Q.P. Code: 655012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: BIG DATA TECHNOLOGIES (CSE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Compare and contrast various data storage methods.	7M
	(b)	Explain various components of Hadoop architecture.	7M
		(OR)	
2.	(a)	Define Grid Computing. Explain various categories of grid operations.	7M
	(b)	Write and explain the benefits of virtualizing hadoop on vSphere.	7M

UNIT – II

3.	(a)	Explain Anatomy of file read in HDFS with neat diagram.	7M
	(b)	Define Fault tolerance. Explain how it works in HDFS.	7M
		(OR)	
4.	(a)	Explain the process of data transferring between two HDFS clusters.	7M
	(b)	Explain Java Interface for Hadoop file systems.	7M

UNIT – III

5.	(a)	Explain MapReduce user interfaces.	7M
	(b)	Explain various default ports used by the Hadoop services.	7M
		(OR)	
6.	(a)	What are various types of MRUnit Tests? Explain briefly.	7M
	(b)	Explain the process of running a distributed MapReduce job.	7M

UNIT – IV

7.	(a)	Explain Task assignment and Task execution in classic MapReduce.	7M
	(b)	Explain Anatomy of a MapReduce Job run.	7M
		(OR)	
8.	(a)	Explain MapReduce types.	7M
	(b)	Explain MapReduce Example of Reduce side join.	7M

UNIT-V

9.	(a)	What are various different file formats in Apache HIVE? Explain briefly.	7M
	(b)	Explain various characteristics of HIVE.	7M
		(OR)	
10.	(a)	Explain the uses and limitations of HIVE.	7M
	(b)	Explain Sort By and Cluster By queries in HIVE with examples.	7M

Q.P. Code: 654812 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: CLOUD COMPUTING (CSE)

Time :3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Write a short note on following computing platforms. 14M
   (i) Grid Computing (ii) Parallel Computing
   (iii) Mobile Computing (iv)Quantum Computing

(OR)

2. Explain 5-4-3 Principles of Cloud computing 14M

UNIT – II

3. (a) Explain the components of cloud structure? 7M
   (b) Discuss about public and private cloud access networking? 7M

(OR)

4. (a) List out and explain the features of cloud? 7M
   (b) Explain the phases of cloud migration? 7M

UNIT – III

5. (a) Where private cloud is suitable? Explain? 7M
   (b) What are the issues associated with private cloud? Discuss? 7M

(OR)

6. (a) How SaaS is different from traditional software? Explain benefits? 8M
   (b) Discuss any three challenges that make SaaS development difficult? 6M

UNIT – IV

7. (a) Explain Google App Engine and Manjrasoft Aneka? 7M
   (b) Explain cloud computing APIs 7M

(OR)

8. Explain the different perspectives on SaaS development? 14M

UNIT-V

9. (a) Explain networking issues in data centers? 7M
   (b) How cooling infrastructure in data center is simplified? 7M

(OR)

10. (a) Explain the services offered by EMC? 7M
    (b) Explain Google cloud as platform and storage? 7M

Q.P. Code: 654612 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: ARTIFICIAL INTELLIGENCE (CSE)

Time: 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Define AI. Write about different AI problems. 7M
   (b) Write about Control Strategies. 7M

(OR)

2. (a) Explain about problem decomposition using Blocks World Problem. 7M
   (b) Write and Explain Hill Climbing algorithm. 7M

UNIT – II

3. (a) Consider the following facts. 7M
   Marcus was a man
   Marcus was a Pompeian
   Marcus was born in 40 A.D
   All men are mortal
   All Pompeian's died when the volcano erupted in 79 A.D
   No mortal lives longer than 150 years.
   It is now 2018.
   Alive means not dead.
   If someone dies, then he is dead at all later times.
   Based on the above given facts prove that Marcus Is Dead.
   (b) What are the differences between Procedural and Declarative knowledge. 7M

(OR)

4. (a) Explain about Forward and Backward Reasoning. 7M
   (b) Express the following sentences in predicate logic: 7M
   (i) Marcus was a man (ii) Marcus was a Pompeian
   (iii) All Pompeian's were Romans
   (iv)All Romans were either loyal to Ceaser or hated him
   (v) Everyone is loyal to someone

UNIT – III

5. (a) Explain about Default Reasoning. 7M
   (b) Write about Minimalist Reasoning. 7M

(OR)

6. (a) Explain about Baye's theorem 7M
   (b) Explain about Dempster-Shafer Theory. 7M

UNIT – IV

7. (a) Explain about Classes and Metaclasses with an example. 7M
   (b) Explain about conceptual Dependency. 7M

(OR)

8. (a) What are Scripts? Explain briefly. 7M
   (b) State Where in the CYC ontology following concepts should fall. 7M
   (i) cat (ii) court case (iii) New York Times (iv) France (v) glass of water

UNIT-V

9. (a) Explain about Minimax Search Procedure 7M
   (b) Explain about Alpha-Beta Cutoffs. 7M

(OR)

10. (a) Write short notes on Syntactic Analysis. 7M
    (b) Write about Knowledge Acquisition. 7M

Q.P. Code: 654412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Regular Examinations of November 2018

SUB: SOFTWARE TESTING (CSE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. State and explain various dichotomies in software testing. 14M

(OR)

2. What is Flow Graph? Explain the Path testing with respective Path Predicates & Achievable Path with Example 14M

UNIT – II

3. What is meant by transaction flow testing? Discuss its significance. 14M

(OR)

4. Describe in detail about the Data Flow Anomaly State Graph. 14M

UNIT – III

5. (a) Discuss in detail about the Domain closure and Domain Dimensionality. 7M

   (b) Define Domain Testing? Discuss various applications of domain testing. 7M

(OR)

6. Discuss in detail the domains and interface testing. 14M

UNIT – IV

7. Explain Regular expressions and flow anomaly detection. 14M

(OR)

8. What is the looping probability of a path expression? Explain with an example. 14M

UNIT-V

9. Explain about State Graph of its Good and Bad with example. 14M

(OR)

10. What are Graph matrices and explain their applications. 14M

Q.P. Code: 654212 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: COMPUTER GRAPHICS (CSE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What is computer graphics? Write the important applications of computer graphics.	7M
	(b)	Explain in detail about video display devices.	7M
		(OR)	
2.	(a)	Explain in detail about graphics input devices.	7M
	(b)	Explain in detail about raster and random scan systems.	7M

UNIT – II

3.	(a)	Explain about Pattern filling in detail.	7M
	(b)	Explain in detail about Sutherland-Hodgman Polygon clipping algorithm.	7M
		(OR)	
4.	(a)	Explain about scan converting circles in detail.	7M
	(b)	Explain about Clipping lines in detail.	7M

UNIT – III

5.	(a)	Write about matrix representation of 2D transformations.	7M
	(b)	Explain in detail about Polygon meshes.	7M
		(OR)	
6.	(a)	Write about matrix representation of 3D transformations.	7M
	(b)	Write a short note on Parametric bicubic surfaces.	7M

UNIT – IV

7.	(a)	Explain the concepts of 3D viewing in detail.	8M
	(b)	State the difference between RGB and HSV color models.	6M
		(OR)	
8.	(a)	Write a short note on (i) CMY color model (ii) YIQ colour space model	6M
	(b)	Explain in detail the RGB chromaticity and XYZ chromaticity.	8M

UNIT-V

9.	(a)	Explain the illumination models in detail.	7M
	(b)	Discuss the computer animation techniques in detail.	7M
		(OR)	
10.	(a)	Explain about Gouraud shading technique in detail.	7M
	(b)	Explain about the various methods of controlling animation in detail.	7M

Q.P. Code: 653612 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: INTERNET OF THINGS (CSE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain In detail about IOT Functional Blocks?	7 M
	(b)	Describe IOT Communication API's?	7 M
		(OR)	
2.		Describe six levels of IOT in detail?	14M

UNIT – II

3.		Determine the IoT Levels for designing Smart lightning , intrusion detection and Structural health monitoring system.	14M
		(OR)	
4.	(a)	Describe about IoT applications on Retail	7M
	(b)	Describe about IoT applications on Logistics	7M

UNIT – III

5.	(a)	Differentiate IoT and M2M	7M
	(b)	Write a brief note on NFV	7M
		(OR)	
6.		Explain in detail about IoT Project system for weather monitoring.	14M

UNIT – IV

7.	(a)	Explain different Functions in Python Programming with example.	7M
	(b)	write a short note on introduction on logical design with python	7M
		(OR)	
8.		Explain in detail about	14M
		i) Modules of Python ii) Packages in Python	

UNIT-V

9.		What is an IoT Device. Explain basic buildings blocks of IoT Devices.	14M
		(OR)	
10.		Write a brief note on	14M
		i) Raspberry Pi ii) raspberry Pi interfaces.	

Q.P. Code: 555012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: CAD/CAM (ME)

Time: 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Explain about CRT in detail, with the help of neat diagram. 14 M

(OR)

2. (a) Write any five applications of Computers for design benefits of CAD. 7 M
   (b) Write about the role of computers in CAD/CAM applications. 7 M

UNIT – II

3. Explain about the following terms in view of 3D transformations. 14 M
   i) Translation ii) Rotation iii) Scaling iv) Reflection

(OR)

4. Explain about clipping in detail with the help of an example. 14 M

UNIT – III

5. Explain in detail about Constructive Solid geometry modeling. 14 M

(OR)

6. (a) Explain Wire frame modeling. 7 M
   (b) Differentiate Surface with solid modeling. 7 M

UNIT – IV

7. Explain about coding and classification system in group technology. 14 M

(OR)

8. (a) Define FMS and explain Components of FMS. 7 M
   (b) Discuss about need of FMS. 7 M

UNIT-V

9. What is meant by CAPP, explain about variant CAPP in detail? 14 M

(OR)

10. (a) Explain barcode technology and its uses. 7 M
    (b) Explain the concept of Automatic identification system. 7 M

Q.P. Code: 554812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019
SUB: METROLOGY (ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain the Principle of GO and NO-GO gauges.	4M
	(b)	Draw the conventional diagram of limits and fits and explain the terms in it?	10M
		(OR)	
2.	(a)	How holes, shafts and fits are designated? Explain with suitable example.	4M
	(b)	Between two mating parts of 100mm basic size, the actual interference fit is to be from 0.05 mm to 0.012mm. The tolerance for hole is the same as the tolerance for the shaft. Find the size of both the shaft and the hole on a (*i*) hole basis unilateral system and (*ii*) shaft basis unilateral system.	10M

UNIT – II

3.	(a)	What are the advantages of dial indicators?	7M
	(b)	An angle of 102^0-8'-42'' is to be measured with the help of following standard angles gauges and a square block. Sketch the combination. (3^0,9^0, 90^0),(1',9') and (6'',18'', 30'').	7M
		(OR)	
4.	(a)	Explain the uses of Vernier Bevel Protractor.	4M
	(b)	Calculate the angle of taper and minimum diameter of an internal taper from the following readings: Diameter of bigger ball=10.25mm; diameter of smaller ball=6.07mm Height of top of bigger ball from datum=30.13mm Height of top of smaller ball from datum=10.08mm	10M

UNIT – III

5.	(a)	Differentiate between primary texture and secondary texture.	4M
	(b)	What is optical flat? What their types? State the limitations of optical flat.	10M
		(OR)	
6.	(a)	What are the important measuring characteristics with optical projectors?	7M
	(b)	What are the applications of optical projectors for precision measurements and inspection?	7M

UNIT – IV

7.	(a)	Explain the procedure for measurement of pitch of the screw.	7M
	(b)	Explain the alignment procedure for the following: (i) Straight of saddle in the horizontal plane (ii) Both the centres in the vertical plane (iii) True running of taper socket in main spindle	7M
		(OR)	
8.	(a)	What is the best size of the wire? Derive an expression in terms of pitch and angle of thread.	7M
	(b)	What is meant by alignment tests on machine tools? Why they are necessary? Explain	7M

UNIT-V

9.	(a)	What are the advantages of optical comparators?	4M
	(b)	Explain the methods used for checking pitch of the gear.	10M
		(OR)	
10.	(a)	State the various types of coordinate measuring machines.	4M
	(b)	State the advantages and possible sources of errors in coordinate measuring machines.	10M

Q.P. Code: 554612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019
SUB: FINITE ELEMENT METHODS (ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Explain the basic steps involved in finite element methods. 7M
   (b) A rod of 10 mm diameter, length 200 mm has nodal displacements due to axial loads as 1.2 mm and 2.8 mm. Calculate the displacements at the centre. Also find the stress, strain and strain energy for the rod. Take E = 210 GPa. 7M

(OR)

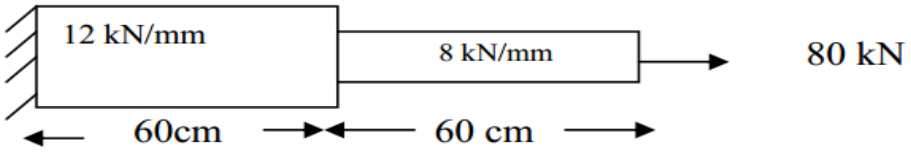
2. (a) Describe stress strain relations in 3D elasticity? 7M
   (b) Explain about weighted residual method? 7M

UNIT – II

3. (a) Write the types of interpolation models and polynomial form of interpolation models? 7M
   (b) Explain about global stiffness matrix. 7M

(OR)

4. Estimate the displacements, forces and stresses in the bar loaded shown in figure 1. The stiffness values of the bars are also shown in figure. 14M

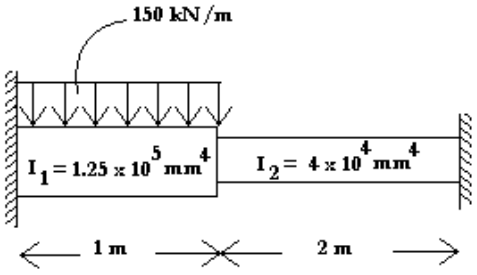


UNIT – III

5. Derive the element stiffness matrix for the 2-noded beam element using direct approach? 14M

(OR)

6. Find the deflections and support reactions for the beam shown in figure 2. Take E = 200 GPa. 14M



UNIT – IV

7. Describe about stress strain relationship matrix [D] and stiffness matrix equation for CST element? 14M

(OR)

8. Explain about Isoparametric formulation, sub parametric and super parametric elements 14M

UNIT-V

9. Derive the conductivity matrix and vector for the 2-D element when one of the faces is exposed to a heat transfer coefficient of h at T α and with internal heat generation of q W/m^3. 14M

(OR)

10. A metallic fin with thermal conductivity k=360 W /m^{0}C, 0.1 cm thick and 10 cm long, extends from a plane wall whose temperature is 235^{0}C. Determine the temperature distribution and amount of heat transferred from the fin to the air at 20^{0}C with h=9 W/m^2 ^{0}C. Take the width of fin to be 1 m 14M

Q.P. Code: 554412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Regular Examinations of November 2018

SUB: INSTRUMENTATION & CONTROL SYSTEMS (ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What is meant by Zero order system? Write the relevant governing equations.	7M
	(b)	State and explain various types of errors in measurements.	7M
		(OR)	
2.	(a)	What. are the functional elements of measuring system? Explain with the suitable examples.	7M
	(b)	State and explain the dynamic characteristics of a measurement system.	7M

UNIT – II

3.		Explain the construction and principle of LVDT with a neat diagram and compare it with capacity pickup transducer.	14M
		(OR)	
4.	(a)	Explain the working principle of Bimetallic thermometer with a neat diagram.	7M
	(b)	Explain the use of piezo electric transducers for displacement measurement.	7M

UNIT – III

5.	(a)	Give the constructional details and explain the working of a cryogenic fuel level indicator.	7M
	(b)	Explain the working principle of electrical tachometer.	7M
		(OR)	
6.	(a)	A Stroboscope projects 6000 flashes per minute on a disk mounted on the shaft of a machine. Find the speed of the machine if the disk appears stationary and has a single image of 10 points.	5M
	(b)	Explain the working of mechanical tachometer with a neat sketch.	9M

UNIT – IV

7.	(a)	Explain how strain gauges can be used for the measurement of bending stresses?	7M
	(b)	Define gauge factor. Explain the factors, which affect the gauge factor.	7M
		(OR)	
8.	(a)	Define the terms i) Humidity ratio ii) Dry bulb temperature iii) Relative humidity.	7M
	(b)	What do you understand about gauge rosettes? Discuss about various types of rosettes.	7M

UNIT-V

9.	(a)	Draw and explain block diagram for temperature control system.	7M
	(b)	Explain the main features of an open-loop control system.	7M
		(OR)	
10.	(a)	What are the basic elements of control system? Classify different control systems.	7M
	(b)	What are the advantages of closed loop control?	7M

Q.P. Code: 554212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: PRODUCTION AND OPERATIONS MANAGEMENT (ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT – I

1. (a) What are the benefits of production and operations management? 7M
   (b) Discuss the characteristics and benefits of JIT production system. 7M

(OR)

2. (a) Explain the components of a production system. 7M
   (b) Define lean manufacturing. Explain the principles of lean manufacturing. 7M

UNIT – II

3. (a) A company has the following sales data. What will be the sales forecast for the 9th year? 7M

Year	1	2	3	4	5	6	7	8
Sales (in crores)	7	10	19	26	39	44	51	59

   (b) Discuss various strategies of aggregate production planning. 7M

(OR)

4. (a) A firm believes that its annual profit depends on its expenditures for research. The information for the six preceding years is given below. Estimate the profit when expenditure is 6 units. 7M

Year	2013	14	15	16	17	18	19
Expenditure	2	3	5	4	11	5	6
Annual Profit	20	25	34	30	40	31	?

   (b) Define and discuss in detail various methods of aggregate planning. 7M

UNIT – III

5. (a) Discuss the advantages and limitations of CRAFT. 7M
   (b) The demand of an assembly line is 1600 units/week and as per the information given below, construct the precedence diagram and compute balance delay applying Largest Candidate's Rule. 7M

Task	1	2	3	4	5	6	7	8
Time(min)	1	0.5	0.8	0.3	1.2	0.2	0.5	1.5
Preceding task	-	-	1,2	2	3	3,4	4	5,6,7

(OR)

6. (a) Discuss the various methods of evaluating location alternatives. 7M
   (b) Compare Travel chart and REL chart. 7M

UNIT – IV

7. (a) Describe ABC analysis technique of selective inventory control system. 7M

(b) For the following data, crash the network, if overhead charges are Rs. 6/day 7M

Activity	1-2	2-3	3-4	3-5	4-5
Normal Time	5	4	6	4	3
Crash Time	3	2	3	1	1
Cost Slope	3	2	4	3	6

(OR)

8. (a) Describe P-system and Q-system of inventory control. 7M

(b) For the following data, find the Critical Path, Total float, Free float and independent float. 7M

Activity	1-2	1-3	2-3	2-4	3-4	4-5
Normal Time	20	25	10	12	5	10
Crash Time	17	25	8	6	2	5
Normal Cost	600	200	300	400	300	300
Crash Cost	720	200	440	700	420	600

UNIT-V

9. (a) What are the objectives of scheduling? Discuss the factors affecting scheduling. 7M

(b) Find the optimum sequence (that minimizes the total elapsed time) of the jobs and the make span, required to complete the given jobs on three machines in the order M_3, M_1, M_2. Also find idle times on each machine in each case. 7M

Job	M_1	M_2	M_3
1	10	2	8
2	3	4	6
3	4	3	9
4	4	3	9
5	2	1	7
6	1	2	7

(OR)

10. (a) Explain Johnson's algorithm of job sequencing and also state the assumptions used. 7M

(b) Five jobs are to be processed on a machine. In what sequence would the jobs be ranked according to the following decision rules. (i) FCFS (ii) SPT (iii) EDD. Calculate completion time for all jobs, Mean Flow Time, No. of Tardy Jobs, Mean Tardiness and average no. of jobs in the system each day. 7M

Job	A	B	C	D	E
t_j	4	5	3	7	2
d_j	6	7	8	10	3

Q.P. Code: 553212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: RAPID PROTOTYPING (ME)

Time: 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Describe the history of rapid prototyping?	7M
	(b)	What are potential applications of rapid prototyping?	7M
		(OR)	
2.	(a)	Describe the various activities of product development?	7 M
	(b)	Categorize rapid prototyping and explain the any two types?	7M

UNIT – II

3.	(a)	Describe the various processes parameters of stereo lithography systems?	7 M
	(b)	Explain the various steps for producing of stereo lithography systems?	7M
		(OR)	
4.	(a)	List of advantage of stereo lithography systems?	7 M
	(b)	Discuss the role of data files in stereo lithography systems?	7M

UNIT – III

5.		Explain the principle and operation of solid grand curing?	14M
		(OR)	
6.		Sketch and explain the fusion deposition modeling?	14M

UNIT – IV

7.	(a)	What are materials to be processed by using laminated object manufacturing and explain their significance?	7 M
	(b)	What are the applications of laminated object manufacturing?	7M
		(OR)	
8.		Describe the various components of 3D printer and explain the challenges for getting desired shape?	14M

UNIT-V

9.	(a)	Explain the significance of Arc spray metal tooling?	7M
	(b)	What are the collaboration tools used for rapid prototyping?	7M
		(OR)	
10.	(a)	What are the application of indirect hard tooling ?	7M
	(b)	What are errors associated with rapid manufacturing processes and explain any two of them?	7M

Q.P. Code: 454812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: VLSI DESIGN (ECE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT – I

1.	(a)	Explain clearly about n-well CMOS fabrication process with neat diagrams	7M
	(b)	Explain about Ion implantation	7M
		(OR)	
2.		With neat sketches explain oxidation process in IC fabrication	14M

UNIT – II

3.		Draw the circuit of a CMOS inverter. Draw and explain its DC characteristics	14M
		(OR)	
4.	(a)	Derive an expression for the Threshold voltage of a MOS Transistor	7M
	(b)	What are the various forms of Pull-up's available for an inverter explain them with neat sketch	7M

UNIT – III

5.	(a)	Discuss about lambda based design rules with neat diagram	8M
	(b)	What are the limitations of scaling	6M
		(OR)	
6.		Draw the CMOS NOR gate and its physical layout with stick diagram	14M

UNIT – IV

7.	(a)	Explain the concept of i. Sheet resistance (Rs) ii. Standard unit of capacitance (Cg)	8M
	(b)	What is transmission gate	6M
		(OR)	
8.	(a)	With the help of logic diagram explain the working of 4-bit comparator	7M
	(b)	Implement 8:1 multiplexer using CMOS switch logic	7M

UNIT-V

9.	(a)	Differentiate between chip level test techniques and system level techniques	7M
	(b)	Explain about boundary scan test	7M
		(OR)	
10.	(a)	Explain the features of FPGA and CPLD	7M
	(b)	Write the difference between PLA and PAL	7M

Q.P. Code: 454612

SET - 2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: ELECTRONIC MEASUREMENTS AND INSTRUMENTATION (ECE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What is precision? What are the two characteristics of precision?	7M
	(b)	Classify and explain various types of errors in measurement.	7M
		(OR)	
2.	(a)	Discuss about basic principle of AF wave analyzer with a neat sketch.	8M
	(b)	Explain briefly about DC voltmeters and AC voltmeters?	6M

UNIT – II

3.	(a)	Explain the working principle of Digital Phase meter with a neat diagram.	7M
	(b)	Explain about the Digital Multimeter.	7M
		(OR)	
4.	(a)	List the types of digital voltmeters. Explain any one type with a neat diagram.	8M
	(b)	Draw and explain block diagram of Universal counter.	6M

UNIT – III

5.	(a)	Explain about storage oscilloscope with block diagram?	8M
	(b)	Explain about Delay lines in CROs.	6M
		(OR)	
6.	(a)	Explain the method of finding frequency relationship of two waveforms using Lissajous figures?	7M
	(b)	Explain the working of Dual trace CRO with neat block diagram.	7M

UNIT – IV

7.	(a)	Explain the working principle of Q-meter with block diagram and its applications.	8M
	(b)	Explain the Kelvin Bridge with neat diagram.	6M
		(OR)	
8.	(a)	Explain the Schearing bridge with neat diagram.	6M
	(b)	Draw and explain the Anderson bridge with neat diagram and derive the expression for unknown inductance.	8M

UNIT-V

9.	(a)	Define data acquisition? Mention the essential features of a data acquisition system.	7M
	(b)	Explain working of strain gauge and what are its specific advantages?	7M
		(OR)	
10.	(a)	Explain the desirable characteristics of thermocouples?	5M
	(b)	Discuss about i) Measurement of Velocity ii) Resistance Thermometers iii) LVDT	9M

Q.P. Code: 454412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Regular Examinations of November 2018

SUB: OPTICAL COMMUNICATIONS (ECE)

Time: 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Distinguish the step index fibers & graded index fibers.	10M
	(b)	Define numerical aperture. How to calculate numerical aperture of a given fiber? Explain.	4M
		(OR)	
2.	(a)	Define cut off wave length, mode field diameter?	7M
	(b)	Define a mode? Explain mode theory in optical fiber? What is V number? Explain.	7M

UNIT – II

3.	(a)	Explain about wave guide & polarization mode dispersion.	7M
	(b)	Explain the mechanical properties of fibers.	7M
		(OR)	
4.	(a)	Discuss different fiber material characteristics in detail	7M
	(b)	Explain the following mechanisms in optical fiber i)absorption ii)scattering	7M

UNIT – III

5.	(a)	Draw and explain the output patterns of source to fiber power launching.	7M
	(b)	Write about fiber alignment& joint losses.	7M
		(OR)	
6.	(a)	Explain about fiber splicing techniques in detail	7M
	(b)	Write about Equilibrium numerical aperture	7M

UNIT – IV

7.	(a)	Explain the working principle of Avalanche photodiode?	7M
	(b)	Explain the resonant frequencies of Laser diode?	7M
		(OR)	
8.	(a)	Explain quantum efficiency and LED power.	7M
	(b)	Derive laser diode rate equation	7M

UNIT-V

9.	(a)	What are the principles of the WDM technique? List various advantages.	7M
	(b)	Explain link power budget with examples.	7M
		(OR)	
10.	(a)	Write short note on Eye patterns?	7M
	(b)	Write short note on attenuation measurement?	7M

Q.P. Code: 454212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019
SUB: DIGITAL IMAGE PROCESSING (ECE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	List the sensor types used for image acquisition. Explain the acquisition by line sensor.	7M
	(b)	Define sampling and quantization. Explain the two processes.	7M
		(OR)	
2.	(a)	How do you represent the image in terms of illumination and reflectance? Explain.	7M
	(b)	Write the functional relationship of pixels in diagonal neighborhood.	7M
		UNIT – II	
3.	(a)	Write the expression for 2D-DCT and list the properties of DCT.	7M
	(b)	Find the 2D Haar transform for f(x,y) shown below[4 -1;2 3].	7M
		(OR)	
4.	(a)	Explain the separability property of unitary transforms.	7M
	(b)	Compute DFT of 2x2 image f(x,y)=[1 1;1 1]	7M
		UNIT – III	
5.	(a)	Distinguish between the spatial and frequency domain enhancement methods.	7M
	(b)	Define histogram and draw the various histogram plots of different images	7M
		(OR)	
6.	(a)	Explain how one can achieve simultaneous gray level range compression and contrast enhancement.	7M
	(b)	What is the principle involved in frequency domain enhancement. Explain with diagram	7M
		UNIT – IV	
7.	(a)	Why Inverse filter is called so? Explain with necessary derivation.	7M
	(b)	Discuss about the Wiener filter.	7M
		(OR)	
8.	(a)	Discuss about various thresholding techniques.	7M
	(b)	Explain the region based segmentation.	7M
		UNIT-V	
9.	(a)	List any two techniques used in lossy and lossless compression. Explain any one.	7M
	(b)	Explain the concept of compression in frequency domain.	7M
		(OR)	
10.	(a)	Generate the arithmetic code for symbols {a,b,c,d} with probabilities {0.2,0.4,0.3,0.1} respectively for the message ‘dad’	9M
	(b)	Write the differences between Huffman and Arithmatic codes.	5M

Q.P. Code: 454012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: EMBEDDED REAL TIME OPERATING SYSTEMS (ECE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain the purpose of Embedded System.	6M
	(b)	Explain classification of Embedded Systems.	8M
		(OR)	
2.	(a)	Explain non Operational Quality attributes of Embedded system.	8M
	(b)	Explain characterstics of Embedded Systems.	6M

UNIT – II

3.	(a)	Describe the computational models in Embedded design	10M
	(b)	Explain the hardware software tradeoffs	4M
		(OR)	
4		Explain in detail about EDA tools.	14M

UNIT – III

5.	(a)	Explain the sophisticated interfacing features in device ports	6M
	(b)	Describe the format of bits in synchronous HDLC protocol based network device	8M
		(OR)	
6.	(a)	Explain ISA, PCI buses.	6M
	(b)	Explain how handheld device is connected to other computer through using IrDA Protocol.	8M

UNIT – IV

7.	(a)	What are the different types of operating system and explain it in detail.	8M
	(b)	Describe about Multiprocessing and Multitasking.	6M
		(OR)	
8.	(a)	Explain about Task Management.	6M
	(b)	Explain how to choose RTOS.	8M

UNIT-V

9.		With a neat sketch explain Communication between Orchestra Robots.	14 M
		(OR)	
10.		With neat diagram explain embedded system for an Adaptive cruise control system in a car.	14 M

Q.P. Code: 355012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. VII Sem.(R15) Supplementary Examinations of May 2019
SUB: MANAGEMENT SCIENCE (EEE, ECE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Distinguish the differences between management and administration. 14M

(OR)

2. What do you mean by social responsibilities of business? 14M

UNIT – II

3. Briefly explain the relationship between mission, goal, objective, strategy and programmes in an industrial environment. 14M

(OR)

4. How do you classify the different types of layouts? Explain in brief. 14M

UNIT – III

5. What are the functions of HRM and explain about the importance of HR Manager in Software industry with suitable examples. 14M

(OR)

6. Explain Inventory control techniques with appropriate illustrations. 14M

UNIT – IV

7. Define work study. Explain various methods of work study. 14M

(OR)

8. Discuss in detail about the main techniques of SQC. 14M

UNIT-V

9. Write short note on
   i) Total float
   ii) Free float 14M

(OR)

10. The following table gives the activities in a construction project:

Activity	1-2	1-4	1-7	2-3	3-6	4-5	4-8	5-6	6-9	7-8	8-9
Optmistic time (t1)	5	0	6	5	5	1	0	1	1	6	0
Normal time(t2)	5	0	0	0	4	0	0	0	1	6	0
Pessimistic time (t3)	0	0	0	0	-1	1	0	-1	0	0	0

14M

i) Draw a PERT diagram
ii) Find the probability that the project will be completed in less than 60 days

Q.P. Code: 354812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: ADVANCED CONTROL SYSTEMS (EEE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Design a phase lead network for a plant with the open loop transfer function G(s) = 25/s(s+2) to have a phase margin of 48^0. 8M
   (b) Explain the design procedure of lead-lag compensator in time domain. 6M

(OR)

2. (a) Describe the design of PI controller using Bode plot approach. 6M
   (b) Explain the procedural steps to design a phase lag compensator using Bode analysis. 8M

UNIT – II

3. (a) List out the advantages of state space techniques. 5M
   (b) Determine the controllability of the following state space model
   $\begin{bmatrix}\dot{x_1}\\ \dot{x_2}\end{bmatrix} = \begin{bmatrix}1 & 1\\ -2 & -3\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}0\\ 1\end{bmatrix}[u(t)]$ and $y(t) = [1 \quad 0]\begin{bmatrix}x_1\\ x_2\end{bmatrix}$ 9M

(OR)

4. (a) Explain the concepts of state, state variables and state model. 6M
   (b) Given G(s) = $\frac{2}{s^2+5s+1}$ obtain the state space model of the system in the diagonal canonical form. 8M

UNIT – III

5. (a) State equation of a control system is given by 8M
   $\begin{bmatrix}\dot{x_1}\\ \dot{x_2}\end{bmatrix} = \begin{bmatrix}0 & -1\\ 2 & 1\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}$
   Obtain the state transition matrix.
   (b) Describe the effect of state feedback on controllability. 6M

(OR)

6. (a) Consider the system has a forcing function and is represented by the following non-homogeneous state equation , 9M
   $\begin{bmatrix}\dot{x_1}\\ \dot{x_2}\end{bmatrix} = \begin{bmatrix}1 & 0\\ 2 & -3\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}1\\ 1\end{bmatrix}[u]$
   Where 'u' is a unit step function
   Determine the solution of this equation, considering initial conditions $x_0 = \begin{bmatrix}1\\ 0\end{bmatrix}$
   (b) Explain the design procedure of reduced order observers. 5M

UNIT – IV

7. (a) Discuss the basic concept of describing function methods. 6M
   (b) Explain the procedure for construction of phase trajectories by phase plane method. 8M

(OR)

8. (a) Explain the classification of nonlinearities and give the examples for each. 7M
   (b) Derive the describing function of On-off nonlinearity with hysteresis. 8M

UNIT-V

9.	(a)	State stability in the sense of Lyapunov? Explain in terms of an example.	8M
	(b)	What are the sufficient conditions of lyapunov stability?	6M
		(OR)	
10.	(a)	State and prove lyapunov stability theorem.	7M
	(b)	Test the stability of the system described by $\dot{x}_1 = -2x_1 + 5\,x_1^2\,x_2$ and $\dot{x}_2 = -3x_2$ Determine the region of asymptotic stability using krasovskii's method.	7M

Q.P. Code: 354612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: HVDC TRANSMISSION (EEE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain the comparison of AC & DC transmission system.	8M
	(b)	List out the applications of HVDC	6M
		(OR)	
2.	(a)	Write short notes on converter station.	6M
	(b)	Explain the technological development of modern trends in DC transmission.	8M

UNIT – II

3.	(a)	Show that rating of the valve used in Graetz's circuit is $2.094P_d$. where P_d is d.c power transmitted.	4M
	(b)	For a 3 phase 6 pulse Graetz's circuit draw the timing diagram considering overlap angle less than 60 degree.	10M
		(OR)	
4.	(a)	Explain about the Rectifier and Inverter waveforms of a converter circuit.	6M
	(b)	With neat sketches explain the converter bridge characteristics.	8M

UNIT – III

5.	(a)	Explain in detail the converter control characteristics of HVDC systems.	8M
	(b)	Explain about EPC scheme of a firing angle control of HVDC systems.	6M
		(OR)	
6.	(a)	Explain about the constant extinction angle control of HVDC systems.	6M
	(b)	Write short notes on starting and stopping of DC link	8M

UNIT – IV

7.	(a)	What are the basic principles of over current protection?	8M
	(b)	Write short notes on Surge arresters	6M
		(OR)	
8.	(a)	Explain the over voltage protection in converter station.	8M
	(b)	Write short notes on protection of DC line.	6M

UNIT-V

9.	(a)	With neat diagram explain about the Sources of reactive power.	8M
	(b)	Write short notes on generation of harmonics.	6M
		(OR)	
10.	(a)	Derive an equation for harmonic voltage and current for single tuned filter.	10M
	(b)	Write short notes on carrier frequency and RI Noise.	4M

Q.P. Code: 354412 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VII Sem. (R15) Regular Examinations of November 2018
SUB: SWITCH GEAR & PROTECTION (EEE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Discuss the causes of over voltages in a power system.
   (b) What is the function of surge absorber? In what way it is different from lightening arrestor?

(OR)

2. (a) Describe the construction, principle of operation and application of valve type lightning arrester?
   (b) Explain the differences between equipment grounding and system grounding?

UNIT – II

3. (a) What is meant by circuit breaker? Discuss the phenomenon of arc formation in a CB.
   (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.

(OR)

4. (a) Describe the construction and working of an SF6 circuit breaker?
   (b) Explain the phenomenon of current chopping and its effect on circuit interruption. Why is it more common in an air blast circuit breaker than in oil circuit breaker?

UNIT – III

5. (a) What is universal torque equation? Using this equation derive the characteristics of (i) impedance relay (ii) reactance relay (iii) mho relay.
   (b) Explain the importance of under voltage/ over voltage relays with an example for each.

(OR)

6. (a) Briefly explain the basic components of static relay
   (b) Discuss in detail about the phase comparators.

UNIT – IV

7. Explain the protection of a generator against
   (i) loss of excitation (ii) stator inter turn fault and (iii) over speeding.

(OR)

8. (a) With aid of neat schematic diagram describe the percentage differential protection scheme of a transformer.
   (b) Explain the construction and principle of operation of a Buchholz relay.

UNIT-V

9. Elaborate on various methods for protection of feeders.

(OR)

10. (a) Explain about the over current protection of bus bars with relevant connection diagram
    (b) Discuss in detail about the three zone protection of transmission lines

Q.P. Code: 354212 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: ELECTRICAL DISTRIBUTION SYSTEMS (EEE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT – I

1.	(a)	Define the terms i) Demand factor, ii) Diversity factor, iii) Load factor, iv) Max. Demand	7M
	(b)	Define the terms i) Demand factor, ii) Diversity factor, iii) Load factor, iv) Max. Demand	7M
		(OR)	
2.	(a)	What are the various characteristics of a load modeling	7M
	(b)	Derive the relationship between loss factor & load factor	7M

UNIT – II

3.	(a)	Explain the primary feeder voltage levels	7M
	(b)	With a neat sketch explain radial distributor	7M
		(OR)	
4.	(a)	What are design consideration of a secondary distribution system	7M
	(b)	What are the methods to analyze distribution feeder losses	7M

UNIT – III

5.	(a)	Describe the three phase balanced primary lines	7M
	(b)	Derive the equations for voltage drop and power loss for uniformly distributed load	7M
		(OR)	
6.	(a)	Deduce the equations for voltage drop equations for Non uniformly distributed load	7M
	(b)	What are the various Non 3 phase primary lines and their relationship	7M

UNIT – IV

7.	(a)	What are the measures taken for line drop compensation	7M
	(b)	What is reactive power? How a capacitive compensation is done for power factor control	7M
		(OR)	
8.	(a)	What is the need of power factor correction? And explain the effect of series capacitor	7M
	(b)	Explain the best capacitor location	7M

UNIT-V

9.	(a)	Explain the importance of SCADA	7M
	(b)	Explain briefly about AMR	7M
		(OR)	
10.	(a)	Explain about CIS and GIS	7M
	(b)	Briefly explain about Distribution Automation	7M

Q.P. Code: 353812 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: POWER QUALITY (EEE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What are the major power quality issues? Explain in detail.	6M
	(b)	Explain the following terms with reference to the power quality. (i) Fast Tripping (ii) Ferro Resonance (iii) Electromagnetic Compatibility (iv) Islanding	8M
		(OR)	
2.	(a)	Define waveform distortion. Explain inter harmonics and DC offset waveform distortions	8M
	(b)	Write the various IEEE and IEC power quality standards.	6M

UNIT – II

3.	(a)	Explain the following terms related with power quality problem. (i) Sags (ii) Swell (iii) Waveform distortion(iv) Harmonics (v) Voltage fluctuations	8M
	(b)	Explain the equipment sensitivity to voltage sags.	6M
		(OR)	
4.	(a)	Explain the various types of power quality disturbances.	7M
	(b)	Explain the equipment sensitivity to voltage sags.	7M

UNIT – III

5.		Discuss impacts of harmonic distortion on various power system components.	14M
		(OR)	
6.	(a)	Discuss about different types of harmonic sources of commercial loads.	6M
	(b)	Write short notes on concept of power system qualities under sinusoidal non sinusoidal conditions.	8M

UNIT – IV

7.	(a)	Explain various objectives of power quality monitoring.	6M
	(b)	Explain the operation of the following power quality measuring equipment.	8M
		(OR)	
8.	(a)	Explain the various power quality monitoring considerations.	8M
	(b)	Write a short note on historical perspective of power quality measuring equipment.	6M

UNIT-V

9.	(a)	Explain briefly about the principle and operation of solid state current limiter.	7M
	(b)	Compare the performance of Solid State Breaker (SSB) and Solid State Transfer Switch (SSTS) used for improving the power quality.	7M
		(OR)	
10.		Compare the performance of the compensating type custom power devices used for improving the power quality.	14M

Q.P. Code: 255012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019
SUB: STRUCTURAL ANALYSIS - II (CE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT-I

1. Obtain the degree of static indeterminacy and degree of kinematic indeterminacy for the structures shown in **figure 1**. 14M

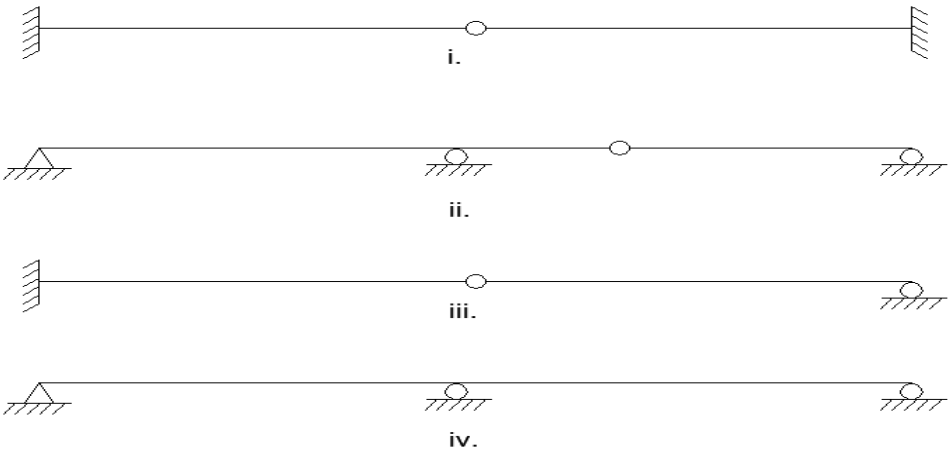


Figure 1.

(OR)

2. Determine the forces in all the members of the redundant pin jointed truss shown in **Figure .2** below. Assume cross-sectional area of each member as 1500 mm^2. 14M

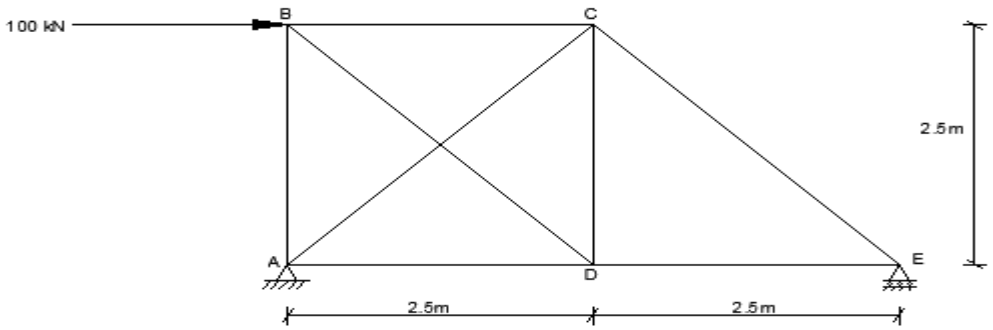


Figure .2

UNIT-II

3. A three hinged parabolic arch hinged at the supports and at the crown has a span of 24m and a central rise of 4m. It carries a concentrated load of 50kN at 18m from the left support and a UDL of 30kN/m over the left half portion. Determine the bending moment and radial shear at a section 6m from left support. 14M

(OR)

4. A foot bridge 3m wide is supported by two suspension cables with a central dip of 3m and horizontal span of 30m. Determine the maximum and minimum tension in cable. Also determine the length of cable and cross-sectional area of cable. The foot bridge has to carry a load of 10kN/sq.m. Permissible stress in cable is 120 MPa. 14M

UNIT-III

5. A uniformly distributed load of 60kN/m and of length 4m transverse across the span of simply supported length of 20m. Compute the maximum bending moment at 5m from left support and absolute bending moment. 14M

(OR)

6. A series of wheel loads crosses over a girder of span 15m from left to right with 40kN load leading as shown in **figure 3**. Determine 14M
   i. Maximum bending moment
   ii. Maximum shear force at a section 4m from left support.

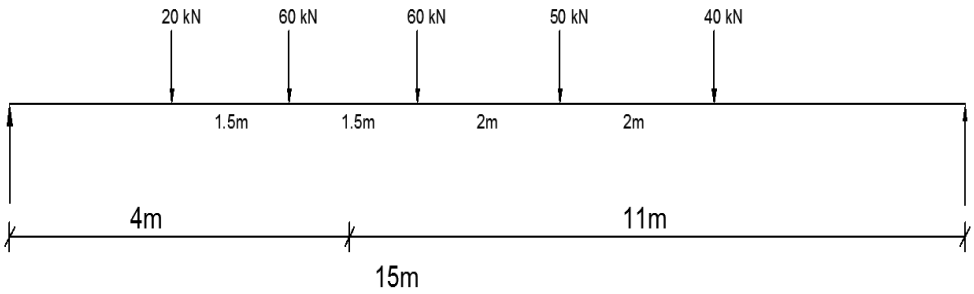


Figure 3.

UNIT-IV

7. Two point loads of 75kN and 150kN spaced 3.5m apart crosses a simply supported girder of span 18m from left to right with 75kN load leading. Draw the influence lines for shear force and bending moment at a section 8m from the right support. Also find the absolute bending moment due to the given loads. 14M

(OR)

8. An Uniformly distributed load of 50 kN/m of 6m length crosses over a girder of span 40m from left to right, with the help of influence lines, determine the values of shear force and bending moment at a point 12m from the left support, when the head of the load is 16m from the left support. 14M

UNIT-V

9. Calculate the support reactions in the continuous beam ABC due to loading as shown in **figure 4** by flexibility method. Take E= 200GPa, I = 200 X 10^6 mm^4. Draw BMD. 14M

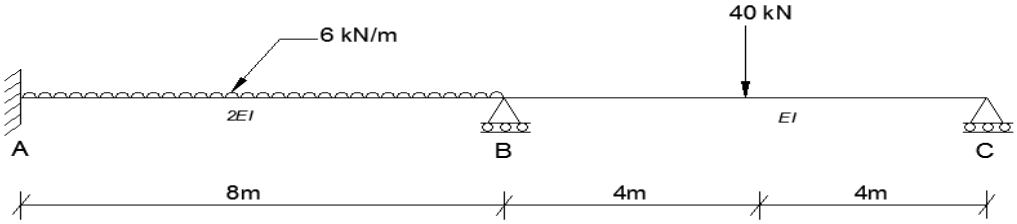


Figure 4.

(OR)

10. Calculate the support reactions in the continuous beam ABC due to loading as shown in **figure 5** by flexibility method. Take E= 200GPa, I = 200 X 10^6 mm^4. Draw BMD. 14M

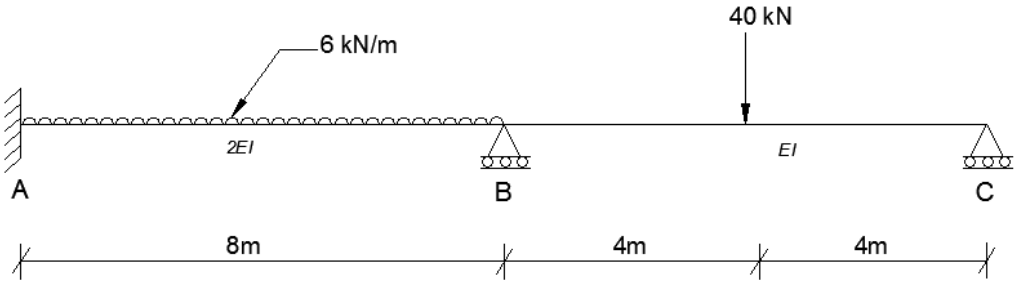


Figure 5.

Q.P. Code: 254812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: DESIGN AND DETAILING OF REINFORCED CONCRETE STRUCTURES-II (CE)

Time: 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Design a reinforced concrete slab having three edges continuous and one edge discontinuous, whose effective size is 3 m x 5 m. Assume a live load of 3 kN/m^2 and a floor finish load of 1 kN/m^2. Use M25 grade of concrete and Fe415 grade steel. Consider mild exposure conditions and unit weight of concrete as 25 kN/m^3. 14M

(OR)

2. Design a circular slab of 4 m diameter to cover an overhead tank. The slab is simply supported at the periphery by a 300 mm thick RC wall. Consider a live load of 3.5 kN/m^2 and floor finish of 50 mm thick. Use M30 grade of concrete and Fe500 steel. Consider unit weight of concrete as 25 kN/m^3, floor finish unit weight as 22 kN/m^3. Assume mild exposure conditions 14M

UNIT – II

3. Design the reinforcement in a square column of size 400 mm, subject to an axial load of 2400 kN due to dead and live loads. The column has an unsupported length of 3.6 m and is braced against sideway in both directions. Use M20 grade of concrete and Fe415 steel. Assume mild exposure conditions. 14M

(OR)

4. Design the longitudinal reinforcement in a square column of size 500 mm subjected to an axial load of 1500 kN and moment of 240 kNm with respect to the major axis. Assume M25 concrete and Fe415 steel. Assume clear cover depth as 50mm. 14M

UNIT – III

5. Design an isolated footing for a column of size 400 mm x 400 mm, carrying an axial load of 400 kN (under service loads, due to dead and live loads). Assume an allowable soil bearing pressure of 200 kN/m^2 at a depth of 1.2 m below the ground. Assume M25 concrete and Fe415 steel 14M

(OR)

6. Design a combined footing for two columns, C1 with size 400 mm x 400 mm, reinforced with 12-16mm diameter bars, and C2 with size 300 mm x 300 mm, reinforced with 8-20mm diameter bars, supporting axial loads of P1 = 1000 kN and P2 = 800 kN respectively (under service loads). The centre to centre distance between the two columns is 3 m. The allowable soil bearing pressure at 1.5 m below ground level is 200 kN/m^2. Assume Fe415 steel and M25 concrete in both the columns and the footings. 14M

UNIT – IV

7. (a) Write about the effect of surcharge on a level backfill and effect of water in the backfill? 8M

   (b) What are all the stability requirements to be considered for the design of a retaining wall? 6M

(OR)

8. Design a T-shaped cantilever retaining wall to retain earth embankment 3.5 m high above the ground level. The embankment is surcharged at an angle of 20^o to the horizontal. The unit weight of the earth is $18N/m^3$ and its angle of repose is 30^o. The safe bearing capacity of a soil may be taken as $200kN/m^2$ at a depth of 1m below the ground. The coefficient of friction between concrete & soil may be taken as 0.50. Use M25 grade of concrete and Fe500 Grade Steel. 14M

UNIT-V

9. Design a square shaped water tank of capacity $400m^3$ (400,000 liter) resting on the ground and having a flexible base. The materials used in the construction are M30 grade of concrete & HYSD steel of grade Fe500. The overall height of the tank is restricted to 4.5M with a free board of 500mm. The bearing capacity of a soil at the site is $250kN/m^2$. 14M

(OR)

10. Design a cylindrical water tank of capacity $300m^3$ (300,000 liter) resting on the ground and having a flexible base. The materials used in the construction are M20 grade of concrete & HYSD steel of grade Fe415. The overall height of the tank is restricted to 4M with a free board of 400mm. The bearing capacity of a soil at the site is $200kN/m^2$. 14M

Q.P. Code: 254612

SET - 2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: DESIGN & DETAILING OF STEEL STRUCTURES (CE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) What are the three conditions in plastic analysis ? Briefly explain them. 7M
   (b) Define (i) Shape factor, (ii) Load factor and (iii) Plastic hinge 7M

(OR)

2. An ISLC 300 @ 324.7 N/m (Fe 410 grade of steel) is to carry a factored tensile force of 900 kN. The channel section is to be welded at the site to a gusset plate 12 mm thick. Design a fillet weld, if the overlap is limited to 350 mm. 14M

UNIT – II

3. Determine the effective net area of double angle section connected to a gusset plate 12mm in thickness as shown in Fig. 1, for the following data : 14M

Diameter of bolts = 16 mm

Number of bolts = 6

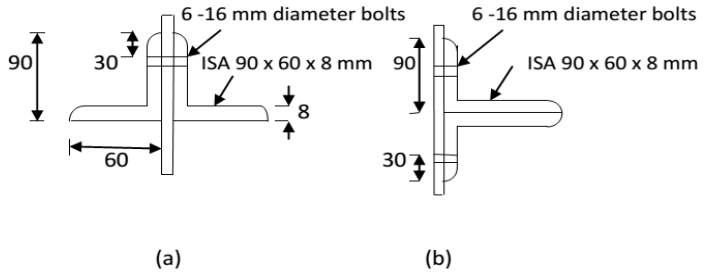
Pitch of bolts = 40 mm

Edge distance of bolts = 30 mm

Grade of bolts : 4.6

Grade of steel : Fe 410

Angles : tack bolted.



What will be the effective net area if the angles are not tack bolted?

(OR)

4. Design a stanchion 3.5 m long, in a building, subjected to a factored load of 550 kN. Both the ends of the stanchion are effectively restrained in direction and position. Use steel of grade Fe 410. 14M

UNIT – III

5. A simply supported steel joist of 4.0 m effective span is laterally supported throughout. It carries a total uniformly distributed load of 40 kN (inclusive of self-weight). Design an appropriate section using steel of grade Fe 410 14M

(OR)

6. Design a laterally unsupported beam of effective span 4 m for the following data: Grade of steel : Fe 410 ; Maximum bending moment : M = 550 kN-m ; Maximum shear force : V = 200 kN. 14M

UNIT – IV

7. Design a stiffened seat connection for an ISMB 350 @ 514 N/m transmitting an end reaction of 320 kN (due to factored loads) to a column section ISHB 300 @ 576.8 N/m. The steel is of grade Fe 410 and bolts of grade 4.6. 14M

(OR)

8. A bracket plate 10 mm thick is used to transmit a reaction of 140 kN at an eccentricity of 100 mm from the column flange. Design the fillet weld. 14M

UNIT-V

9. A column ISHB 35O @ 661.2 N/m carries an axial compressive factored load of 1700 kN. Design a suitable welded gusset base. The base rests on M 15 grade of concrete. 14M

(OR)

10. A column section ISHB 350 @ 661.2 N/m carries a factored axial compressive load of 1650 kN and factored bending moment of 90 kN-m. Design the base plate and its connections. Assume concrete pedestal of M-20 grade. 14M

Q.P. Code: 254412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Regular Examinations of November 2018

SUB: TRANSPORTATION ENGINEERING – II(CE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain the concept of creep using Percussion theory. How do you rectify creep.	7M
	(b)	What are the advantages and disadvantages of concrete sleepers	7M
		(OR)	
2.	(a)	Discuss briefly about the functions of different components of permanent way.	7M
	(b)	Explain about the adzing of sleepers.	7M

UNIT – II

3.		What are the purposes of railway stations and also explain about the factors to be considered for selecting a site for a railway station.	14M
		(OR)	
4.		Discuss in detail about the underground railways and tube railways.	14M

UNIT – III

5.	(a)	List out Aircraft characteristics to be considered in planning and designing of an airport.	7M
	(b)	Explain briefly about the bypass taxiway with the help of a neat sketch.	7M
		(OR)	
6.	(a)	Draw a typical sketch of an airport layout showing the location of airways, taxiways, apron, runway, terminal building etc., of a two way offset parallel runways.	8M
	(b)	Differentiate between minimum circle radius and minimum turning radius of an aircraft.	6M

UNIT – IV

7.	(a)	Discuss briefly about Rubble mound break waters.	7M
	(b)	What are dry docks? Discuss briefly about the design principle of dry dock.	7M
		(OR)	
8.		Based on what factors harbours are classified? How are they classified? Explain with the help on neat diagrams wherever needed.	14M

UNIT-V

9.	(a)	Discuss about the hydraulic dredger with the help of a neat sketch.	7M
	(b)	What are timber piles and explain the concept of the protection of the timber piles.	7M
		(OR)	
10.	(a)	Explain the formation of tides. Explain tidal day, spring tides and neap tides.	7M
	(b)	Explain about the bucket ladder dredger and grab dredger with neat sketches.	7M

Q.P. Code: 254212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: WATER RESOURCES ENGINEERING - II (CE)

Time: 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Define a spillway. What are its functions? How are spillways classified?	7M
	(b)	Describe with a neat sketch how the profile of an ogee spillway is evolved.	7M
		(OR)	
2.	(a)	Describe with neat sketches the various types of bucket type energy dissipators.	7M
	(b)	List the common types of gates used for spillways. Describe any two types of spillway gates with neat sketches.	7M

UNIT – II

3.	(a)	Define a canal fall. Explain the necessity of canal falls. What factors influence their location?	7M
	(b)	Describe briefly the different types of canal falls.	7M
		(OR)	
4.		Describe the procedure for designing a 'straight glacis fall'.	14M

UNIT – III

5.	(a)	What is a head regulator? What are the functions of a distributary head regulator and a cross-regulator?	7M
	(b)	What is a canal outlet? What are the requirements of a good outlet?	7M
		(OR)	
6.	(a)	What are modular, semi-modular and non-modular outlets? Describe with a neat sketch a non-modular type of outlet.	7M
	(b)	Define sensitivity of an outlet. Find the relationship between sensitivity and flexibility of an outlet.	7M

UNIT – IV

7.	(a)	Define a cross-drainage work. Differentiate between :(i) aqueduct and syphon aqueduct and (ii) super passage and canal syphon.	7M
	(b)	Describe the various factors affecting the suitability of aqueduct and syphon aqueduct.	7M
		(OR)	
8.		Explain the important features of design of cross drainage works.	14M

UNIT-V

9.	(a)	What is 'development of water resources'? Give details of India's water resources.	7M
	(b)	Explain the purposes served by water resources development projects.	7M
		(OR)	
10.	(a)	Explain the process of project formulation.	7M
	(b)	What are the various management strategies? Explain.	7M

Q.P. Code: 253812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VII Sem. (R15) Supplementary Examinations of May 2019

SUB: ADVANCED FOUNDATION ENGINEERING (CE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) How would you check the stability of an anchored sheet pile wall with fixed earth support method? 7 M

   (b) How will you fix the depth of embedment of different sheet piles in cohesive and cohesionless soils? 7 M

(OR)

2. A cantilever sheet pile wall retains cohesionless to a height of 6 m. The soil, including that into which the pile is driven, is cohesionless with $\varphi = 30^o$, $\gamma = 19$ kN/m^3 , $\gamma_{sub} = 10$ kN/m^3 . The surface of the retained soil is horizontal and level with the top of the wall. The water level in the backfill is 3 m from top. Determine the depth of embedment of sheet pile. 14 M

UNIT – II

3. (a) Discuss the method for the design of circular cellular coffer dam on rock. 7 M

   (b) A trench 5 m deep is to be made in clay with unconfined compressive strength 100 kN/m^2, $\varphi = 0^o$ and $\gamma = 17.5$ kN/m^3. Horizontal timber struts are to be provided at lengths of 1
   , 2.5 and 4 m below the ground level. The centre to centre spacing of the struts along the length of trench is 2.0 m. Making necessary assumptions, draw the earth pressure envelope and estimate the loads carried by the struts. 7 M

(OR)

4. (a) Describe the methods for the design of various components of a braced cut, stating the assumptions made. 7 M

   (b) Check the stability of circular cellular coffer dam shown in Fig. Q.4.b. against sliding and overturning. Take $\gamma = 18$ kN/m^3 , $\varphi = 30^o$, $\delta = 25^o$, K = 0.6, $f = 0.3$, $T_{all} = 1500$ kN/m. The diameter of the main cell is 15 m. 7 M

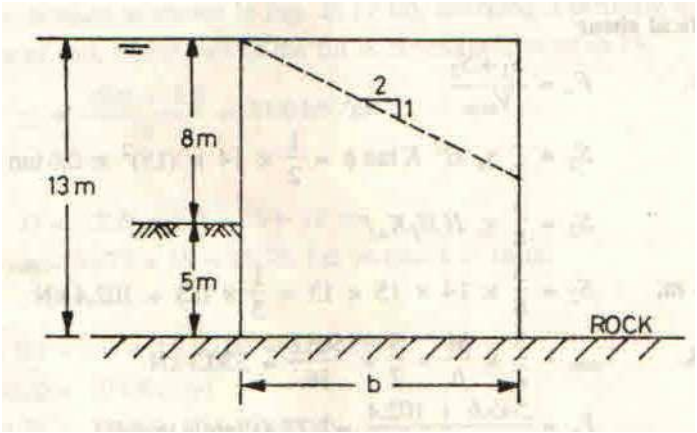


Fig. Q.4.b.

UNIT – III

5. (a) Discuss various forces acting on a well foundation. 7 M

(b) The well has the following particulars: Outer diameter = 5 m ; Inner diameter = 3 m ; Depth below scour level = 12 m ; Moment = 5000 kN.m ; Horizontal force acting at 8 m above the scour level = 600 kN ; Factor of safety = 2.0 . Assuming that the well tilts about a certain point above the base, compute the allowable total equivalent resisting force due to earth pressure. Take $\gamma_{sat} = 20\ kN/m^3$, $\varphi = 30^o$. 7 M

(OR)

6. (a) What are different shapes of wells? Discuss the characteristics of each type. 7 M

(b) Design a well foundation to be sunk through 30 m of sand to support a load of 50 MN. The allowable bearing pressure is 1700 kN/m^2. Test the feasibility of sinking the well foundation, taking the skin friction as 27 kN/m^2. What is the thickness of the concrete seal requires. 7 M

UNIT – IV

7. (a) Define the collapse potential. How would you determine it? 7 M

(b) A soil profile's active-zone depth is 3.5 m. If a foundation is to be placed 0.5 m below the ground surface, what would be the estimated total swell? The following data were obtained from laboratory tests. 7 M

Depth (m)	0.5	1	2	3
Swell (%)	2	1.5	0.75	0.25

If the allowable total swell is 10 mm, what would be the undercut necessary to reduce the total swell?

(OR)

8. (a) Explain the typical damages that a structure resting on expansive soil is likely to suffer. 8 M

(b) Explain the terms (i) free swell, (ii) differential free swell, (iii) swelling potential and (iv) swelling pressure 6 M

UNIT-V

9. (a) Write a note on stabilization of soil with lime and mention the physical and chemical changes that occur in soil 7 M

(b) Explain the chemical stabilization of soil along with various chemicals that used. 7 M

(OR)

10. (a) Discuss the stabilization of soil with Geo-synthetics. 7 M

(b) What is mechanical stabilization? Discuss the factors affecting the properties of mechanical stabilized soil. 7 M