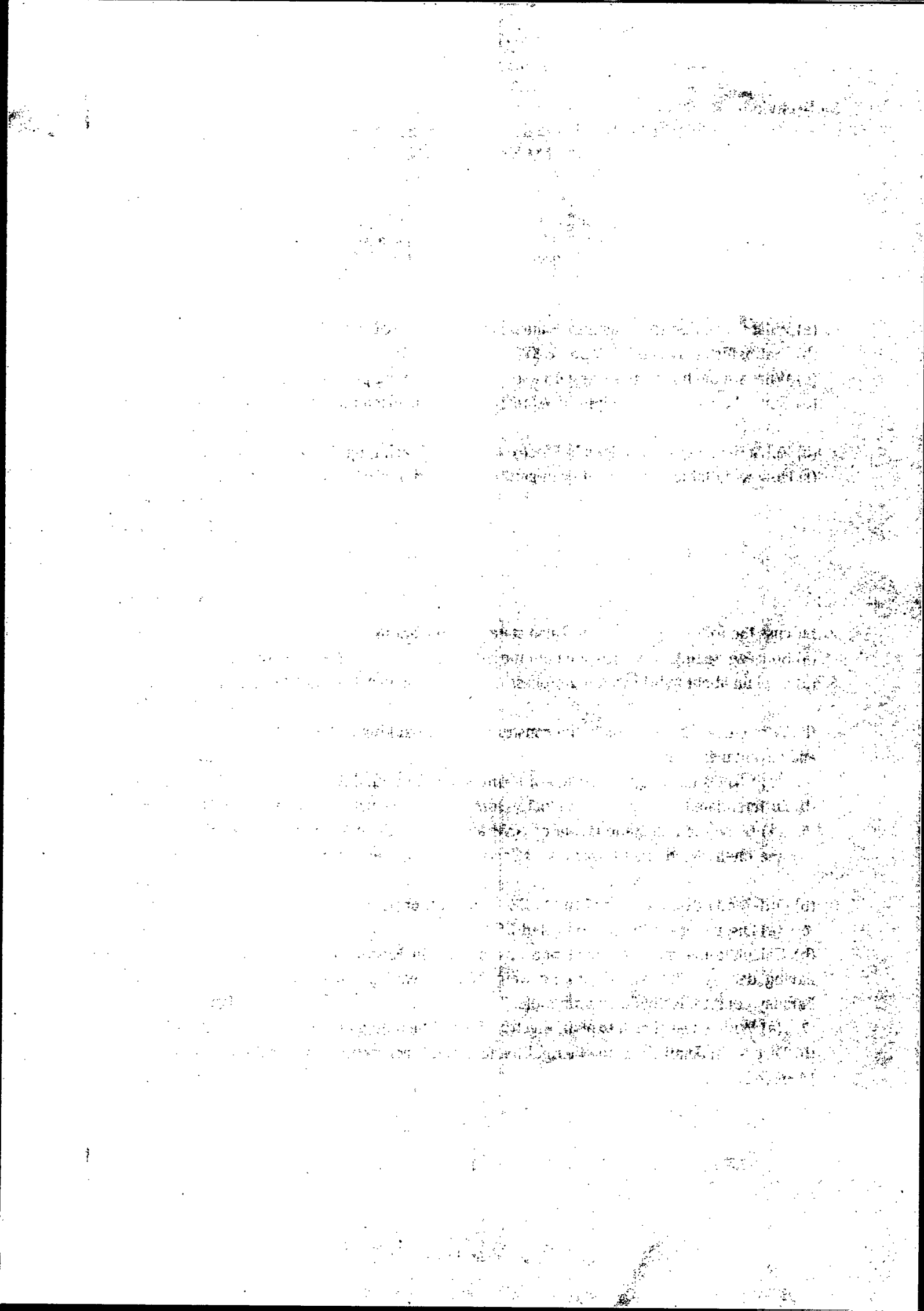
[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Discuss the following in brief and also state its applications. [CO1,K2,12M]
   (a) Squeeze casting (b) Vacuum mould casting (c) Evaporative pattern casting
3. (a) Explain about hybrid welding process and state its advantages and disadvantages of it. [CO2,K2,6M]
   (b) With a neat sketch, explain the construction and working of LBW. Also state its applications and advantages in brief. [CO2,K5,6M]
4. (a) Write a brief note on design of forming and forming thin sections. [CO3,K1,6M]
   (b) Differentiate between High Velocity Forming and magnetic forming [CO3,K2,6M]
5. (a) Draw the schematic layout of AJM and explain the operational characteristics. What are the methods adopted to have an effective control over the mass flow rate of the abrasive? [CO4,K2,8M]
   (b) Differentiate between AJM and WJM (At least four points each). [CO4,K2,4M]
6. (a) Discuss about the economics of ECM. [CO5,K2,5M]
   (b) Calculate the metal removal rate in mm^3/min in Electrochemical machining of a material having density 8000 kg/m^3, atomic weight 56, valence 2 when current used is 1000 A and Faraday constant is 96500 columb/mole. [CO5,K3,7M]
7. (a) With a neat sketch explain Electron Beam Machining process. [CO6,K2,6M]
   (b) Discuss in detail about the thermal features and mechanism of material removal problems on MRR in LBM. [CO6,K3,6M]

***



Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16ME4104

IV B.Tech I Semester Regular&Supple Examinations, January-2022

POWER PLANT ENGINEERING

(ME)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What are the advantages of artificial draught over natural draught[K1,CO2,2M]
   (b) Draw the layout of diesel power plant? [K2,CO4,2M]
   (c) Differentiate between dams and spillways used in hydroelectric power plants. [K2,CO5,2M]
   (d) Define radioactivity. [K1,CO3,2M]
   (e) What is a run-of-river plant? [K1,CO5,2M]
   (f) What are fixed and operating costs? [K1,CO6,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain with a simple sketch working of thermal power plant [K2,CO1,6M]
   (b) What are renewable and non - renewable energy sources? Discuss with reference to Indian scenario. [K1,CO1,6M]

3. (a) What are the advantages of mechanical draught in a boiler? [K1,CO2,6M]
   (b) Explain the site selection criterion of hydro power plant. [K2,CO5,6M]

4. (a) Describe the inplant coal handling with a neat diagram [K2,CO3,6M]
   (b) What are the advantages of forced draft over induced draft. [K1,CO3,6M]

5. (a) What methods are used to improve the efficiency of gas turbine power plant?[K1,CO4,6M]
   (b) Differentiate Boling water reactor with Pressurized water reactor. [K2,CO4,6M]

6. (a) Discuss with a simple sketch, thermostat cooling system in Diesel power plant. [K2,CO5,6M]
   (b) Draw a neat line diagram of a diesel power plant showing all the systems and explain the working [K2,CO5,6M]

7. (a) What is a load curve and its significance? [K2,CO6,6M]
   (b) Differentiate between fixed cost and running cost in an organization. [K2,CO6,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16ME4111

IV B.Tech I Semester Regular&Supple Examinations, January-2022

PRODUCTION PLANNING AND CONTROL

(ME)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Distinguish between job and mass production [CO1,K4]
   (b) List the qualitative methods of demand forecasting. [CO2,K1]
   (c) What is the significance of maintain inventory? [CO3,K1]
   (d) Define routing and scheduling. [CO4,K1]
   (e) List various scheduling methods. [CO5,K1]
   (f) What are the activities of a dispatcher?[CO6,K1]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the objectives and functions of production planning and control. [CO1,K2,6M]
   (b) Discuss the elements of production control. [CO1,K2,6M]

3. (a) What are the uses of short-, medium- and long-term forecasts? [CO2,K1,6M]
   (b) A firm believes that its annual profit depends on its expenditures for research. The information for the preceding six years is given below. Estimate the profit when the expenditure is 6 units. [CO3,K3,6M]

Year	1	2	3	4	5	6
Expenditure for Research	2	3	5	4	11	5
Annual Profit	20	25	34	30	40	31

4. (a) What are the various inventory ordering procedures? Explain in detail. [CO3,K2,6M]
   (b) What is ABC analysis. Explain the procedure with the help of an example.[CO3,K2,6M]

5. (a) Discuss the factors effecting routing procedure. [CO4,K2,6M]
   (b) Differentiate between loading and scheduling. [CO4,K2,6M]

6. (a) What is Line balancing. Explain the line balancing procedure. [CO5,K2,6M]
   (b) Write a short note on flow production scheduling. [CO5,K2,6M]

7. (a) Define follow-up. What are the types of follow-up? Explain. [CO6,K2,6M]
   (b) Write a short note on the applications of computer in production planning and control. [CO6,K2,6M]

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC41OE14

IV B.Tech I Semester Regular& Supple Examinations, January-2022

ROBOTICS (OPEN ELECTIVE-III)

(ME)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

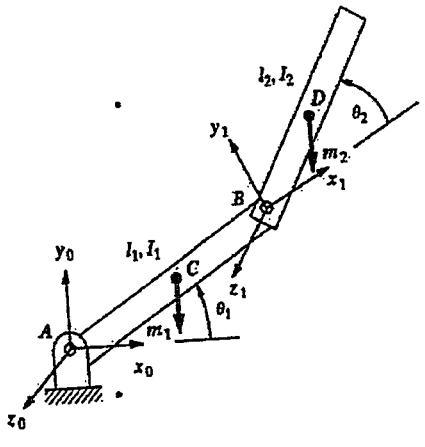
PART-A

1. (a) What are Requirements and challenges of end effectors? [K1,CO1,2M]
   (b) List the limitations of potentiometer? [K1,CO2,2M]
   (c) Write about robot application for welding. [K1,CO3,2M]
   (d) What is D-H notation explain in brief? [K1,CO4,2M]
   (e) Describe the Jacobian matrix? [K2,CO5,2M]
   (f) Illustrate and explain Skew motion. [K2,CO6,2M]

PART-B

4 X 12 = 48

2. a) What are the different types of automation? Explain them with examples. [K1,CO1,6M]
   b) Describe the classification of robots by control system. [K2,CO1,6M]
3. a) Differentiate between stepper motor and D.C. motor drives for a robot. [K2,CO2,6M]
   b) Write about velocity sensors. [K1,CO2,6M]
4. a) Define material transfer application? Explain about simple pick and operation with neat sketch. [K2,CO3,6M]
   b) State characteristics of work which promote application of robots. Discuss robot application for assembly and inspection. [K1,CO3,6M]
5. a) Explain the homogeneous transformation as applicable to rotation? [K2,CO4,6M]
   b) Derive the forward kinematics matrix for an articulated robot arm (RRR) using DH convention? [K3,CO4,6M]
6. Using Lagrangian method, derive the equations of motion for the two degree of freedom robot arm, shown in figure, the center of mass for each link is at the center of link. The moments of inertia are I1 and I2 [K3,CO5,12M]



7. a) Discuss different features of Trajectory planning in Robots & their significance. [K3,CO6,6M]
   b) Discuss the textural robot language structure with the help of block diagram. [K3,CO6,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC4101

IV B.Tech I Semester Regular&Supple Examinations, January-2022

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

(ECE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define class and object in java [CO1, K2, 2M]
   (b) What is meant by primitive data type? Discuss [CO1, K1, 2M]
   (c) Explain about super keyword .[CO2, K2, 2M]
   (d) List the methods in Thread class.[CO4, K2, 2M]
   (e) Differentiate between application and applet[CO5, K2, 2M]
   (f) What are the different types of controls available in AWT?[CO2, K1, 2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What is object oriented programming? Explain the need of object oriented programming [CO1,K2, 6M]
   (b) List and explain java buzzwords. [CO1,K2, 6M]

3. (a) What is constructor? What are the rules of constructor? Give an example. [CO1,K2, 6M]
   (b) What is constructor overloading? Explain with examples [CO2,K3, 6M]

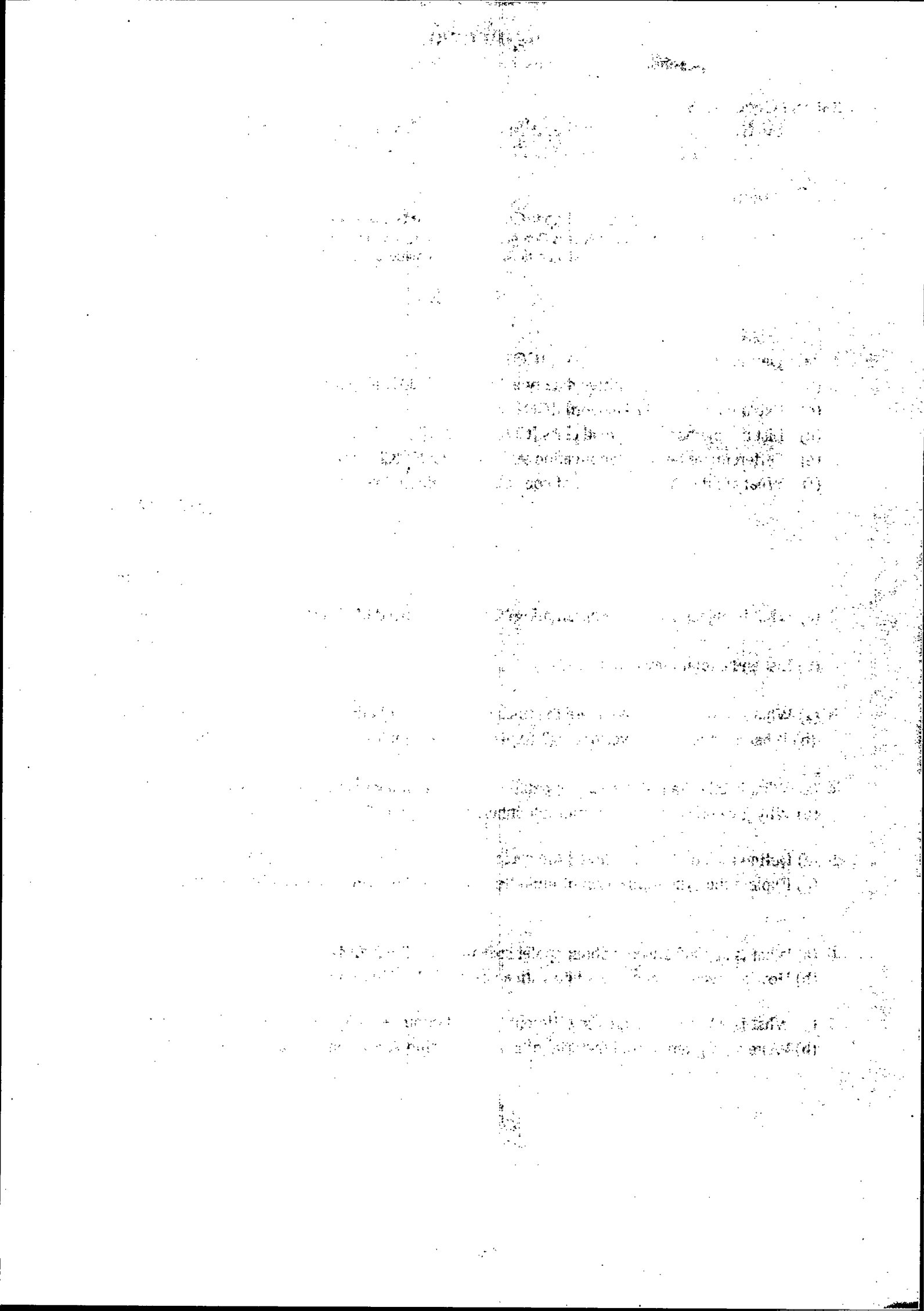
4. (a) What is inheritance? Explain in detail inheritance in java with examples.[CO3,K3,8M]
   (b) Why java does not support multiple inheritance explain ? [CO3,K3,4M]

5. (a) Define thread? Explain thread life cycle in detail? [CO4,K2, 6M]
   (b) Explain the synchronization of multiple threads in Java with an example [CO4,K3, 6M]

6. (a) What is applet? Discuss about applet structure [CO5,K2, 6M]
   (b) How to create an applet explain with an example? [CO5,K3, 6M]

7. (a) What is AWT? What are the different types of controls available in AWT? [CO5,K1, 6M]
   (b) Write a program to find factorial of a number using AWT components [CO5,K3, 6M]

***



Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC4102

IV B.Tech I Semester Regular&Supple Examinations, January-2022

MICROCONTROLLERS AND EMBEDDED SYSTEMS

(ECE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a) Define register and list number of registers in 8051. [CO1,K1,2M]

b) Show the schematic for LED interface to 8051. [CO2,K2,2M]

c) List ARM processor types. (Write 4 latest versions). [CO3,K1,2M]

d) Define embedded systems? Laptop is embedded system or not. Comment on your answer. [CO4,K1,2M]

e) What is watchdog timer in embedded systems?[CO5,K1,2M]

f) Differentiate multiprocessing and multitasking in two important aspects? [CO6,K1,2M]

PART-B [4 X 12 = 48]

2. a) List and explain different types of 8051 Instructions (6 types). [CO1,K2,6M]

b) Explain RAM & ROM Organization of 8051 microcontroller. [CO1,K2,6M]

3. a) Draw a schematic that makes an 230 volts bulb to control ON and OFF with microcontroller 8051 via relay interface. [CO2,K3,6M]

b) Explain Opt-Isolators and ultrasonic sensor Interface with 8051 microcontroller.[CO2,K2,6M]

4. a) Draw the ARM architecture and explain its functions [CO3,K2,8M]

b) What is THUMB programming model in ARM controller? Explain its basic operation? [CO3,K1,4M]

5. a) Differentiate embedded system and general computing systems, Also write 4 examples of each system. [CO4,K2,6M]

b) What characteristics and quality attributes to be considered for embedded systems. [CO4,K2,6M]

6. Explain these embedded system terms: [CO5,K2,12M]

a) Real time clock b) USB c) SPI d) I2C e) Oscillator unit f) Reset circuit.

7. a) Explain process and threads? [CO6,K2,6M]

b) Brief about device drivers and also list scheduling Algorithms. [CO6,K2,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC4103

IV B.Tech I Semester Regular&Supple Examinations, January-2022

COMPUTER NETWORKS

(ECE)

Time: 3 hours Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a) Write a short note on ARPANET. [CO1,K1,2M]
   b) What is transmission media? Explain about Twisted Pair and Coaxial cable transmission media. [CO1,K1,2M]
   c) What are the Framing methods in Data Link layer? [CO2,K1,2M]
   d) Differentiate Virtual-Circuit and Datagram Networks. [CO2,K2,2M]
   e) What is connection-oriented and connection less transport service? [CO3,K1,2M]
   f) What is DNS Name Space? [CO4,K1,2M]

PART-B

4 X 12 = 48

2. a) What are the different Layers in the OSI Reference Model? Explain the Functionalities of each Layer. [CO1,K1,6M]
   b) Differentiate LAN, MAN and WAN network topologies. [CO1,K2,6M]

3. a) How the message switching implemented in circuit switching networks? Explain with an example. [CO2,K1,6M]
   b) Differentiate Narrow band ISDN - Broadband ISDN. [CO2,K2,6M]

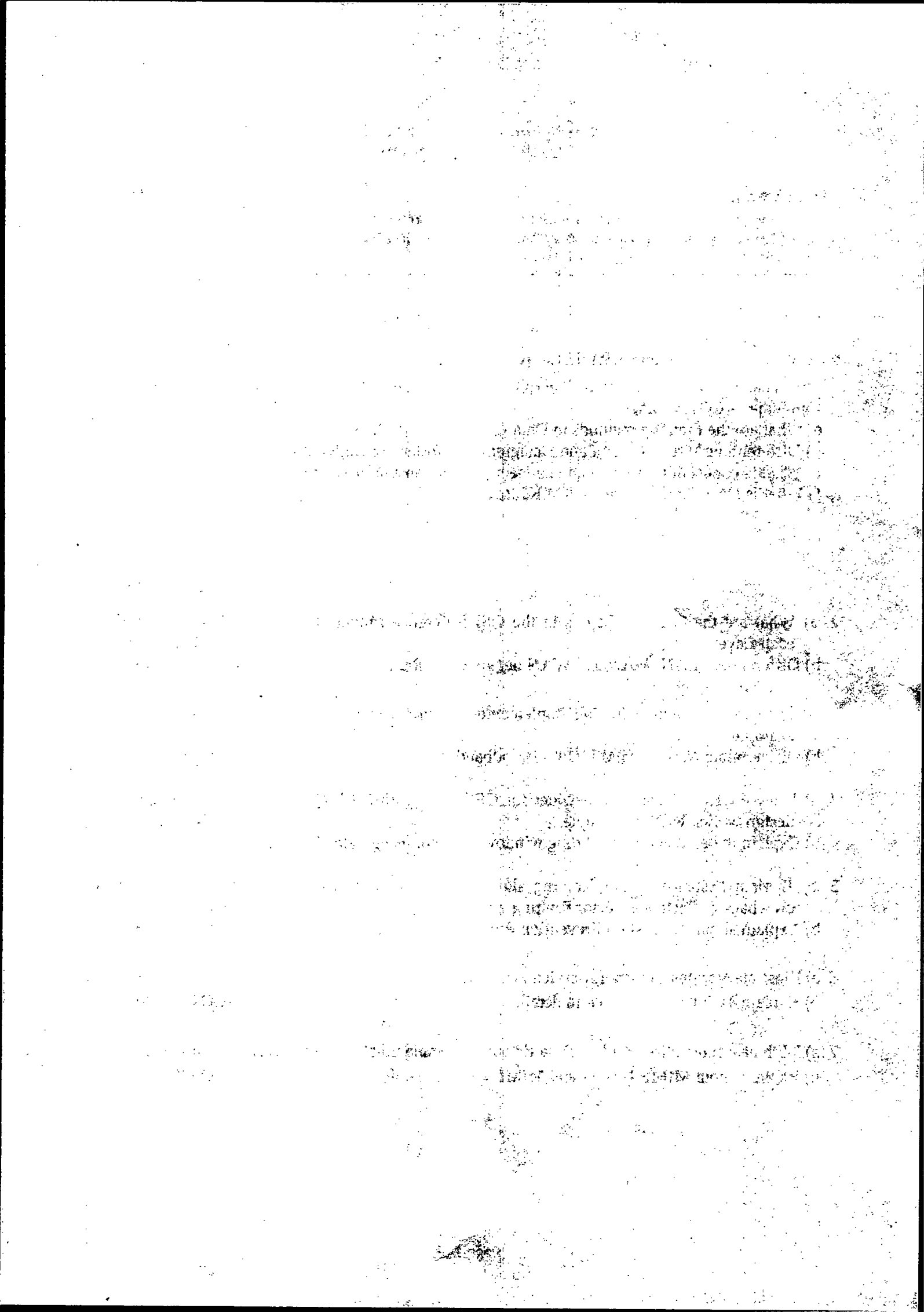
4. a) Draw a CRC encoder and decoder for CRC code with C (7, 4). Also explain how this CRC design works, with an example. [CO4,K2,6M]
   b) Explain in detail about the sliding window protocol using Selective Repeat. [CO4,K2,6M]

5. a) Explain Distance Vector Routing algorithm with a suitable example. What is the serious drawback of Distance Vector Routing algorithm? [CO5,K2,6M]
   b) Explain about Congestion Prevention Policies. [CO5,K2,6M]

6. a) Illustrate Various Transport Service Primitives. [CO5,K2,6M]
   b) Explain TCP Header Format in detail. [CO4,K2,6M]

7. a) With neat illustration Explain Data Encryption Standard algorithm (DES). [CO6,K3,6M]
   b) Explain about MIME Header and MIME types in detail. [CO6,K2,6M]

***



Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC4107

IV B.Tech I Semester Regular &Supple Examinations, January-2022

BIO MEDICAL INSTRUMENTATION

(ECE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Explain the importance of resting potential? [CO1,K2,2M]
   (b) List the electrodes used for EMG [CO2,K1,2M]
   (c) Explain Doppler Effect? [CO3,K2,2M]
   (d) Explain microwave diathermy [CO4,K2,2M]
   (e) Distinguish micro shock and macro shock [CO6,K2,2M]
   (f) List the methods of accident prevention [CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) How the various bioelectric potentials are measured? And list the some of the equipment's using such measurement [CO1,K1,6M]
   (b) Discuss briefly about the problems encountered in measuring a living system?[CO1,K2,6M]

3. (a) Discuss the primary characteristics of various typical bioelectric signals [CO2,K2,6M]
   (b) List and discuss briefly various types of electrodes for biomedical applications[CO2,K2,6M]

4. (a) Explain in detail about the blood pressure measurement by indirect method.[CO3,K2,6M]
   (b) Draw and explain the working principle of spirometer [CO3,K2,6M]

5. (a) Discuss the importance of state-of-art wearable patient monitoring displays over traditional monitoring equipment's. [CO4,K2,6M]
   (b) Draw and explain the calibration and repair ability of patient monitoring equipment system. [CO4,K2,6M]

6. (a) Compare the operating principle of ultrasonic diagnosis with X-ray diagnosis[CO5,K2,6M]
   (b) Describe the working principle of MRI scan with block diagram [CO5,K2,6M]

7. (a) Discuss the common causes of electrical accidents [CO6,K2,6M]
   (b) Explain about the Isolated Power Distribution system in ICU [CO6,K2,6M]

***

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC4110

IV B.Tech I Semester Regular&Supple Examinations, January-2022

RADAR SYSTEMS

(ECE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is maximum unambiguous range? [K1, CO1]
   (b) Calculate the Doppler frequency of an aircraft moving with a speed of 550 Knots and when the CW radar is working with λ=8cms. [K3, CO2]
   (c) What is Staggered PRF? [K1, CO3]
   (d) Give the principle operation of conical scan. [K3, CO4]
   (e) List out Salient features of Parabolic Reflector Antennas. [K1, CO5]
   (f) Write short notes on branch type duplexer [K1, CO6]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What is minimum detectable signal? Calculate minimum receivable signal in a radar receiver that has an IF bandwidth of 1.5 MHz and a 9-dB noise figure. [K3,CO1,6M]
   (b) Derive modified radar range equation. [K4,CO2,6M]

3. (a) Draw and explain CW radar with nonzero IF receiver [K2,CO2,6M]
   (b) List out the applications of CW radar [K1,CO2,6M]

4. (a) Explain bind speed and the methods for reducing the effects of blind speed. [K2,CO3,6M]
   (b) Explain the differences between MTI versus pulse Doppler radar. [K4,CO3,6M]

5. (a) Explain the principle of operation of phase comparison mono pulse tracking radar with a block diagram. [K4,CO4,6M]
   (b) Explain the following [K2,CO4,6M]
   (i) Amplitude fluctuations (ii) Receiver and servo noise

6. (a) Draw and explain the principle operation of Lens Antenna. [K2,CO5,6M]
   (b) What is meant by correlation? Explain cross correlation with the help of neat block diagram. [K4,CO5,6M]

7. (a) Draw and explain the architecture for Phased Arrays [K4,CO6,6M]
   (b) With neat diagrams explain branch and balanced type of duplexers. [K4,CO6,6M]

***

Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC41OE18

IV B.Tech I Semester Regular & Supple Examinations, January-2022

GLOBAL POSITIONING SYSTEM (OPEN ELECTIVE-III)

(ECE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is space segment constellation? [CO1,K1,2M]
   (b) What is toposoheric refraction. [CO2,K1,2M]
   (c) Explain differential GPS. [CO3,K2,2M]
   (d) What is smoothening of GPS data? [CO4,K1,2M]
   (e) What are global uses of GPS. [CO5,K1,2M]
   (f) What is ground based augmentation? [CO6,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain user categories and receiver types. (CO1,K2,6 M)
   (b) Explain ground control stations in detail. (CO1,K2,6 M)

3. (a) Explain GPS data acquisition in detail. (CO2,K2,6 M)
   (b) Explain multipath mathematical model and multipath reduction. (CO2,K2,6 M)

4. (a) Explain static point processing Vs kinematic point processing, static relative positioning Vs kinematic relative positioning. (CO3,K2,6 M)

   (b) Explain planning of GPS survey. (CO3,K2,6 M)

5. (a) Explain single base line versus multi point solution. (CO4,K2,6 M)
   (b) Explain cycle slip detection and repair. (CO4,K2,6 M)

6. (a) Explain interoperability of GPS with example. (CO5,K2,6 M)
   (b)Explain air borne GPS for photo control (CO5,K2,6 M)

7. (a) Explain future of GPS satellites. (CO6,K2,6 M)
   (b) What are hardware and software improvements needed in future GPS. (CO6,K1,6 M)

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CS4101

IV B.Tech I Semester Regular&Supple Examinations, January-2022

INTERNET OF THINGS

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Mention any two applications of IOT. (K1,CO1,2M)
   (b) List the essential components of IOT design. (K2,CO2,2M)
   (c) What is the role of Micro controller in design of IOT systems? (K1,CO3,2M)
   (d) Write the differences between Raspberry Pi and desktop computer.(K1,CO3,2M)
   (e) What is the use of Web Application Messaging Protocol(WAMP)? (K1,CO4,2M)
   (f) What is the role of sensors in home automation applications?(K1,CO2,2M)

PART-B

4 X 12 = 48

2. (a) What are the differences between M2M and IOT? Illustrate with an example. (K3,CO1,6M)
   (b) Briefly explain various characteristics of IOT.(K4,CO1,6M)

3. (a) Write short note on Functional view specification of an IOT system.(K2,CO26M)
   (b) Describe various steps involved in IOT design methodology.(K2,CO2,6M)

4. (a) What is Arduino? Explain (K2,CO3,6M)
   (b) What is System-on-Chip(SoC)? Explain.(K2,CO3,6M)

5. (a) What is *Raspberry PI* and how does it work?(K2,CO3,6M)
   (b) Why do we use *Raspberry PI* instead of *Arduino*? Give suitable justification.(K2,CO3,6M)

6. (a) Explain the process of using Xively platform in an IOT project in detail.(K2,CO4,6M)
   (b) Write short note on various Cloud Storage Models and Communication APIs.(K2,CO4,6M)

7. (a) What impact will the IOT has on Infrastructure and Smart Cities? Discuss.(K4,CO2,6M)
   (b) Design an IOT system to facilitate the stakeholders of Agriculture domain.(K4,CO2,6M)

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CS4102

IV B.Tech I Semester Regular&Supple Examinations, January-2022

BIG DATA ANALYTICS

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What happens in map phase and reduce phase of a Hadoop map reduce framework [CO2,K1,2M]

(b) How do you load data using spark [CO3,K1,2M]

(c) Write about linking with spark SQL. [CO4,K1,2M]

(d) what is Namenode and Datanode [CO1,K1,2M]

(e) What was Hadoop named after? [CO1,K1,2M]

(f) What is the purpose of Pig Latin scripting language [CO5,K1,2M]

PART-B

4 X 12 = 48

2. (a) Construct Architecture of Hadoop and explain each component in detail [CO1,K2,6M]

(b) Write about driver Code in Hadoop MapReduce. [CO2,K1,6M]

3. (a) Distinguish between the old and new versions of Hadoop API for map reduce framework. [CO2,K4,6M]

(b) Mention the configuration of Hadoop Cluster using Fully Distributed Mode in detail [CO1,K1,6M]

4. a) Explain the concept of RDD (Resilient Distributed Dataset) and state how you can create RDDs in Apache Spark. [CO3,K2,8M]

b) What are the main operations of RDD? [CO3,K1,4M]

5. (a) Name the components of Spark Ecosystem.[CO3,K1,8M]

(b) Explain how to minimize data transfers while working with Spark? [CO3,K2,4M]

6. (a) Compare and contrast Hadoop, Pig and Hive [CO5,K2,6M]

(b) List strengths and Weaknesses of each tool set [CO5,K4,6M]

7. Write a brief notes on local and distributed modes of running PIG Scripts. [CO5,K1,12M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CS4105

IV B.Tech I Semester Regular&Supple Examinations, January-2022

SOFTWARE TESTING METHODOLOGY

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Describe the need and goals of testing. [CO1,K2,2M]
(b) Define the process of verifying the code. [CO1,K1,2M]
(c) List out various metrics used for graph testing. [CO1,K1,2M]
(d) What is integration testing? [CO2,K1,2M]
(e) What do you mean by a test case? Give an example to it. [CO5,K1,2M]
(f) What are factors to be considered before automate testing? [CO5,K1,2M]

PART-B

2. (a) Explain the model of testing with neat sketch. [CO1,K2,6M]
(b) Draw and explain the life cycle of a testing in detail. [CO1,K2,6M]

3. (a) Differentiate verification & validation with a real time example. [CO3,K2,6M]
(b) Explain the process of conducting the black box testing. [CO2,K2,6M]

4. (a) Define & explain the process of path testing with an example. [CO3,K2,6M]
(b) How to go about selecting paths for testing? Explain with an example. [CO3,K1,6M]

5. How integration testing, system testing and acceptance testing are useful for validating the code. [CO3,K1,12M]

6. (a)Explain various metrics used for measuring the quality of a software. [CO4,K2,6M]
(b) Discuss need of minimizing the test suite along with its benefits. [CO4,K2,6M]

7. (a) Contrast automation and manual testing processes [CO5,K2,6M]
(b) Explain various guidelines for automation testing. [CO5,K2,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CS4110

IV B.Tech I Semester Regular & Supple Examinations, January-2022

MOBILE AD-HOC AND SENSOR NETWORKS

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) List the applications of MANET [K1,CO1,2M]
   (b) Write the Neighbour knowledge methods [K1,CO2,2M]
   (c) Define Partition in TCP [K1,CO3,2M]
   (d) Write the Advantages of WSNs over wired Networks [K1,CO4,2M]
   (e) Write the different types of channel allocation schemes [K1,CO4,2M]
   (f) List out the hardware and software components of a sensor node. [K1,CO5,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Explain the following routing protocols with neat sketch [K2,CO1,12M]
   (a) DSR
   (b) ZRP

3. (a) Explain the Broadcasting Strom with example [K2,CO2,6M]
   (b) Compare and Contrast Multicasting and Geocasting [K2,CO2,6M]

4. Discuss the solutions for TCP over ad hoc [K2,CO3,12M]

5. (a) Explain the regularly placed sensors [K2,CO4,6M]
   (b) Explain any two WSN applications [K2,CO4,6M]

6. Explain the following
   (a) Eaves-drop-And-Register [K2,CO4,6M]
   (b) Directed Diffusion [K2,CO4,6M]

7. (a) Explain the Sensor Network Hardware [K2,CO5,6M]
   (b) Discuss about Sensor Network Programming Challenges [K2,CO5,6M]

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC41OE9

IV B.Tech I Semester Regular & Supple Examinations, January-2022

CLOUD COMPUTING (OPEN ELECTIVE–II)

(CSE)

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define Network Virtualization. [CO1,K1,2M]
   (b) What is Cloud Computing? [CO2,K1,2M]
   (c) What is a Data Center? [CO3,K1,2M]
   (d) What is Disaster Recovery [CO5,K1,2M]
   (e) What is IaaS? [CO4,K1,2M]
   (f) List types of Cloud. [CO2,K1,2M]

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain how Service Oriented Architecture (SOA) is supported in cloud computing. [CO1,K2,6M]
   (b) What is a Virtual Machine? Discuss about Virtualization Middleware. [CO1,K2,6M]

3. (a) Briefly discuss about Cloud Infrastructure Models. [CO2,K2,6M]
   (b) Explain about Cloud Application Architecture. [CO2,K2,6M]

4. (a) Explain about Shift to a Cloud Cost Model. [CO3,K2,6M]
   (b) Explain Service Levels for Cloud Applications [CO3,K2,6M]

5. (a) Discuss about Machine Image Design [CO3,K2,6M]
   (b) How data security is implemented in Cloud Computing.[CO3,K4,6M]

6. (a) Explain Storage-as-Service [CO4,K2,6M]
   (b) Explain Platform-as-Service [CO4,K2,6M]

7. (a) Explain Disaster Recovery Planning. [CO5,K2,6M]
   (b) Discuss about Cloud Centers in detail.[CO5,K2,6M]

***