NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

(R16) IV B.TECH I SEMESTER ADVANCED SUPPLE END EXAMINATIONS JUNE - 2022

TIME TABLE

TIMINGS : 1.00 PM TO 4.00 PM

BRANCH	02.06.2022	03.06.2022	04.06.2022	06.06.2022	07.06.2022	08.06.2022
CIVIL ENGINEERING (01- CE)	ESTIMATION COSTING AND VALUATION (R16CE4101)	ENVIRONMENTAL ENGINEERING-II (R16CE4102)	CONSTRUCTION TECHNOLOGY AND MANAGEMENT (R16CE4103)	OPEN CHANNEL HYDRAULICS (R16CE4108)	PHOTOGRAMMETRY AND REMOTE SENSING (R16CE4114) / BRIDGE ENGINEERING (R16CE4116)	WATER SHED MANAGEMENT (R16CC410E22)
ELECTRICAL AND ELECTRONICS ENGINEERING (02 - EEE)	POWER SYSTEM OPERATION AND CONTROL (R16EE4101)	SWITCHGEAR AND PROTECTION (R16EE4102)	UTILIZATION OF ELECTRICAL ENERGY (R16EE4103)	POWER QUALITY (R16EE4107)	PLC AND AUTOMATION (R16EE4109) no student?	INTERNET OF THINGS (R16CC410E7) / WEB TECHNOLOGIES (R16CC410E8)
MECHANICAL ENGINEERING (03 - ME)	FINITE ELEMENT METHODS (R16ME4101)	CAD/CAM (R16ME4102)	ADVANCED MANUFACTURING PROCESSES (R16ME4103)	POWER PLANT ENGINEERING (R16ME4104)	PRODUCTION PLANNING AND CONTROL (R16ME4111)	ROBOTICS (R16CC410E14)
ELECTRONICS AND COMMUNICATION ENGINEERING (04 - ECE)	OBJECT ORIENTED PROGRAMMING THROUGH JAVA (R16EC4101)	MICROCONTROLLERS AND EMBEDDED SYSTEMS (R16EC4102)	COMPUTER NETWORKS (R16EC4103)	BIO MEDICAL INSTRUMENTATION (R16EC4107)	RADAR SYSTEMS (R16EC4110)	GLOBAL POSITIONING SYSTEM (R16CC410E18)
COMPUTER SCIENCE AND ENGINEERING (05 - CSE)	INTERNET OF THINGS (R16CS4101)	BIG DATA ANALYTICS (R16CS4102)	SOFTWARE TESTING METHODOLOGY (R16CS4105)	MOBILE AD-HOC AND SENSOR NETWORKS (R16CS4110)	CLOUD COMPUTING (R16CC410E9)	-----

NOTE:

i. ANY OMISSION OR CLASHES IN THIS TIME TABLE MAY PLEASE BE INFORMED TO THE CONTROLLER OF EXAMINATIONS, IMMEDIATELY.

ii. EVEN IF GOVERNMENT DECLARES HOLIDAY ON ANY OF THE ABOVE DATES,THE EXAMINATIONS SHALL BE CONDUCTED AS USUAL.

iii. THE HODs ARE REQUESTED TO INFORM THE EXAMINATION SECTION (AUTONOMOUS) ANY OTHER SUBSTITUTE SUBJECTS THAT ARE NOT INCLUDED IN THE ABOVE LIST IMMEDIATELY.

CHIEF CONTROLLER OF EXAMINATIONS

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

Subject Code: R16CE4101

IV B.Tech I Semester Adv. Supple Examinations, June-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) Earnest Money and Security Deposit [CO4, K1,2M]

(b) What is sinking fund ? [CO4, K1,2M]

(c) Define standard schedule of rates. [CO4, K1,2M]

(d) Write the differences between depreciation and obsolescence. [CO4, K2,2M]

(e) What is lead and lift? [CO2, K1,2M]

(f) What is contract? Explain it [CO4, K1,2M]

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

PART-B

4 X 12 = 48

2. (a) List out various types of estimate, which is the more accurate. [CO1, K2,6M]

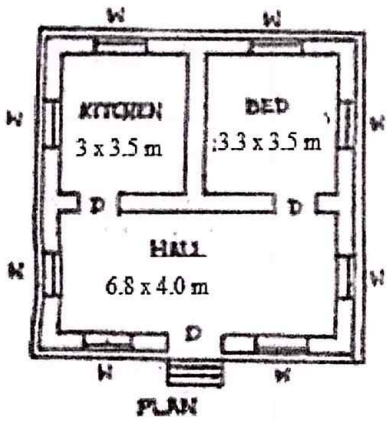
(b) Explain briefly the relevance of approximate method of estimate. [CO1, K2,6M]

3. For the shown building in Fig.1 Estimate the following Quintiles by using center line method.

i). Earth Work Excavation for foundation.

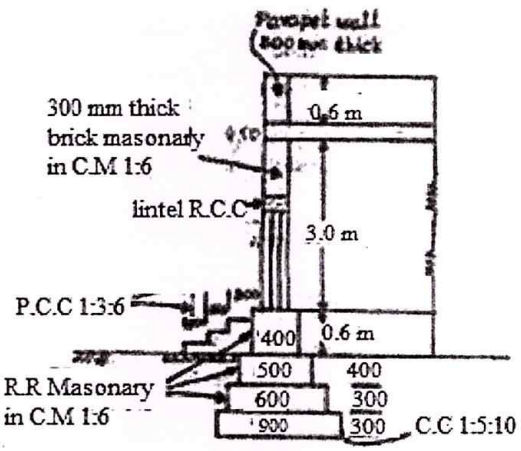
ii) .R.R.Masonry in C.M (1:6) for footings.

iii) Brick Masonry with C.M (1:6) for Super Structure. [CO2, K3,12M]



Building

Door: D - 1.2 m x 2.1 m
Window : W - 1.0 m x 1.2 m



Section

Fig.1

4. Estimate the quantity of earthwork in cutting for a road of 10 m formation width the following data using mean sectional area method or trapezoidal formula method. Side slope is 2:1 (H:V) and no cross slope. [CO2, K3,12M]

Chainage (meters)	0	30	60	90	120	150
Ground Level	80.50	79.30	81.40	84.00	85.10	83.50
Formation Level	70.00	Rising gradient of 1 in 30				

5. (a) What is the necessity of specification? Write down specifications for a first class building. [CO3, K2,6M]

(b) Write the detailed specifications for damp proof course (2.5 cm thick) C.C 1:2: 4 [CO3, K2,6M]

6. (a) What is the purpose of rate analysis? [CO4, K1,4M]

(b) Prepare the unit rate for R.C.C (1:2:4) by using 20 mm aggregate including Labour & Materials but excluding steel. Take unit=1m^3 and 1m^3 20 mm Aggregate = Rs.1800/-, 1m^3 Sand= Rs.950/- Cement 1 bag(50 kg)= 450/-; Labour Charges for 1m^3 of R.C.C = Rs.950/-[CO4, K3,8M] [8]

7. (a) Briefly explain the terms i) Tender ii) Tender Notice & iii) Tender Schedule [CO4, K2,6M]

(b) Write about i)Plinth area ii) Floor Area & iii) Carpet area [CO4, K2,6M]

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

Subject Code: R16ME4101

IV B.Tech I Semester Adv. Supple Examinations, June-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 shape function? Give its practical importance. [CO1, K2,2M]

(b) Write the stiffness matrix for 1-d element with linear interpolation functions [CO2, K2,2M]

(c) What are the differences between plane truss and space truss? [CO3, K2,2M]

(d) Define iso-parametric elements [CO4, K2,2M]

(e) Express the stiffness matrix for a 1-D conduction problem [CO5, K2,2M]

(f) What are the practical importance of Eigen values and Eigen Vectors? [CO6, K2,2M]

PART-B

4 X 12 = 48

2. (a) A rod fixed at its ends is subjected to a varying body force as shown in Figure.1. Use the Rayleigh-ritz method with an assumed displacement field $u=a_0+a_1x+a_2x^2$ to determine displacement u(x) and stress σ(x). Assume = I unit and A=1 unit [CO1, K4,6M]

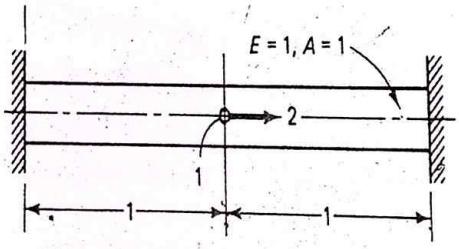

Figure.1

(b) Write the Potential function for a continuum under all possible loads and indicate all the variables involved. Also express the total potential of general finite element in terms of nodal displacements. [CO1, K3,6M]

3. (a) Briefly discuss the penalty approach while handing boundary conditions in FEA?[CO2, K4,4M]

(b) A bar as shown fig.2, subjected to an axial load of P = 5000KN, A_1= 2500mm^2, A_2= 900mm^2, E =100Gpa, L_1=500mm and L_2=300mm. The gap between the bar and rigid support is 10 microns. Find the stresses in the members. [CO2, K4,8M]

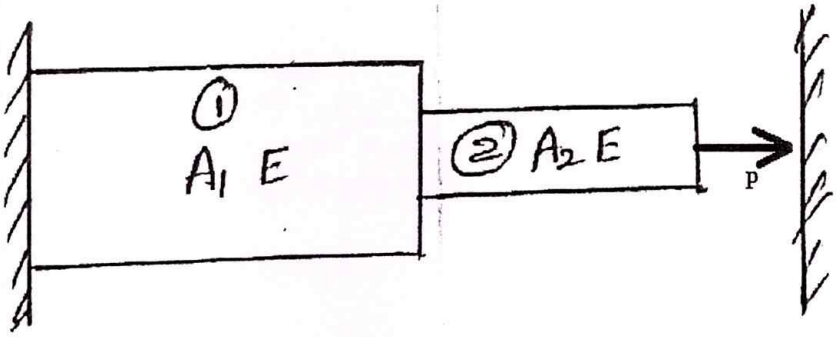

Figure 2

4. For the truss shown in figure 3, establish the element stiffness matrices and assemble the global stiffness matrix for the active degrees of freedom and determine a) Nodal displacements b) Stress in the members and c) The reaction at the roller support, Take E= 100 Gpa. Area of c/section = 100 mm^2 Length = 100 cm, P = 100 kN [CO3, K5,12M]

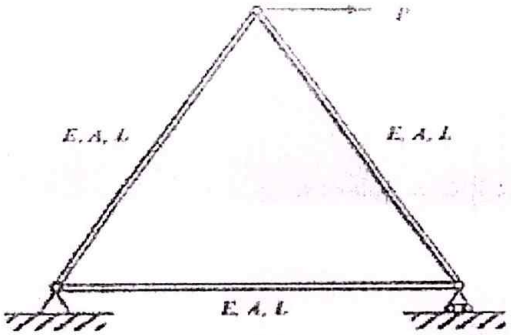

Figure 3

5. (a) Derive the B Matrix (relating strains and nodal displacements) for an iso-parametric triangular element with linear interpolation for the geometry as well as field variables. [CO4, K4,6M]
(b) For point P located inside the triangle shown in the figure.4 below the shape functions N_1 and N_2 are 0.15 and 0.25, respectively. Determine the x and y coordinates of point P. [CO4, K4,6M]

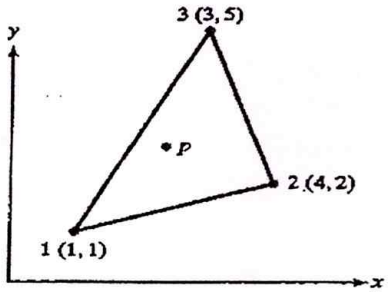

Figure. 4

6. Find the temperature distribution in the one-dimensional fin shown in Figure 5 below using two finite elements. [CO5, K4,12M]

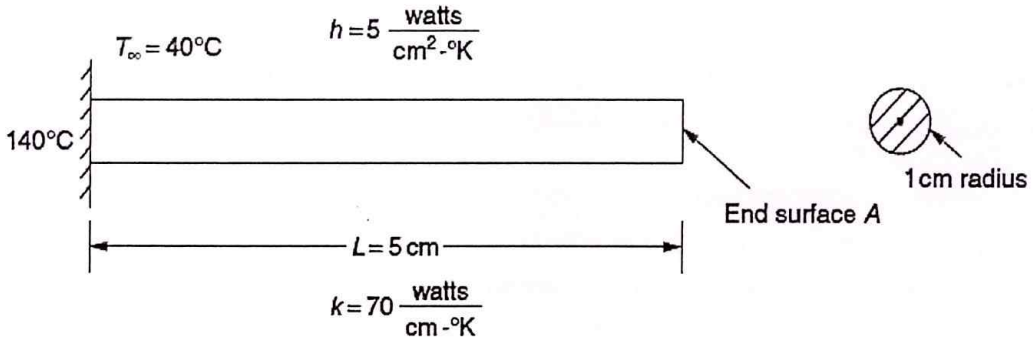

Figure 5

7. A bar of length 1 m; cross sectional area 100 mm^2; density of 7 gm/cc and Young's modulus 200 Gpa is fixed at both the ends. Consider the bar as three bar elements and determine the first two natural frequencies and the corresponding mode shapes. Discuss on the accuracy of the obtained solution. [CO6, K5,12M]

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

Subject Code: R16EC4102

IV B.Tech I Semester Adv. Supple Examinations, June-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)What are the alternate functions of 8051 microcontroller. **[CO1,K2,2M]**

(b)If the crystal frequency of 8051 is 16MHz, then find the time to execute a machine cycle instruction. **[CO2,K3,2M]**

(c)Estimate the content of r0 after execution of following instruction? (Assume: r0=0x00000001, r1=0x00000001) MOV r0, r1, LSL#2. **[CO2,K3,2M]**

(d) Write any two examples of embedded systems you have used today. **[CO3,K1,2M]**

(e) Explain the purpose of Watchdog Timer. **[CO4,K2,2M]**

(f) Distinguish between preemptive and non-preemptive RTOS. **[CO6,K2,2M]**

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

PART-B

4 × 12 = 48

2. (a) Illustrate the addressing modes of 8051 with suitable examples. **[CO1,K2,6M]**

(b) The 8051 RAM contents are given in the following figure. Assume A=05H, B=01H and register Bank 1 is selected. Find the output for following and explain where it will be stored. **[CO1,K3,6M]**

22H	08H
21H	04H
20H	80H
.	.
.	.
.	
14H	50H
13H	20H
12H	11H
11H	13H
10H	15H
0FH	00H
0EH	20H
0DH	02H
0CH	08H
0BH	09H
0AH	0AH
09H	00H
08H	01H
07H	02H
06H	03H
05H	04H
04H	05H
03H	06H
02H	07H
01H	08H
00H	09H
address	

3. (a) List out and explain the LED and LCD interface of 8051 **[CO2,K2,6M]**
(b) Interface DAC with 8051 and write a program to generate a symmetrical square wave. **[CO2,K3,6M]**

4. (a) What do the following ARM instructions mean and what is accomplished? **[CO3,K3,6M]**
   i. TEST R1, R3
   ii. MOVGT R2, R5
   iii. ADDLT R5, R6, R7
   iv. ANDEQ R1, R2, R4
   v. CMP R1, R2
   vi. SUBNE R1, R2, R7

   (b) Write an ALP for ARM processor to compute the following expression: 4X-3Y+9Z, where X=2, Y=2 and Z=4. **[CO3,K3,6M]**

5. (a) Classify the embedded systems based on performance of microcontroller. **[CO4,K2,6M]**
   (b) Whether laptop is an embedded system, justify your answer. **[CO5,K2,6M]**

6. (a) Briefly give details of various hardware components required to build an embedded systems. **[CO4,K2,6M]**

   (b) Describe various Embedded Firmware design approaches. **[CO5,K2,6M]**

7. (a) Explain how do the semaphores overcome the shred data problem. Also explain the limitations in semaphores and their remedies. **[CO6,K2,6M]**
   (b) Discuss about inter task communication techniques in RTOS. **[CO5,K2,6M]**

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Subject Code: R16CE4102

IV B.Tech I Semester Adv. Supple Examinations, June-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) What are the different types of sewerage system? [CO1,K1,2M]
   (b) Explain the meaning and significance of time of concentration? [CO2,K2,2M]
   (c) Why grit chambers are provided in sewage treatment process? [CO1,K1,2M]
   (d) When is inverted syphon provided in sewerage system. [CO1,K1,2M]
   (e) Give the characteristics of solid waste. [CO5,K1,2M]
   (f) List any four types of traps.[CO5,K1,2M]

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

PART-B

4 X 12 = 48

2. (a) Explain the different types of sewerage systems with their suitability. **[CO1,K2,5M]**
   (b) A town has a population of one lakh with a per capita average sewage flow of 300 lpcd. Design the sewer running 0.6 times full depth at peak discharge. The sewer is to be laid at a slope of 1 in 625. Take Manning's N as 0.013 and peak factor as 3. **[CO1,K3,7M]**

3. (a) Differentiate between conservancy system and water carriage system. **[CO2,K2,5M]**
   (b) The BOD of a sewage incubated for one day at 30^0C has been found to be 100 mg/l. What will be the 5-day 20^0C BOD. Assume BOD rate K` as 0.21 d^{-1} at 20^0C (base e).**[CO2,K3,7M]**

4. (a) Design a high rate trickling filter from the following data. **[CO4,K3,7M]**
   Design flow: 40 MLD Recirculation ratio: 1.5
   BOD of raw sewage: 250mg/l Desirable effluent BOD: 20 mg/l
   (b) Explain with a neat sketch the principle and process working of an oxidation pond. **[CO4,K2,5M]**

5. (a) Explain with a neat sketch, working of a deep manhole. **[CO5,K2,6M]**
   (b) Explain the use of gutters in sewerage system. **[CO5,K2,6M]**

6. (a) Discuss with one example each for reuse and recycle of waste-water. **[CO4,K2,4M]**
   (b) Elaborate the engineered system for integrated solid waste management. **[CO4,K2,8M]**

7. (a) Explain the various systems of sanitary plumbing and write down the main characteristics of each system. **[CO3,K2,9M]**
   (b) Mention the classification of traps according to use. **[CO5,K2,3M]**

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

Subject Code: R16CE4103

IV B.Tech I Semester Adv. Supple Examinations, June-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 is slack in CPM? (CO1, K1,2M)
   (b) Can critical path have float? (CO2, K1,2M)
   (c) How do you calculate total project cost? (CO3, K1,2M)
   (d)What is NBC code? (CO4, K1,2M)
   (e) What are ISO-9000 standards? (CO4, K1,2M)
   (f) What do you the bulldozers are doing? (CO5, K1,2M)

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

PART-B

4 X 12 = 48

2. (a) Explain why planning is necessary? Describe various steps for planning a project. [CO1,K2,6M]
   (b) Distinguish between CPM and PERT networks in planning different works and times pertaining to a major construction project [CO1,K2,6M]

3. (a) Discuss in detail about start and finish time estimates [CO1,K2,6M]
   (b) Explain critical path and sub critical path [CO1,K2,6M]

4. What do you understand by direct cost and indirect cost? Enumerate steps for optimization of cost [CO2,K2,12M]

5. (a) Write short notes on green technologies [CO3,K1,6M]
   (b) Discuss ABC analysis for materials management [CO3,K2,6M]

6. (a) What do you understand by Quality Control in Construction industry? How it helps in good quality of workmanship. [CO4,K1,6M]
   (b)Explain causes and prevention of accidents at construction site [CO4,K2,6M]

7. (a) Explain the important economical consideration required for construction equipments [CO5,K2,6M]

   (b) Highlight and explain the various factors governing the selection of earthmoving equipment [CO5,K2,6M]

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CE4108

IV B.Tech I Semester Adv. Supple Examinations, June-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) Differentiate open channel flow and pipe flow. [CO1,K2,2M]
   (b) What does critical depth mean?[CO2,K1,2M]
   (c) What is hydraulic surge?[CO3,K1,2M]
   (d) Why draft tube is necessary in the case of reaction turbines?[CO4,K1,2M]
   (e) What is meant by multi stage centrifugal pump?[CO5,K1,2M]
   (f) What does Darcy's law state[CO6,K1,2M]

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

PART-B

4 X 12 = 48

2. (a) A trapezoidal channel has slopes of 1 horizontal to 2 vertical and the slope of the bed is 1 in 1500. The area of the section is $40m^2$. Find the dimensions of the section if it is most economical. Determine the discharge of the most economical section if C=50 [CO1,K3,6M]
   (b) State and Explain Chezy's and Manning's Formulas for open channel flows.[CO1,K2,6M]

3. (a) Derive the differential equation for steady gradually varied flow open channels and list all assumptions. [CO2,K3,6M]
   (b) Briefly explain the direct step method and standard step method to determine the gradually varied flow profiles. [CO2,K3,6M]

4. (a) A hydraulic jump occurs in horizontal rectangular channel with sequent depths of 0.25m and 4.9 m. Calculate the rate of flow per unit width, energy loss and initial Froude number. [CO3,K3,6M]
   (b) What is rapidly varied flow? Derive the expression for energy dissipation in a hydraulic jump formation. [CO3,K3,6M]

5. (a) Explain with neat diagram the working of a Kaplan Turbine [CO4,K2,6M]
   (b) A Francis turbine working under a head of 5 m at a speed of 210 rpm develops 75 KW when the rate of flow of water is 1.8 m^3/sec. If the head is increased to 16 m, determine the speed, discharge and power.[CO4,K3,6M]

6. (a) Discuss the construction details and working principles of a reciprocating pump [CO5,K2,6M]
   (b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 rpm against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Estimate the vane length at the outer periphery of the impeller.[CO5,K3,6M]

7. (a) What is flow net. State its properties and applications [CO6,K2,6M]
   (b) Differentiate confined aquifer and unconfined aquifer[CO6,K2,6M]

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Subject Code: R16CE4114

IV B.Tech I Semester Adv. Supple Examinations, June-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) Define the term Stereoscopy **[CO1,K1,2M]**
   (b) How would you define the ortho rectification? **[CO2,K1,2M]**
   (c) What is meant by parallax?**[CO1,K2,2M]**
   (d) Explain the significance of atmospheric window?**[CO3,K2,2M]**
   (e) What is meant by platform? Classify them?**[CO3,K1,2M]**
   (f) What is meant by geometric correction?**[CO1,K1,2M]**

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

PART-B

4 X 12 = 48

2. (a) Explain the overlap in aerial photography. Enumerate the reasons for overlap in aerial Photogrammetry? **[CO1,K2,6M]**
   (b) Derive an expression for scale of vertical photograph over a flat terrain with figure? **[CO2,K3,6M]**
3. (a) What is meant by Aero-triangulation? Explain briefly about it's elements and principles? **[CO3,K2,6M]**
   (b) Explain about collinearity conditions with a figure?**[CO3,K2,6M]**
4. (a) Explain with diagrammatic representation about operation of Lens stereo scope and Mirror Stereo scope. **[CO3,K2,6M]**
   (b) Explain the geometry of tilted Aerial Photographs with figure? **[CO3,K2,6M]**
5. (a) Classify scattering and explain them with figures. **[CO1,K2,6M]**
   (b) What is meant by resolution? Explain about Spectral, Temporal and Radiometric resolutions? **[CO1,K2,6M]**
6. (a) Explain the salient aspects of ResourceSat-1(IRS-P6) and Cartosat-2 (IRS-P7) missions. **[CO1,K2,6M]**
   (b) Explain the following data formats with figures**[CO1,K2,6M]**
   i) Band Interleaved by Pixel (BIP) and ii) Band Interleaved by Line (BIL)
7. (a) What is the significance of image enhancement? Explain briefly about Nonlinear Contrast Enhancement techniques with a neat sketch **[CO3,K2,6M]**
   (b) Explain the objective and procedure of unsupervised classification?**[CO3,K2,6M]**

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Subject Code: R16CC41OE22

IV B.Tech I Semester Adv. Supple Examinations, June-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) Explain concept of watershed? [CO1,K1,2M]
   b) Write objectives of watershed development[CO1,K1,2M]
   c) Explain the universal soil loss equation[CO3,K1,2M]
   d) Write the difference b/w dam and check dam.[CO2,K1,2M]
   e) Write the different objectives of Land capability classification.[CO1,K1,2M]
   f) Role of Decision Support System. [CO1,K1,2M]

PART-B

4 X 12 = 48

2. a) Explain the Integrated and multidisciplinary approach for watershed management. [CO2,K2,6M]
   b) Explain various factors that deteriorate the watershed [CO2,K2,6M]

3. a) What type of basic data need on watersheds [CO1,K1,6M]
   b) Explain in detail Physiographic characteristics and Climatic characteristics of watershed. [CO1,K2,6M]

4. a) List out the climatic factors that influence the Erosion [CO2,K1,6M]
   b) Explain in detail various erosion control measures. [CO2,K2,6M]

5. a) Explain in detail about different water harvesting structures [CO3,K2,6M]
   b) What is the difference between catchment harvesting and rain water harvesting [CO3,K1,6M]

6. a) What is meant by Reclamation of saline and alkaline soils. [CO4,K1,6M]
   b) Explain briefly about the Land use and Land capability classification [CO3,K2,6M]

7. Explain the applications of Geographical Information System in watershed management[CO4,K2,12M]

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

Subject Code: R16EE4101

IV B.Tech I Semester Adv. Supple Examinations, June-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 are the assumptions considered in deriving the transmission loss expression? [CO1, K1,2M]
   (b) Write the objective function expression of hydro-thermal scheduling problem along with Constraint equations. [CO2, K1,2M]
   (c) Compare the unit commitment problem with economic load dispatch. [CO3, K2,2M]
   (d) What is the necessity for maintaining frequency constant in the power system? [CO4, K1,2M]
   (e) What is the difference of ACE in single-area and two-area power systems? [CO5, K1,2M]
   (f) What are the specifications of load compensation?[CO6, K1,2M]

PART-B

4 X 12 = 48

2. (a) Explain the important characteristics of a Steam unit. [CO1, K2,6M]
   (b) The fuel cost in \$/hr of three thermal plants of a power system are $C_1=200+7.0P_1+0.008P_1^2$ \$/hr $C_2=180+6.3P_2+0.009P_2^2 \$/hr$ $C_3=140+6.8P_3+0.007P_3^2 \$/hr$ Where P_1, P_2, P_3 are in MW. Plant outputs are subjected to following limits 10 MW $\leq P_1 \leq$ 85 MW , 10 MW $\leq P_2 \leq$ 80 MW, 10 MW $\leq P_3 \leq$ 70 MW .

The real power loss is assumed as $P_{L(pu)}=0.0218P_{1(pu)}^2+0.0228P_{2(pu)}^2+0.0179P_{3(pu)}^2$ on a 100 MVA base. Determine the optimal dispatch of generation when the total system load is 150 MW. [CO1, K3,6M]

3. Explain the importance of hydro-thermal coordination and derive the mathematical formulation of long-term hydro-thermal scheduling. [CO2, K2,12M]
4. (a) Using the dynamic programming method, how do you find the most economical combination of the units to meet a particular load demand? [CO3, K3,6M]
   (b) Explain the need of an optimal unit commitment problem. [CO3, K2,6M]
5. (a) For a single-area system, show that the static error in frequency can be reduced to zero using frequency control and comment on the dynamic response of an uncontrolled system with necessary equations. [CO4, K3,6M]
   (b) A 1000 MW control area 1 is interconnected with a 5000 MW control area 2. The 1000MW area has the system parameters: R = 2Hz/pu MW, B = 0.01 pu MW/Hz and increase in load, ΔP_{D1}= 0.01 pu MW. Area 2 has the same parameters R and B but in terms of the 5000 MW base. Find the static frequency drop. [CO4, K3,6M]
6. (a) Two control areas of 1,000 and 2,000 MW capacities are interconnected by a tie line. The speed regulations of the two areas are 4 Hz/pu MW and 2.5 Hz/pu MW respectively. Consider a 2% change in frequency in each area. Find steady-state change in frequency and tie-line power of 10 MW change in load occurs in both areas. [CO5, K3,8M]
   (b) Draw the block diagram for a two-area LFC with integral controller blocks and explain each block. [CO5, K2,4M]
7. (a) Compare the different types of compensating equipment for transmission systems. [CO6, K2,6M]
   (b) Explain the effects on uncompensated line under no-load and load conditions. [CO6, K2,6M]

Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16EE4102

IV B.Tech I Semester Adv. Supple Examinations, June-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) If L and C are 4mH and 0.001 μF respectively, a current chop of magnitude 50 A then what would be the magnitude of induced voltage? [CO1,K3,2M]

(b) Sketch a typical time/P.S.M. curve. [CO2,K2,2M]

(c) Why is overload protection not necessary for alternators? [CO3,K2,2M]

(d) Compare Grounded and Ungrounded Neutral Systems. [CO4,K1,2M]

(e) What factors govern choosing pilot-wire installation? [CO5,K1,2M]

(f) Differentiate Mho & offset Mho. [CO6,K2,2M]

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

PART-B

4 X 12 = 48

2. (a) Discuss the principle of operation of an air-blast circuit breaker. What are the advantages and disadvantages of using air as the arc quenching medium? [CO1,K2,8M]

(b) In a short circuit test on a circuit breaker, the following readings were obtained on single frequency transient : [CO1,K3,4M]

i. time to reach the peak re-striking voltage, 50 μ sec

ii. the peak re-striking voltage, 100 kV

Determine the average RRRV and frequency of oscillations.

3. (a) Describe the construction and principle of operation of an induction type directional overcurrent relay. [CO2,K2,6M]

(b) Derive the equation for torque developed in an induction relay. [CO2,K3,6M]

4. (a) Illustrate the application of Merz-Price circulating current principle for the protection of alternator. [CO3,K2,6M]

(b) What factors cause difficulty in applying circulating current principle to a power transformer? Brief the remedial measures to overcome that difficulty. [CO3,K2,6M]

5. (a) Discuss the time-graded overcurrent protection for [CO4,K2,6M]

i. Radial feeders

ii. Parallel feeders

iii. Ring main system

(b) Brief about the distance protection scheme for the protection of feeders.[CO4,K2,6M]

6. (a) Describe in detail about the various methods of overvoltage protection of overhead transmission lines.[CO5,K2,6M]

(b) Why neutral grounding is provided and compare different types of neutral grounding?[CO5,K2,6M]

7. (a) Narrate the performance of Microprocessor based distance relays. [CO6,K2,6M]

(b) Compare Static Relays and Electromagnetic Relays. [CO6,K2,6M]

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Subject Code: R16EE4103

IV B.Tech I Semester Adv. Supple Examinations, June-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) Why flywheels are employed in industrial motors? [CO1,K1,2M]
   (b) List the different types of electrodes used in Arc furnaces.[CO2,K1,2M]
   (c) Define Illumination and Luminous intensity.[CO3,K1,2M]
   (d) List the requirements of good lighting.[CO4,K1,2M]
   (e) Write different supply systems used in Electric traction[CO5,K1,2M]
   (f) What is the difference between dead weight and adhesive weight of a locomotive? [CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) State the important factors on which the selection of Electric Drives depends? **[CO1,K1,6M]**
   (b) Explain how Electric drives are classified and illustrate them with their relative merits and demerits. **[CO1,K2,6M]**

3. (a) What is Dielectric heating? Explain the principle of dielectric heating. Give its advantages and Applications. **[CO2,K2,6M]**
   (b) List and explain the different methods of Electric Welding in brief. **[CO2,K2,6M]**

4. (a) Explain the laws of Illumination. **[CO3,K2,6M]**
   (b) Explain the working of High pressure mercury vapour lamp with neat diagram. **[CO3,K2,6M]**

5. Write a short note on the following: **[CO4,K2,12M]**
   (a) Flood lighting
   (b) Street lighting
   (c) LED lighting

6. (a) Explain typical speed-time curves of different services used in Electric traction. **[CO5,K2,6M]**
   (b) A train has a schedule speed of 30 kmph over a level track, distance between stations being 1 km. Station stopping time is 20 s. Assuming braking retardation of 3 kmphps, and maximum speed 25% greater than average speed, calculate acceleration to run the service. **[CO5,K3,6M]**

7. (a) Explain the tractive effort for Propulsion of train and on what factors does it depend. **[CO6,K2,6M]**
   b) What Is specific Energy Consumption(SEC). Explain the factors that affect SEC **[CO6,K2,6M]**

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16EE4107

IV B.Tech I Semester Adv. Supple Examinations, June-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) Differentiate power quality and voltage quality?[CO1,K2,2M]
   (b)What is meant by interruption? [CO2,K2,2M]
   (c)Define the term Distortion factor? [CO3,K1,2M]
   (d)Explain passive filters?[CO4,K2,2M]
   (e)Write different conflicts on impact of DG?[CO5,K2,2M]
   (f)Write about application of Intelligent systems for power quality? [CO6,K2,2M]

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

PART-B

4 X 12 = 48

2. (a)Explain about long duration and short duration voltage variations? **[CO1,K2,6M]**
   (b) Explain different modes of waveform distortion? **[CO1,K2,6M]**

3. (a) Explain different sources of voltage sags and interruptions? **[CO2,K2,6M]**
   (b)Explain about different devices for over voltage protection? **[CO2,K2,6M]**

4. (a) Explain flicker and write about power factor penality? **[CO3,K2,6M]**
   (b) Explain different devices for voltage regulation? **[CO3,K2,6M]**

5. (a) Write different sources of harmonics? **[CO4,K2,6M]**
   (b) Describe briefly voltage distortion and current distortion? **[CO4,K2,6M]**

6. Briefly explain different types of DG technologies? **[CO5,K2,12M]**

7. (a) Explain various power quality monitoring standards? **[CO6,K2,6M]**
   (b) Explain Historical perspective of PG measuring instruments? **[CO6,K2,6M]**

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CC41OE7

IV B.Tech I Semester Adv. Supple Examinations, June-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) Define IoT? [CO1,K1,2M]
   (b) List out the IoT components?[CO1,K1,2M]
   (c) Explain about SOC?[CO1,K2,2M]
   (d) What is the importance of Rasberry Pi in IoT?[CO4,K1,2M]
   (e) List out the IoT physical servers?[CO4,K1,2M]
   (f) Mention the applications of IoT?[CO3,K1,2M]

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

PART-B

4 X 12 = 48

2. (a) Discuss the Characteristics & Physical Design of IoT? [CO1,K2,6M]
   (b) What are the elements of one M2M IoT?[CO1,K1,6M]

3. (a) Explain about Device & Component Integration and Application Development in IoT? [CO2,K2,6M]
   (b) Discuss Domain Model Specification?[CO2,K2,6M]

4. (a) With a neat diagram, explain how actuators and sensors interact with physical world? [CO3,K2,6M]
   (b) Explain IDE in Arduino Board?[CO3,K2,6M]

5. Discuss the following topics for prototyping of embedded system with Raspberry Pi: [CO4,K2,12M]
   i. Cases & extension board
   ii. Operating system
   iii. Programming language & debugging

6. Explain cloud storage models & communications APIs & WAMP in IoT?[CO4,K2,12M]

7. Provide the solutions with IoT by addressing following Sectors:[CO4,K2,12M]
   i. Agriculture
   ii. Smart city

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16ME4102

IV B.Tech I Semester Adv.Supple Examinations, June-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 is the Structure of a computing system? [CO1,K1,2M]
	(b)	Explain Boundary representation modelling. [CO2,K2,2M]
	(c)	Enumerate the sweep technique for 3D geometric constructions [CO3,K1,2M]
	(d)	List the different types of Machining center. [CO4,K1,2M]
	(e)	What are the various languages used in GT? [CO5,K1,2M]
	(f)	Describe the Flexible manufacturing system. [CO6,K1,2M]

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

PART-B

4 X 12 = 48

2.	a)	What do you understand by Geometric transformation? Explain any three common transformations used in computer graphics. [CO1,K1,6M]
	b)	Discuss various CAD input devices with suitable diagrams. [CO1,K2,6M]
3.	a)	What is meant by a Geometric Entity? Explain the common entities used in Geometric Modelling.[CO2,K2,6M]
	b)	Develop a general form of Bezier curve for the control points given by (0, 2), (2, 3), (3, 2) and (3, 0). [CO2,K3,6M]
4.		Describe at least two editing and solid modelling commands. [CO3,K2,12M]
5.	a)	What are the basic components of NC system and explain the function of each component [CO4,K2,6M]
	b)	Discuss any three motion statements used in APT part programming [CO4,K2,6M]
6.	a)	What are the various hierarchical structure used in GT applications? [CO5,K1,6M]
	b)	Explain about production flow analysis[CO5,K2,6M]
7.	a)	What are the different types of manufacturing systems? Explain with the help of block diagrams. [CO6,K2,6M]
	b)	Explain the application and advantages of integration of CAQC with CAD/CAM system. [CO6,K2,6M]

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16ME4103

IV B.Tech I Semester Adv. Supple Examinations, June-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) State the principle of stir casting process. **[CO1,K1,2M]**

(b) Why vacuum is important in producing a good quality weld in EBW?**[CO2,K1,2M]**

(c) What are the limitations of high velocity forming process?**[CO3,K1,2M]**

(d) How the material removal rate is controlled in plasma arc machining?**[CO4,K1,2M]**

(e) List the factors that affect MRR in ECM.**[CO5,K1,2M]**

(f) Is it possible to machine electrically non-conductive material using EBM process? Justify your answer.**[CO6,K1,2M]**

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

PART-B

4 X 12 = 48

2. (a) Explain ceramic shell casting with neat sketch and state its applications. **[CO1,K2,6M]**

(b) Write the advantages and disadvantages of the following: **[CO1,K1,6M]**

i. Stir Casting ii. Squeeze casting

3. (a) Write a short note on process parameters and economic considerations of laser beam welding process. **[CO2,K1,6M]**

(b) Describe the principle of operation of EBW. What are the possible problems or difficulties and how it can be dealt with?**[CO2,K1,6M]**

4. With neat sketch explain the hydro and magnetic forming processes and also state the design considerations for forming. **[CO3,K2,12M]**

5. (a) With the help of sketches, show the effect of stand-off-distance on material removal rate in AJM process. **[CO4,K2,8M]**

(b) Write the salient features on Abrasive flow finishing process.**[CO4,K1,4M]**

6. (a) What are the important process parameters that control the material removal rate in EDM? Explain any four factors. **[CO5,K1,8M]**

(b) Discuss about economics of ECM Process. **[CO5,K2,4M]**

7. (a) Describe the unique characteristics of laser beam machining techniques possesses that make it the only choice for the job. Give examples. **[CO6,K2,6M]**

(b) Compare the operation of transferred and non-transferred arc mode in plasma machining. **[CO6,K2,6M]**

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Subject Code: R16ME4104

IV B.Tech I Semester Adv. Supple Examinations, June-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 resources for power development in India?[CO1,K1,2M]
(b) How does an industrial steam generator differ from a utility boiler?[CO2,K1,2M]
(c) What is a stoker? What are the different types of stokers? [CO3,K1,2M]
(d) What is the function of pressurize in PWR?[CO4,K1,2M]
(e) Under what circumstance will you recommend Diesel power plants?[CO5,K1,2M]
(f) What are the major factors that decide the economics of power plants?[CO6,K1,2M]

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

PART-B

4 X 12 = 48

2. (a) Explain the factors considered for site selection of a thermal power plant. [CO1,K2,6M]
(b) Explain in detail general layout of hydroelectric power plant with neat sketch.[CO1,K2,6M]

3. (a) Write short notes on the requirements of surface condensers. [CO1,K1,6M]
(b) Discuss the main objectives of feed water treatment and also explain the lime – soda process for softening of feed water. [CO2,K2,6M]

4. (a) Write a brief note on following:
(i). Implant handling of coal (ii). Unit coal handling system [CO3,K1,6M]
(b) Draw a line diagram of hydraulic ash handling system used for modem capacity power plant. Discuss its merits with other systems. [CO3,K2,6M]

5. (a) What is regeneration? How it improves the thermal efficiency of a simple open cycle gas turbine plant. [CO4,K2,6M]
(b) What is chain reaction? How it is maintained? What is the difference between controlled and uncontrolled chain reaction? Explain with neat sketches and with examples.[CO4,K2,6M]

6. (a) Explain the different methods of classifying a hydroelectric power plant. What is a runoff river plant? [CO5,K2,6M]
(b) What are the advantages of supercharging? Explain the methods used for supercharging diesel engines. [CO5,K2,6M]

7. (a) Explain environmental aspects of power generation. [CO6,K2,6M]
(b) Explain the methods to control pollution in thermal and nuclear power plants.[CO6,K2,6M]

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

Subject Code: R16ME4111

IV B.Tech I Semester Adv. Supple Examinations, June-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) State any two differences between Mass, Batch and Job production systems.**[CO1,K1,2M]**

(b) List out the advantages and disadvantages of short term and long term forecasting's. **[CO2,K1,2M]**

(c) Define inventory control and state the purpose of holding a stock in a firm.**[CO3,K1,2M]**

(d) What is routing and list out its advantages?**[CO4,K1,2M]**

(e) What are the basic scheduling problems? List out in brief.**[CO5,K1,2M]**

(f) Explain the application of computer in PPC.**[CO6,K2,2M]**

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

PART-B

4 X 12 = 48

2. (a) Explain the importance of process planning with reference to production control. Discuss the activities in process planning. [CO1,K2,6M]

(b) Write short notes on organization of production planning and control department. [CO1,K1,6M]

3. (a) Explain the general principles of forecasting techniques. Also state the difference between qualitative and quantitative methods. [CO2,K2,6M]

(b) Fit the linear regression model for the following data and forecast the demand for 9th period. [CO2,K3,6M]

Period	1	2	3	4	5	6	7	8
Demand	750	820	840	820	840	755	785	750

4. (a) What do you understand by inventory control? Distinguish between in-process inventory, safety stock inventory and seasonal inventory. [CO3,K2,6M]

(b) What is ABC analysis? Explain its significance in the inventory control with suitable example. [CO3,K2,6M]

5. (a) Enlist the functions of routing and describe the various decisions to be taken while preparing the routing procedure in brief. [CO4,K2,6M]

(b) Describe route sheet with a suitable example. [CO4,K2,6M]

6. (a) Explain the procedure by which scheduling 2 jobs in m machines can be done with suitable example. [CO5,K2,6M]

(b) Write any four differences between scheduling and loading. [CO5,K2,6M]

7. (a) What is dispatching? State various activities of a dispatcher and also describe the common forms used for dispatching. [CO6,K2,6M]

(b) What is follow up? State the objectives and different types of follow ups in detail. [CO6,K1,6M]

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Subject Code: R16CC41OE14

IV B.Tech I Semester Adv. Supple Examinations, June-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 is meant by quality and repeatability of robot? [CO1,K1,2M]
   (b) Write about absolute encoder? [CO2,K1,2M]
   (c) Differentiate between palletizing and de-palletizing operations. [CO3,K1,2M]
   (d) Differentiate between kinematics and differential kinematics. [CO4,K1,2M]
   (e) What is Lagrange formulation? [CO5,K1,2M]
   (f) Mention the advantages and disadvantages of lead through programming. [CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) List out various types of end effectors and explain them with neat sketch [CO1,K2,6M]
   (b) How the robots are classified based on its coordinates and control system? Explain briefly [CO1,K2,6M]
3. Write a short note on [CO2,K2,12M]
   (a) Working principle of AC motor
   (b) Position and velocity sensors
4. (a) List out the applications of Industrial robots? Explain briefly.[CO3,K2,6M]
   (b) Discuss in detail about the robot assembly and inspections applications. [CO3,K2,6M]
5. An RR robot (shown in Figure 1) has two links of length 1m. Assume that the origin of the global coordinate system is at J_1.
   (a) Determine the coordinate of the end-effector point if the joint rotations are 30^0 at both joints.
   (b) Determine joint rotations if the end-effector is located at (1,0). [CO4,K2,12M]

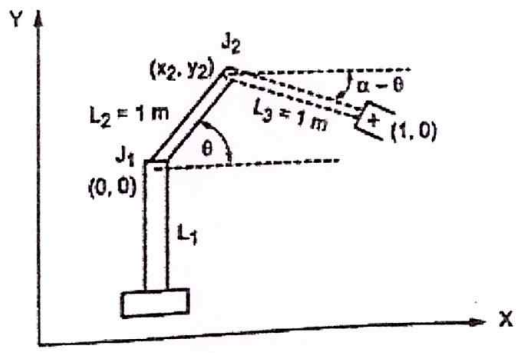

Figure 1

6. What is differential transformation? How they are useful in the context of robotics?[CO5,K2,12M]
7. List out steps involved in trajectory planning. Explain briefly.[CO6,K2,12M]

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

Subject Code: R16EC4101

IV B.Tech I Semester Adv. Supple Examinations, June-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) Distinguish between Procedure Oriented Programming and Object-Oriented Programming. [CO1,K2,2M]

   (b) What is constructor? Give an example. [CO2,K1,2M]

   (c) Distinguish Method Overriding and Method Overloading. [CO3,K2,2M]

   (d) What is synchronization? How many types of synchronizations are there in java? [CO4,K1,2M]

   (e) Compare Adapter classes and Inner classes. [CO3,K2,2M]

   (f) What Is the Difference Between A Swing and AWT Components? [CO5,K1,2M]

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

PART-B

4 X 12 = 48

2. (a) Write a report for this: Analyse your car by using object-oriented design principles. In other words, pick one of your car's systems, such as the braking system, and analyse it in terms of the encapsulation, information-hiding and interface principles. [CO1,K3,6M]

   (b) What are the different components of JDK? Explain. Also describe the concept of JRE.[CO1,K2,6M]

3. (a) Write a Java program to read and display the array elements. [CO2,K3,6M]

   (b) What is reachable and non-reachable code? Can an object be garbage collected while it is still reachable? Explain your answer. [CO1,K2,6M]

4. (a) Write a java program to create own exception for Negative Value Exception if the user enters negative value. [CO3,K3,6M]

   (b) What is a package? How to create user defined package in java with example. [CO3,K2,6M]

5. (a) Explain with one example program how to implement inter thread communication in java. [CO4,K3,6M]

   (b) Write a program to implement LIFO (last in first out) with the use of all the possible methods of threading methods. [CO4,K3,6M]

6. (a) The default behaviour for the focus subsystem is to consume the focus traversal keys, such as Tab and Shift Tab. Say you want to prevent this from happening in one of your application's components. How would you accomplish this? [CO5,K3,6M]

   (b) Write an applet that asks the user to enter two floating-point numbers, obtains the two numbers from the user and draws their sum, product (multiplication), difference and quotient (division).[CO5,K3,6M]

7. (a) List out the steps for creating simple user Registration form using java swing with an example[CO5,K3,6M]

   (b) Write a program that will display check boxes and option buttons they are numbered from1 to 5. Use a textbox to display the number those corresponding boxes or button checked.[CO5,K3,6M]

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Subject Code: R16EC4103

IV B.Tech I Semester Adv. Supple Examinations, June-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 the differences LAN and MAN **[CO1,K1,2M]**

(b) Write the disadvantages of copper wires **[CO2,K1,2M]**

(c) Write the advantages and disadvantages of slotted aloha **[CO3,K1,2M]**

(d) Define count to infinity problem.**[CO3,K1,2M]**

(e) What is Congestion?**[CO4,K1,2M]**

(f) Write the differences substitution ciphers and Transposition ciphers. **[CO5,K1,2M]**

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

PART-B

4 X 12 = 48

2. Explain the functions of various layers in ISO – OSI model. **[CO1,K2,12M]**

3. (a) Discuss about twisted pair cables and coaxial cables.**[CO2,K2,6M]**

(b) Explain the differences between circuit switching and packet switching**[CO2,K2,6M]**

4. (a) What is the significance of data link layer? Explain the design issues of data link layer. **[CO3,K2,6M]**

(b) Explain the stop and wait protocol with neat sketch**[CO4,K2,6M]**

5. (a) Compare and contrast the Virtual circuit and data grams**[CO4,K2,6M]**

(b) Explain Link State Routing with an example.**[CO4,K2,6M]**

6. (a) Explain the structure of UDP Header format. **[CO5,K2,6M]**

(b) Discuss in detail about the connection establishment and release in TCP.**[CO5,K2,6M]**

7. Explain the following **[CO6,K2,12M]**

(a) DNS

(b) E-mail

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16EC4107

IV B.Tech I Semester Adv. Supple Examinations, June-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) Briefly explain the importance of biomedical instrumentation in current scenario? [CO1,K2,2M]

(b) Compare the electrodes of ECG and EEG.[CO2,K2,2M]

(c) What are the general constraints in design of medical instrumentation system?[CO3,K1,2M]

(d) Explain the methods of accident prevention in medical environment.[CO4,K2,2M]

(e) Explain the importance of Ventilators[CO5,K2,2M]

(f) What is CAT Scan? List the applications of CAT Scan.[CO5,K2,2M]

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

PART-B

4 X 12 = 48

2. (a) With a neat block diagram illustrate the basic biomedical instrumentation system [CO1,K2,6]

(b) Explain the various problems encountered in measuring a living system and how to solve them [CO1,K2,6]

3. (a) what special features of amplifiers make them suitable for biomedical applications [CO2,K1,2]

(b) Design a biomedical differential amplifier and derive the overall gain of the amplifier [CO2,K2,10]

4. (a) With neat diagram explain Rheographic method of indirect blood pressure measurement. [CO3,K2,8]

(b) Explain the principles of Body Plethysmography and its clinical use [CO4,K2,4]

5. (a) Explain the advantages and disadvantages of nerve and muscle stimulators [CO4,K2,6]

(b) Discuss the various power sources of implantable pacemaker. [CO4,K2,6]

6. (a) Explain the various types of biotelemetry systems and its applications in emergency patient monitoring [CO5,K2,6]

(b) How Implantable units are used in biotelemetry systems for accurate patient monitoring [CO5,K2,6]

7. (a) Differentiate between macro-shock and micro-shock. [CO6,K2,4]

(b) Explain the various precautions to minimize electric shock hazards. [CO6,K2,8]

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16EC4110

IV B.Tech I Semester Adv. Supple Examinations, June-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 are limitations of basic radar? **[CO1,K1,2M]**
   (b) State principle of Doppler effect.**[CO2,K1,2M]**
   (c) Compare MTI and pulse Doppler radar.**[CO3,K1,2M]**
   (d) What are types of tracking radar.**[CO4,K1,2M]**
   (e) What is derivative gain?**[CO5,K1,2M]**
   (f) What are limitations of phased array antenna.**[CO6,K1,2M]**

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

PART-B

4 X 12 = 48

2. (a) What are basic parameters of Radar and their definitions. **[CO2,K2,6M]**
   (b) Explain coherent detection and non coherent detection. **[CO1,K2,6M]**

3. (a) Explain principle of CW radar with block diagram. **[CO3,K2,6M]**
   (b) Explain principle of FMCW radar with block diagram. **[CO3,K2,6M]**

4. (a) Explain MTI radar with power oscillator transmitter. **[CO4,K2,6M]**
   (b) Explain limitations to MTI performance. **[CO4,K2,6M]**

5. (a) Explain mono pulse and hybrid tracking. **[CO5,K2,6M]**
   (b) Explain operation of conical scanning radar. **[CO5,K2,6M]**

6. (a) Explain different types of reflector antennas. **[CO6,K2,6M]**
   (b) Derive matched filter receiver. **[CO6,K2,6M]**

7. (a) Explain duplexer functions and types. **[CO6,K2,6M]**
   (b) Explain architecture for phased arrays. **[CO6,K2,6M]**

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CC41OE18

IV B.Tech I Semester Adv. Supple Examinations, June-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 do you understand by the terms spoofing and anti-spoofing?[CO1,K1,2M]
   (b) Write the equation of Hopfield dry refractivity function. [CO2,K1,2M]
   (c) Illustrate the Concept of relative positioning? [CO3,K1,2M]
   (d) Describe how the GPS Accuracy has measured using chi-square distribution? [CO4,K1,2M]
   (e) List out the practical considerations of GPS for an Attitude determination?[CO5,K1,2M]
   (f) Explain why augmentation is necessary for GPS?[CO6,K1,2M]

PART-B

4 X 12 = 48

2. (a) Explain the four groups of GPS receivers in detail? [CO1,K2,6M]
   (b) Explain user segment constellation in detail? [CO1,K2,6M]

3. (a) Calculate ionospheric group delay on L1 frequency if the pseudo range measurements on the GPS frequencies f1 = 1575.45 Mhz and f2=1227.60 Mhz are P1 =23525863.60400 m and P2 =23525871.73040 m respectively [CO2,K3,4M]
   (b) Derive the total electron content (TEC) by ionospheric refraction [CO2,K2,8M]

4. (a) Discuss the various aspects of conducting a GPS survey and provide information to make the effort more productive/ [CO3,K2,6M]
   (b) Explain the process of automatic trouble shooting of GPS in real-time applications? [CO3,K2,6M]

5. (a) Explain single base and multi base network adjustments? [CO4,K2,6M]
   (b) Derive the following relation

$$K = \frac{1}{Q_{11} + \sigma_\ell^2} \begin{bmatrix} Q_{11} \\ Q_{12} \end{bmatrix}$$

   for a dynamic system of a moving vehicle using Kalman filter. [CO4,K3,6M]

6. (a) Discuss the application of GPS in the following areas: [CO5,K2,6M]
   (i) Transportation (ii) Air navigation
   (b) Discuss in detail about the principal of operation GLONASS with respect to space. [CO5,K2,6M]

7. (a) Explain the detail note of GPS modernization? [CO6,K2,6M]
   (b) Explain the ground and satellite based augmentation methods? [CO6,K2,6M]

Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CS4101

IV B.Tech I Semester Adv. Supple Examinations, June-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) What is the role of things and internet in IoT? [CO1,K1,2M]
   (b) What is Zigbee? List the advantages of Zigbee. [CO2,K1,2M]
   (c) Differentiate between Arduino and Raspberry pi. [CO3,K2,2M]
   (d) What are GPIO pins used in Raspberry Pi boards? [CO3,K1,2M]
   (e) Discuss about WAMP in IoT. [CO4,K2,2M]
   (f) What are the challenges of IoT? [CO2,K1,2M]

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

PART-B

4 X 12 = 48

2. (a) Explain the different characteristics of IoT. [CO1, K2,6M]
   (b) How does M2M communication work? Explain. [CO1, K2,6M]
3. (a) Discuss in detail about Domain model specification of IoT system. [CO2, K2,7M]
   (b) How to map IoT level to functional groups. Explain. [CO2, K2,5M]
4. (a) Differentiate between sensors and actuators. [CO3, K3,5M]
   (b) Justify which plat form is better to implement IOT for different applications? [CO3, K3,7M]
5. (a) How to Connect a Monitor or TV to Your Raspberry Pi. Explain. [CO3, K2,6M]
   (b) Why we need to choose raspberry pi to develop IOT applications? [CO3, K2,6M]
6. (a) Explain IOT cloud-based services using the Xively. [CO4, K2,6M]
   (b) Describe different Cloud storage Models. [CO4, K2,6M]
7. (a) Explain applications of IoT in Home Automation systems. [CO2, K2,6M]
   (b) Design smart city applications in IOT. [CO2, K4,6M]

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

Subject Code: R16CS4102

IV B.Tech I Semester Adv. Supple Examinations, June-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)** Write about Hadoop Cluster. [CO1,K1,2M]
   (b) What is map reduce? [CO2,K1,2M]
   (c) What does Mapper do in MapReduce? [CO2,K1,2M]
   (d) What is Apache Spark Vs Hadoop? [CO3,K1,2M]
   (e) How does Hive interact with Hadoop. [CO5,K1,2M]
   (f) What data Structure does a Spark SQL query generated? [CO4,K1,2M]

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

PART-B

4 X 12 = 48

2. **(a)** What is Hadoop and Explain basic components of Hadoop. [CO1,K1,6M]
   (b) Define and Differentiate JobTracker, TaskTracker [CO1,K1,6M]

3. **(a)** How do you Analyzing the Data with Hadoop and explain with example? **[CO2,K2,6M]**
   (b) What is Driver code, Mapper code, Reducer code and explain with example? **[CO2,K2,6M]**

4. What is RDD? What are the different Operation of RDD and explain with example? **[CO3,K2,12M]**

5. **(a)** What is JDBC & ODBC and explain with spark SQL? **[CO4,K2,6M]**
   (b) What are two main types of transformations that could be applied on RDDs in spark? **[CO4,K1,6M]**

6. **(a)** Explain Pig Architecture with neat diagram. **[CO5,K2,6M]**
   (b) Explain Pig Script Interfaces and Mode of Running in Hadoop.**[CO5,K2,6M]**

7. **(a)** What is Hive and explain Features and Architecture of Hive. **[CO5,K2,6M]**
   (b) What are the Different types of Data Types and explain with simple example?**[CO5,K2,6M]**

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Narasaraopeta Engineering College (Autonomous)
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Subject Code: R16CS4105

IV B.Tech I Semester Adv. Supple Examinations, June-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) What is meant by testing? Why we need it.**[CO1,K1,2M]**

(b) Describe boundary value analysis.**[CO1,K1,2M]**

(c) Difference between loop testing and data flow testing.**[CO2,K2,2M]**

(d) List out the functionalities of integration testing.**[CO3,K1,2M]**

(e) How to measure the effectiveness of a prioritized test suite.**[CO4,K1,2M]**

(f) Describe the need for automation.**[CO5,K1,2M]**

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

PART-B

4 X 12 = 48

2. (a) Discuss about Myths related software testing and its facts.**[CO1,K1,6M]**

(b) Draw software testing life cycle and explain in detail. **[CO1,K1,6M]**

3. (a) Discuss about the verification & validation activities.**[CO2,K2,6M]**

(b) What are the principles of state table based testing? Discuss advantages and disadvantages..

[CO2,K1,6M]

4. (a) Difference between the inspections and technical reviews.**[CO3,K2,6M]**

(b) What is data flow model? Explain the various components of data flow model.**[CO3,K1,6M]**

5. (a) Define the following terms: Acceptance testing and system testing with examples.**[CO4,K1,6M]**

(b) What is meant by integration testing and what are the goals of it. **[CO4,K1,6M]**

6. (a) Explain the software quality assurance models with examples.**[CO5,K2,6M]**

(b) Define the test suite prioritization. Discuss about different types of test case prioritization

[CO5,K1,6M]

7. (a) List out & explain the categorization of testing tools.**[CO5,K2,6M]**

(b) Discuss about the debugging techniques in detail. **[CO5,K2,6M]**

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Subject Code: R16CS4110

IV B.Tech I Semester Adv. Supple Examinations, June-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 some design challenges posed by sensor networks.[CO4,K1,2M]

(b) Why is energy efficiency important in WSN routing?[CO4,K1,2M]

(c) State the difference between cellular network and Ad hoc wireless network.[CO1,K2,2M]

(d)Write down the issues of designing a MAC protocol for Ad hoc networks.[CO2,K1,2M]

(e)Differentiate between WSNs and MANETs. [CO1,K1,2M]

(f)How the table driven protocols work in Ad hoc network?[CO1,K1,2M]

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

PART-B

4 X 12 = 48

2. (a)Describe the characteristics, applications, requirements and challenges of MANETs. [CO1,K2,6M]

(b)Differentiate position and topology based routing protocols with example.[CO1,K2,6M]

3. (a)What are the characteristics of data transmission? Explain the concept of the broadcast storm. [CO2,K2,6M]

(b)Illustrate the concept of multicasting and geocasting. [CO2,K2,6M]

4. (a) What is TCP? Discuss with an example TCP over Ad hoc wireless networks. [CO3,K2,6M]

(b)Identify the major reasons behind that TCP not perform well in Ad hoc networks.[CO3,K2,6M]

5. (a)Explain the concept of sensing and communication range in the context of wireless sensors. [CO4,K2,6M]

(b) What is meant by clustering of sensors? Explain with suitable example. [CO4,K2,6M]

6. (a)Explain the concept of data retrieval in sensor networks. [CO54,K2,6M]

(b)Discuss the high-level application layer support in sensor networks. [CO4,K2,6M]

7. (a) Discuss the various challenges involved in sensor network programming. [CO5,K2,6M]

(b) Explain the concept of node-level software platforms. [CO4,K2,6M]

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Narasaraopeta Engineering College (Autonomous)

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Subject Code: R16CC41OE9

IV B.Tech I Semester Adv. Supple Examinations, June-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 On-Demand computing. **[CO1,K1,2M]**
   b) Define cloud scale.**[CO2,K1,2M]**
   c) List different applications of cloud.**[CO2,K1,2M]**
   d) What is Host security?**[CO5,K1,2M]**
   e) What are the Advantages of Storage-as-a-Service?**[CO4,K1,2M]**
   f) What is Recovery Time Objective (RTO)?**[CO5,K1,2M]**

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

PART–B

4 X 12 = 48

2. **a)** How does virtualization happens? Explain with the help of storage virtualization? **[CO1,K2,6M]**
   b) Summarize service oriented architecture (SOA)?**[CO1,K2,6M]**
3. **a)** Explain the Benefits and Limitations of cloud computing. **[CO2,K2,6M]**
   b) Summarize Cloud Infrastructure models?**[CO2,K2,6M]**
4. **a)** Explain briefly about Shift to a Cloud Cost Model.**[CO3,K2,6M]**
   b) Explain Service Levels for Cloud Applications.**[CO3,K2,6M]**
5. **a)** Explain about Web Application Design. **[CO5,K2,6M]**
   b) How to secure database in cloud computing? Explain with the help of security issues.**[CO5,K2,6M]**
6. **a)** Explain briefly about Platform-as-a-Service.**[CO4,K2,6M]**
   b) Explain about Application-as-a-Service.**[CO4,K2,6M]**
7. **a)** Explain about different types of Clouds.**[CO2,K2,6M]**
   b) How backup, business continuity, and disaster recovery will help to achieve resiliency? Justify with your answer? **[CO5,K2,6M]**