AR20

CODE: 20CET206 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech.II Semester Regular/Supplementary Examinations, May, 2023

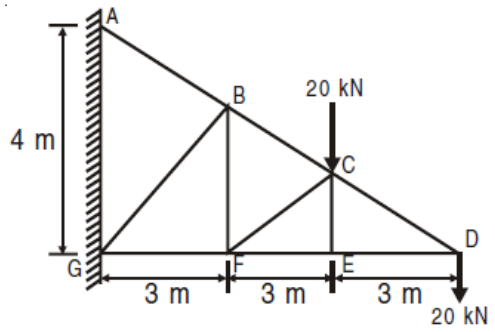
Structural Analysis

(CIVIL ENGINEERING)

Time: 3 Hours **Max Marks: 60**

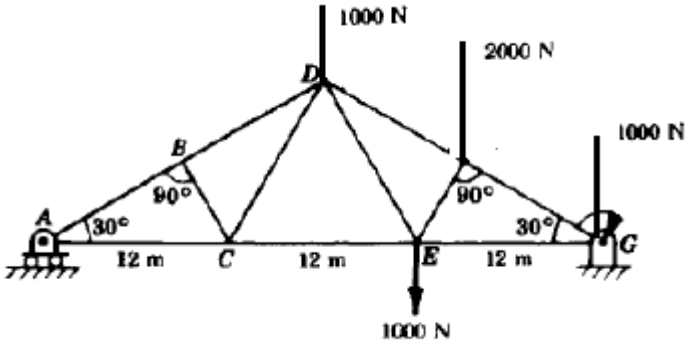
Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

		Marks	CO	Blooms Level
	UNIT-I			
1.	Determine the forces in all the members of a truss loaded as shown in Fig.	10	1	2

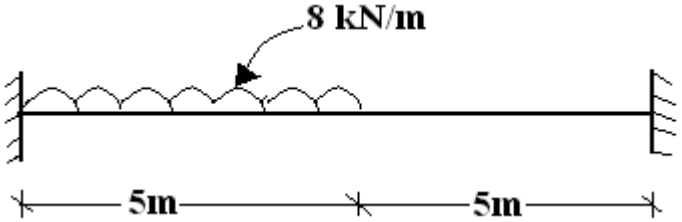


(OR)

2.	Determine the forces in the members BD,CD and CE of the truss loaded as shown in the figure.	10	1	3



	UNIT-II			
3.	A fixed beam is loaded as shown in the figure. Determine the fixing moments and reactions at the ends and draw the shear force and bending moment diagrams	10	2	3



(OR)

4.	A propped cantilever beam of span 12m subjected UDL of intensity 20 kN/m distributed for a length of 6m from the fixed end. Draw the shear forced and bending moment diagram	10	2	3

UNIT-III

5.	a	Derive the energy stored due to Bending moment 'M'.	5	3	3
	b	Derive the energy stored due to axial loading.	5		3

(OR)

6.		A two span continuous beam of equal span 4m each having simple supports is subjected to UDL of 30kN/m over its entire length. Find the magnitude of reaction at middle support by using Castigliano's theorem.	10	3	4

UNIT-IV

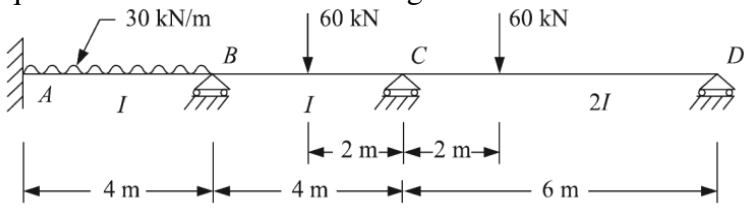
7.		A two hinged parabolic arch has a span of 35m and a central rise of 7m. Calculate the bending moment, radial shear and normal thrust at a section distant 10m from the left hinge, due to a single point load of 6kN acting at 12m from the right support.	10	4	4

(OR)

8.		A three hinged parabolic arch has a span of 20m and a central rise of 5m. The arch is subject to a UDL over left half portion and a point load of 40kN acting at 6m from the right support. Calculate the bending moment, radial shear and normal thrust at a section distant 8m from the left hinge.	10	4	4

UNIT-V

9.		Analyze the continuous beam shown in figure, using three-moment equation. Draw S.F and B.M diagrams.	10	5	4

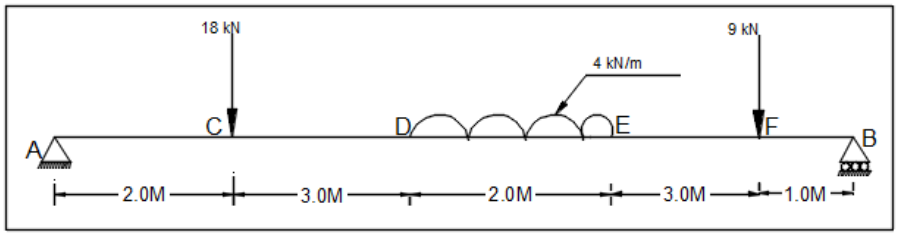


(OR)

10.		ABC is a continuous beam with constant EI throughout its length. The end supports A and C are fixed and beam is continuous over middle support B. Span BC is uniformly loaded with 10kN per metre length, while a concentrated vertical load of 100kN acts at the mid span AB. Draw SFD and BMD. Use three-moment theorem.	10	5	4

UNIT-VI

11.		Find Shear force at 4m from left support and Bending moment at center of span for given simply supported beam in the method of Influence line diagrams.	10	6	4



(OR)

12.		Draw the influence diagram for bending moment at any section of a simply supported beam. Using the ILD, determine the support reactions and find bending moment at 2m and 4m for a simply supported beam of span 8m subjected to three point loads of 10kN, 15kN and 5kN placed at 1m, 4m and 6m respectively	10	6	4

AR20

CODE: 20CST206 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B. Tech. II Semester Regular/Supplementary Examinations, May, 2023

DATABASE MANAGEMENT SYSTEMS

(COMMON TO CSE, CSM & IT)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

			Marks	CO	Blooms Level
		UNIT-I			
1.	a	Write the advantages of DBMS	5 M	CO1	L2
	b	Explain different Roles of DBA	5 M	CO1	L2
		(OR)			
2.		Explain different types of Data Models in DBMS with examples	10 M	CO1	L2
		UNIT-II			
3.	a	Summarize the role of ER Model in database design by taking a suitable example.	5 M	CO2	L2
	b	What is a View? Write the syntax to create and drop a view? Give examples.	5 M	CO2	L2
		(OR)			
4.		Explain Integrity Constraints with suitable examples	10 M	CO3	L2
		UNIT-III			
5.	a	Differentiate between nested query and correlated nested query with example.	5 M	CO3	L2
	b	Explain set-comparison operators with examples	5 M	CO3	L2
		(OR)			
6.		Explain different types of joins with examples	10 M	CO3	L2
		UNIT-IV			
7.	a	Explain problems related to decomposition	5 M	CO4	L2
	b	Why normalization is needed? Explain the process of normalization.	5 M	CO4	L2
		(OR)			
8.		Differentiate between 3 NF and BCNF with example	10 M	CO4	L2
		UNIT-V			
9.	a	Explain different states of a transaction with neat diagram.	5 M	CO5	L2
	b	Explain strict 2 PL	5 M	CO5	L2
		(OR)			
10.		Explain concurrency control techniques with examples	10 M	CO5	L2
		UNIT-VI			
11.	a	Differentiate between ISAM and B+ Tree.	5 M	CO6	L2
	b	Explain clustered and non-clustered indexing with example	5 M	CO6	L2
		(OR)			
12.	a	Distinguish between Primary and Secondary Indexes with example	5 M	CO6	L2
	b	Explain B+ tree indexing in detail	5 M		L2

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CODE: 20ECT206 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech.II Semester Regular/Supplementary Examinations, May, 2023

ANALOG COMMUNICATIONS

(ELECTRONICS AND COMMUNIATION ENGINEERING)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

			Marks	CO	Blooms Level
		UNIT-I			
1.	a.	Consider a single-tone conventional AM signal with a total power of 1 kW. What is the power in each of the sideband frequency components if the modulation depth is 70%.	5M	CO1	Apply
	b.	With suitable diagram explain the square-law diode modulation method for AMgeneration?	5M	CO1	Understand
		(OR)			
2.	a.	What is modulation? Why is modulation used in communication system?	5M	CO1	Remember
	b.	Draw and Describe an expression for AM wave and sketch its frequency spectrum.	5M	CO1	Understand
		UNIT-II			
3.	a.	Explain the operation of balanced modulator.	5M	CO2	Understand
	b.	Distinguish between DSB-AM, DSB-SC, and SSB-SC system of modulation, sketch theirwaveform.	5M	CO2	Remember
		(OR)			
4.	a.	Explain the method of generating VSB signal from SSB signal.	5M	CO2	Understand
	b.	Explain the phase-shift method of SSB-SC generation.	5M	CO2	Understand
		UNIT-III			
5.	a.	A frequency-modulated voltage wave is given by the equation : $e = 12 \cos (6 \times 10^8 t + 5 \sin 1250\ t)$Find (i) carrier frequency (ii) signal frequency (iii) modulation index (iv) maximum frequency deviation (v) power dissipated by the FM wave in a 10-ohm resistor.	5M	CO3	Apply
	b.	Explain Armstrong method of generation of FM signal.	5M	CO3	Understand
		(OR)			
6.	a.	Explain the direct method of FM generation.	5M	CO3	Understand
	b.	Distinguish between Narrow band FM over Wide band FM	5M	CO3	Remember
		UNIT-IV			
7.	a.	Explain the effect of feedback on the performance of AM transmitter.	5M	CO4	Understand
	b.	Draw the block diagram of FM Transmitter and explain the function of eachblock in detail.	5M	CO4	Understand
		(OR)			
8.	a.	With neat sketch explain the principle of operation of Super heterodyne receiver.	5M	CO4	Understand
	b.	What is the significance of AGC circuit? Differentiate between simple and delayed AGC.	5M	CO4	Remember
		UNIT-V			
9.	a.	Explain the PPM generation from PWM with a neat block diagram andnecessary figures.	5M	CO5	Understand
	b.	Compare PAM, PWM and PPM pulse modulation techniques.	5M	CO5	Remember
		(OR)			

10.	a.	Explain the generation of PPM, with a neat circuit diagram and wave forms	5M	CO5	Understand
	b.	Explain the generation and detection of PAM.	5M	CO5	Understand

UNIT-VI

11.	a.	What is FDM? Explain the importance of FDM over TDM along with circuitdiagram.	5M	CO6	Understand
	b.	With a neat block diagram, explain the operation of Time division multiplexing technique.	5M	CO6	Understand

(OR)

12.	a.	Explain about noise in AM systems.	5M	CO6	Understand
	b.	Compare the FM system with AM system from the point of view of noise performance.	5M	CO6	Remember

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CODE: 20EET206 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech.II Semester Regular/Supplementary Examinations, May,2023

A.C.MACHINES

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

			Marks	CO	Blooms Level
		UNIT-I			
1.		Explain the three Phase induction motor equivalent circuit diagram at Standstill and running conditions with phasor diagrams	10	1	2
		(OR)			
2.	a	Explain the working principle of three phase induction motor	5	1	2
	b	Explain how rotating magnetic field is produced in case of three phase induction motor	5	1	2
		UNIT-II			
3.	a	Explain the Auto-transformer Starting method for three phase induction motor	5	2	2
	b	Explain any one speed control method for three phase induction motor	5	2	2
		(OR)			
4.		Explain the procedure to construct circle diagram using No-load & Blocked rotor test.	10	2	3
		UNIT-III			
5.	a	Explain the armature reaction effect in case of synchronous machine.	5	3	2
	b	A three phase, 50Hz, 10-pole, star connected salient pole alternator has 150 slots. The armature coil short chorded by 2 slots. Find out the pitch factor and distribution factor for fifth and seventh harmonic components.	5	3	3
		(OR)			
6.	a	What are the factors affect the generated emf of an alternator, explain	5	3	1
	b	Develop the phasor diagrams of an alternator at lagging power factor, leading power factor and unity power factor. Neglect the armature resistance.	5	3	2
		UNIT-IV			
7.		Define voltage regulation of an alternator and explain how it is determined through mmf method? Also justify why it is called optimistic approach?	10	4	2
		(OR)			
8.		A three phase, star connected, 1500kVA, 6600V, 50Hz alternator has armature resistance and synchronous reactance of 0.4ohm and 6ohm per phase respectively. Determine the voltage regulation at 0.8 lagging power factor and at 0.707 leading power factor through emf method	10	4	3
		UNIT-V			
9.	a	Explain the construction of synchronous motor?	5	5	2
	b	Develop the phasor diagrams of synchronous motor under normal excitation, under excitation and over excitation conditions?	5	5	2
		(OR)			
10.		Why synchronous motor is not self starting? Explain various starting methods of synchronous motor in brief?	10	5	3
		UNIT-VI			
11.		Explain no load and blocked rotor tests on single phase induction motor, also explain how to obtain equivalent circuit parameters from test data?	10	6	1
		(OR)			
12.	a	Explain double field revolving theory in case of single phase induction motor.	5	6	1
	b	Explain working of capacitor start and run single phase induction motor	5	6	1

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CODE: 20MET206 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech. II Semester Regular/Supplementary Examinations, May, 2023

MANUFACTURING TECHNOLOGY-1

Mechanical Engineering

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

			Marks	CO	Blooms Level
		UNIT-I			
1.	a	What is casting? Explain the casting steps and their applications	5	1	Remembering
	b	Discuss different types of patterns and their applications	5	1	Understanding
		(OR)			
2.	a	Explain CO_2 moulding process with advantages, disadvantages and applications.	5	1	Understanding
	b	Describe construction of cupola furnace and various melting zones	5	1	Remembering
		UNIT-II			
3.	a	Discuss the following (i) Gate (ii) Chills (iii) Chaplets	5	2	Understanding
	b	A cylindrical riser of 6cm diameter and 6cm height has to be designed for a sand casting mould for producing a steel rectangular plate casting of 7cmX 10cm X 2cm dimensions having the total solidification time of 1.36minute. Find the total solidification time fo the riser in minutes.	5	2	Understanding
		(OR)			
4.		Discuss precision investment casting process, advantages and applications of the process	10	2	Remembering
		UNIT-III			
5.	a	Define welding process and classify different Arc welding processes	4	3	Understanding
	b	Explain principle of MIG welding with suitable sketches and their applications	6	3	Understanding
		(OR)			
6.	a	Discuss the following processes (i) Spot welding (ii) seam welding	5	3	Understanding
	b	Explain thermit welding process and its applications	5	3	Applying
		UNIT-IV			
7.	a	Derive Length of deformation zone, Angle of bite, Maximum reduction possible for one pass.	5	4	Understanding
	b	In a rolling process, sheet of 25mm thickness is rolled to 20mm thickness. Roll is of diameter 600mm and it rotates at 100 rpm. Find the roll strip contact length .	5	4	Analysing
		(OR)			
8.	a	Define extrusion process. Explain forward extrusion process and applications.	5	4	Understanding
	b	Discuss wire drawing and tube drawing with neat sketches	5	4	Understanding
		UNIT-V			
9.	a	Define forging. Explain smith forging, with neat sketch.	5	5	Understanding
	b	Discuss drop forging stages i) Fullering (ii) Edging (iii) Bending (iv) Blocking	5	5	Understanding
		(OR)			
10.	a	Explain following sheet metal working operations (i)Punching (ii)Blanking (iii) Bending	4	5	Understanding
	b	A rectangular hole of size 100mmX50mm is to be made on a thick sheet of steel having ultimate tensile strength and shear strength of 500MPa and 300MPa respectively. The hole is made by punching process. Neglecting the effect of clearance, find the punching force in KN	6	5	Understanding
		UNIT-VI			
11.		Explain following methods with suitable figures (a) Electrohydraulic forming (b)Explosive forming	10	6	Understanding
		(OR)			
12.		Explain following techniques with neat sketch (a) Injection moulding (b) Blow moulding	10	6	Understanding

AR18

CODE: 18CST207 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B. Tech II Semester Supplementary Examinations, May, 2023

Database Management Systems

(Common to CSE AND IT)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	. Discuss in brief about the characteristics of DBMS?	4M
	b)	What is a Database model? List out various database models and explain any two of them	8M
		(OR)	
2.	a)	Write the importance of Logical data independence	4 M
	b)	Explain: (i) Database (ii) Metadata (iii) Data Dictionary (iv) user constraints table	8 M

UNIT-II

3.	a)	What is Entity set? and also define Relationship set. List and explain the symbols used to draw ER Diagram	6M
	b)	Explain the difference between weak entity and strong entity set. How to represent the strong entity and weak entity set through ER diagram? Give an example.	6M
		(OR)	
4.	a)	Explain in detail about various key constraints used in database system	6M
	b)	Draw an ER diagram for Hospital management system	6M

UNIT-III

5.	a)	Define BCNF.	4M
	b)	Consider the following TRANS-MSTR table: TRANS-STR(TNO,ACCNO,DATE,PARTICULAR,DR_CR,AMT,BAL) Write a database trigger on the TRANS-MSTR that checks the following: i) The transaction amount is not zero and is positive. ii) In case of a withdrawal the amount does not exceed the current balance for that account number.	8M
		(OR)	
6.	a)	Discuss GROUPBY and HAVING clauses with an example. And also give the constraints related to their usage.	4M
	b)	What is JOIN operator in DBMS? Explain all the variations of the JOIN operation in relational algebra with a suitable example.	8M

UNIT-IV

7.	a)	What is lossless join decomposition? Explain the same with an example.	6M
	b)	Explain two-phase locking for ensuring serializability.	6M
		(OR)	
8.	a)	What are the benefits of using dynamic indexing? Explain in detail B+ tree file Organization.	6M
	b)	Explain how Concurrency control can be achieved with locking methods.	6M

UNIT-V

9.	a)	Write short notes on: i) Primary index ii) Clustered index iii) Secondary index.	6M
	b)	Write and explain optimistic concurrency control algorithm	6M
		(OR)	
10.	a)	What is database Recovery? Explain Shadow paging in detail.	8M
	b)	Explain B+ tree indexing.	4M

AR18

CODE: 18EET207 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B. Tech II Semester Supplementary Examinations, May,2023

ELECTRICAL MACHINES-II

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Explain principle of operation of 3-phase Induction motor. 6M
   b) A 3-phase , 20hp, 208 V, 60Hz, 6-Pole, star connected Induction moto delivers 15KW at a slip of 5%r. Calculate the following(i) Synchronous speed (ii) Rotor speed (iii) Frequency of rotor current. 6M

(OR)

2. a) Derive the expression for starting torque in an 3- phase induction motor and also condition for maximum starting torque 6M
   b) A 480V, 60 Hz, 6-pole, three-phase, delta-connected induction motor has the following parameters: 6M
   $R_1=0.461\ \Omega$, $R_2=0.258\ \Omega$, $X_1=0.507\ \Omega$, $X_2=0.309\ \Omega$, $X_m=30.74\ \Omega$
   Rotational losses are 2450W. The motor drives a mechanical load at a speed of 1170 rpm. Calculate the following (i)Synchronous speed in rpm(ii)slip(iii)Line Current(iv)Input Power.

UNIT-II

3. a) Explain the Speed control methods of Induction motors. 6M
   b) A 400V ,3-Phase , 50Hz star connected Induction motor has the following test results 6M

No-load test	400V	8.5 A	1100W
Blocked Rotor Test	180V	45A	5799W.

   Calculate the line current and power factor when operating at 4% slip. The stator resistance per phase is 0.5Ω

(OR)

4. a) Explain the Torque-slip characteristics of 3-Phase,Induction motor 6M
   b) Explain the operation of Induction Generator. 6M

UNIT-III

5. a) Define (i) Pitch factor (ii) Distribution factor (iii) slot angle 6M
   b) A 3-phase, 50 Hz alternator is running at 600 rpm has a 2-layer winding, 12 turns/coil, 4 slots/pole/phase, and coil-pitch of 10 slots. Let us find the induced EMF per phase and line if the flux/pole is 0.035 webers. 6M

(OR)

6. a) Explain the construction and types of Alternators. 6M
   b) Explain armature reaction and it's effects in Synchronous Generator. 6M

UNIT-IV

7. a) Explain the method of pessimistic to compute the voltage regulation of an alternator 6M
   b) A 3-phase Star connected synchronous generator rated at 10KVA and 230V has a synchronous reactance of 1.2 Ω per phase and armature resistance of 0.5 Ω per phase. Calculate(i) The % voltage regulation at full load and 0.8 lagging power factor(ii) The power factor of load such that the voltage regulation is zero on full load. 6M

(OR)

8. a) A 3 phase 1800 kVA, 3.3 kV, 50 Hz, 250 rpm, salient pole alternator has the following design data.Stator bore diameter = 230 cm Gross length of stator bore = 38 cm Number of stator slots = 216 Number of conductors per slot = 4Sectional area of stator conductor = 86 mm^2 Using the above data, calculate(i) Flux per pole(ii) Flux density in the air gap(iii) Current density(iv) Size of stator slot. 6M
   b) Explain the MMF method to compute the voltage regulation of an alternator 6M

UNIT-V

9. a) Explain the principle of operation of Synchronous motor with neat sketch. 6M
   b) Explain the starting methods of Synchronous motors. 6M

(OR)

10. a) Explain why the synchronous motor is not a self starting motor. 6M
    b) A 1492 kW ,unity power factor,3-phase ,star-connected ,2300 V, 50 Hz, synchronous motor has a synchronous reactance of 1.95 ohm/phase. Compute the max. torque in N-m which this motor can deliver if it is supplied from a constant frequency source and if the field excitation is constant at the value which would result in unity power factor at rated load. Assume that the motor is of cylindrical rotor type. Neglect all losses. 6M

AR18

CODE: 18MET206 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B. Tech II Semester Supplementary Examinations, May, 2023

MANUFACTURING TECHNOLOGY -I

(Mechanical Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1	a.	Explain the steps involved in the casting process	6
	b.	Discuss the advantages and applications of casting.	6

(OR)

2	a.	What are the different types of patterns used in casting? Explain pattern allowances.	6
	b.	A casting with a cylindrical riser is to be made from aluminium alloy using the sand-casting process. The volume of the casting is 0.1 m^3, and the volume of the riser is to be equal to the volume of the casting. Calculate the height and diameter of the riser required to feed the casting, assuming a solidification time of 5 minutes.	6

UNIT-II

3	a.	Describe the classification of welding processes with the help of a flow diagram.	6
	b.	Explain the principle and equipment used in gas welding	6

(OR)

4	a.	Describe the principle of resistance welding. Discuss the different types of resistance welding.	6
	b.	Discuss the different types of welding defects with supporting diagrams.	6

UNIT-III

5	a.	Explain the fundamentals of metalworking processes with a neat sketch	6
	b.	Discuss the difference between hot working and cold working along with its advantages and disadvantages.	6

(OR)

6	a.	Explain the types of forging operations, with a special emphasis on press forging.	6
	b.	Explain the working principle of extrusion and drawing operations with suitable diagrams.	6

UNIT-IV

7	a.	Explain the different types of forging dies, with the help of neat diagram.	6
	b.	Explain differences between punching and blanking with the help of neat diagrams	6

(OR)

8	a.	Describe the principles of sheet metal working, with a special emphasis on punching and blanking	6
	b.	Discuss the different types of sheet metal working processes, with a special emphasis on bending and embossing.	6

UNIT-V

9	a.	Discuss the types, properties, and applications of plastics	6
	b.	Explain the injection moulding process with suitable diagram	6

(OR)

10	a.	Discuss the advantages and applications of electro-hydraulic forming.	6
	b.	Describe the different types of additives used in plastics processing	6

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AR18

CODE: 18CET209 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B. Tech II Semester Supplementary Examinations, May, 2023

Structural Analysis-I

(CIVIL ENGINEERING)

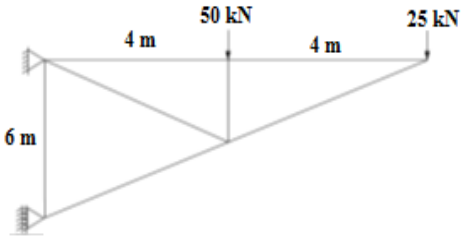
Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Differentiate between static and kinematic indeterminacy. 4 M

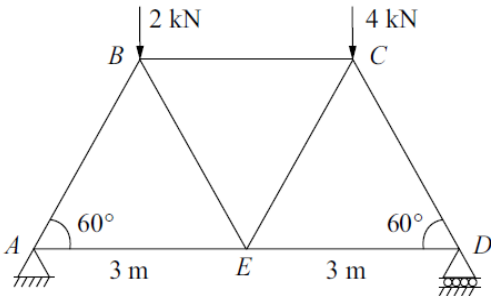
   b) Use anyone of the method and determine the member forces and the reaction at the supports. 8 M



(OR)

2. a) What are the assumptions in the truss analysis? 4 M

   b) Find the forces in all members of the pin jointed truss shown in Fig.by using method of joints. 8 M



UNIT-II

3. A Propped cantilever AB of span 9 m is fixed at A and propped at B. It is carrying a uniformly distributed load of 2 KN/m over the entire span Determine support reactions and sketch SFD and BMD. 12 M

(OR)

4. A Fixed beam of AB of span 6m is carrying a point load of 6 KN and a clockwise Couple of 5 KNM at distances of 2m from left and right supports respectively. Determine support reactions and sketch SFD and BMD. 12 M

UNIT-III

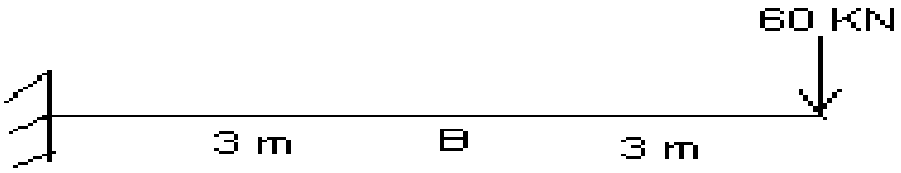
5. A continuous beam ABC consists of spans AB and BC of lengths 4m and 6m respectively, the ends A and B being fixed. C is a free end. The span AB carries a uniformly distributed load of 24 kN/m while the span BC carries a point load of 108 kN at a distance of 2 m from C. Find the support moments and support reactions. Also sketch the bending moment diagram 12 M

(OR)

6. Derive the clayporn's therom of three moments of continuous beam ABC . 12 M

UNIT-IV

7. a) State and Prove Castigliano's first theorem. 4 M
   b) Using Castigliano's theorem-1 obtain slope at B for the cantilever beam shown below. 8 M



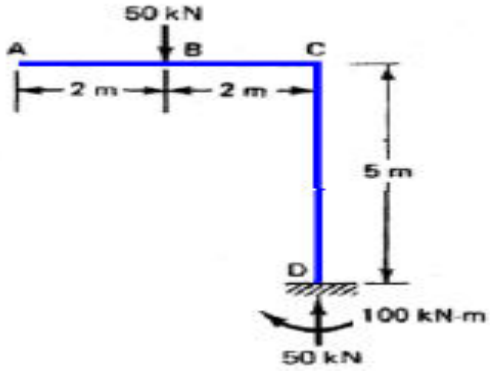
(OR)

8. a) State Betti's and Maxwell's reciprocal theorems and mention their applications. 4 M

   b) Determine the deflection in a simply supported beam of length 'L' under a point load 'P' acting at a distance 'a' from left end and 'b' from right end? Use strain energy method. 8 M

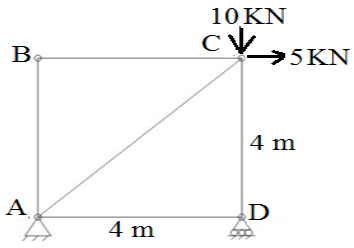
UNIT-V

9. Determine the horizontal deflection at A for the frame shown below. Take E= 200 $\times 10^6$ kN/m^2; I = 200$\times 10^6$ mm^4 12 M



(OR)

10. Find horizontal and vertical deflection of joint C of truss ABCD loaded as shown below. Assume that, all members have the same axial rigidity. 12 M



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AR18

CODE: 18ECT208 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B. Tech II Semester Supplementary Examinations, May,2023

ANALOG COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Define amplitude modulation? Derive expression for single tone AM wave.	6M
	b)	Explain generation of AM waves using Square Law Modulator	6M
		(OR)	
2.	a)	Derive power relations in AM wave.	4M
	b)	Explain detection of AM wave by using Square Law Detector.	8M

UNIT-II

3.	a)	Explain frequency domain description of DSB-SC modulated wave.	6M
	b)	Explain coherent detection of DSB-SC modulated wave.	6M
		(OR)	
4.	a)	Explain time domain description of SSB-SC modulated wave	6M
	b)	What is VSB modulation? Explain in detail.	6M

UNIT-III

5.	a)	Explain spectral analysis of sinusoidal FM signals.	6M
	b)	Draw and explain FDM.	6M
		(OR)	
6.	a)	Draw and explain direct method of FM generation.	8M
	b)	Compare TDM and FDM.	4M

UNIT-IV

7.	a)	Classify Radio Receivers in detail.	6M
	b)	Compare AM and FM receivers.	6M
		(OR)	
8.	a)	Draw and explain low level AM transmitter.	6M
	b)	Draw and explain phase modulated FM transmitter.	6M

UNIT-V

9.	a)	Explain generation and demodulation of PAM.	6M
	b)	Draw and explain generation of PWM.	6M
		(OR)	
10.	a)	Explain threshold effect in FM.	6M
	b)	Derive the SNR in AM receivers using envelope detection.	6M

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AR16

CODE: 16CE2008 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, May, 2023

Structural Analysis-I

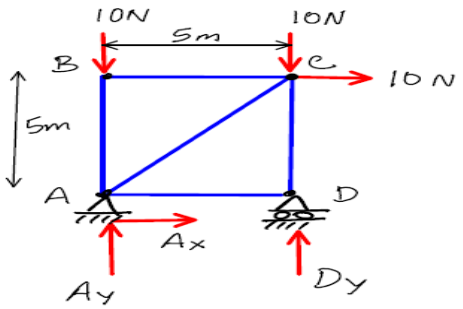
(CIVIL ENGINEERING)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

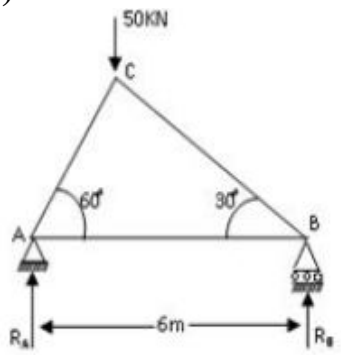
1. a) Analyse given truss by using methods of joints and determine external rections and internal forces in the members. 8m



b) Write types of frames and Assumptions in the members of a perfect frame. 6m

(OR)

2. Find the forces in the members *AB*, *BC*, *AC* of the truss shown below in Fig. End *A* is hinged and *B* is supported on rollers. 14m



UNIT-II

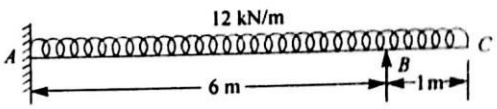
3. The propped at free end cantilever of span 4.5m is propped at and carrying a point load of 45 kN at a distance of 1.5m from the fixed support Determine the Prop reaction and draw the SFD and BMD. 14m

(OR)

4. Calculate the fixed end moments and support reactions of fixed beam AB of length 6m carrying a UDL of 4 KN/M over the left half of the span. 14m

UNIT-III

5. a) Find the support moments and draw the SFD and BMD of give beam as shown in figure. 7m



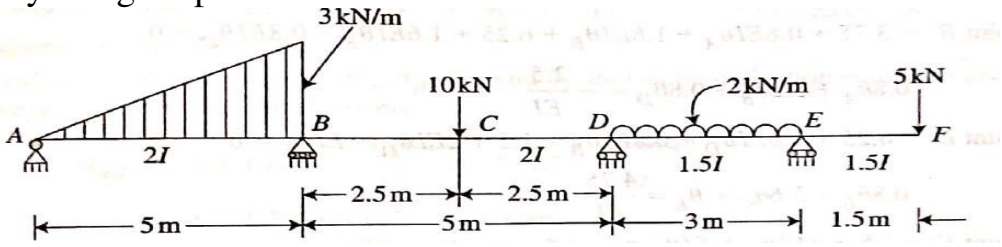
b) Analyse a continuous beam of span's AB and BC, either ends are simply supported and length of each span 8m. The entire carrying an udl of 40 KN/M on whole span calculate the support moments and draw the SFS ad BMD. 7m

(OR)

6. Derive the clayporn's therom of three moments of the continuous beam of ABC. 14m

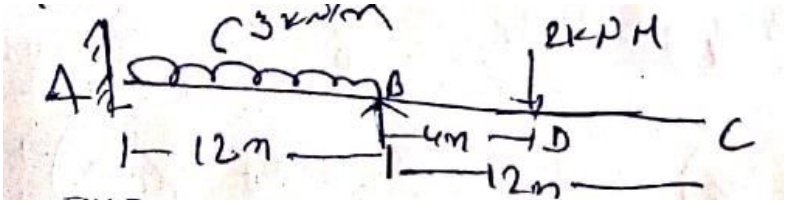
UNIT-IV

7. Find the support moments for the given continuous beam as shown in fig. by using Slope Deflection Method. 14m



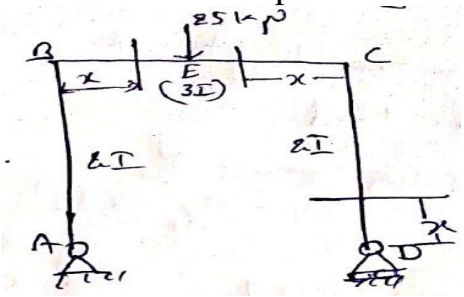
(OR)

8. Find the support moments and Reactions and also draw SFD and BMD for the given continuous beam as shown in fig. by using Slope Deflection Method. 14m



UNIT-V

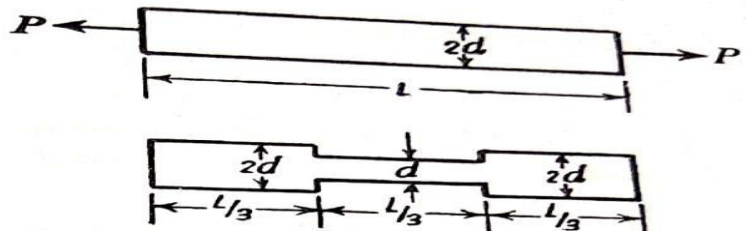
9. a) Find Deflection o portal frame at Point 'C'as show fig. 8m



b) Derive expression for strain energy stored due to bending. 6m

(OR)

10. a) Compare the strain energy two bars of same material and same length are subjected to an equal gradual applied tensile load as shown in fig. 8m



b) Derive expression for strain energy stored due to bending. 6m

AR16

CODE: 16CS2008 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, May, 2023

Database Management Systems

(COMMON TO CSE & IT)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Draw and explain the three level architecture of database system.	**7M**
	b)	What is a data model? Explain in detail about various data models.	**7M**
		(OR)	
2.	a)	List and explain about different users of database system.	**8M**
	b)	List and explain various database languages with examples.	**6M**

UNIT-II

3.	a)	Discuss in detail about various concepts used in ER-model.	**8M**
	b)	Specify and explain various structural constraints of relationship type.	**6M**
		(OR)	
4.	a)	Describe the properties of a relation.	**6M**
	b)	What is a view? How views are implemented?	**8M**

UNIT-III

5.	a)	By considering an example describe various data update operations in SQL.	**8M**
	b)	What is a group function? List and explain how to use group functions in SQL with appropriate examples.	**6M**
		(OR)	
6.	a)	List and explain the common data types available in SQL.	**8M**
	b)	Explain the following with examples. i) Nested Queries ii) Correlated Queries	**6M**

UNIT-IV

7.	a)	What is a functional dependency? Write Armstrong inference rules of functional dependencies.	**6M**
	b)	Explain in detail about properties of decompositions.	**8M**
		(OR)	
8.	a)	What is normalization? Explain in detail about various normal forms.	**7M**
	b)	What is concurrency control? With suitable examples explain various concurrency problems.	**7M**

UNIT-V

9.	a)	Discuss in detail about different types of failures.	**7M**
	b)	Describe the concept of shadow paging technique.	**7M**
		(OR)	
10.	a)	What is an index structure? Explain how to use hash table as an index structure for a database.	**7M**
	b)	Explain B+ trees indexing.	**7M**

AR16

CODE: 16EE2012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, May,2023

ELECTRICAL MACHINES-II

(ELECTRICAL & ELECTRONICS ENGINEERING)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Write the advantages disadvantages of 3- Θ induction motor, compare between different types of induction motors based on the construction of Rotor. **7M**

   b) The Induced emf between the slip ring terminals of an induction motor at standstill isn100V. The rotor windings are star connected and has a resistance of 0.4 ohms per phase and standstill reactance of 2.25 ohms per phase. Calculate, the rotor current when the slip-ring terminals are short – circuited and the rotor is rotating at a slip of 4%. **7M**

(OR)

2. a) Obtain the condition for maximum running torque and starting torque. **7M**

   b) A 6pole, 3-phase, 50hz, Induction Motor develops maximum torque of 300N-M at a speed of 960rpm. Determine the torque developed by the motor at 5% slip. The rotor resistance per phase is 0.6 ohm. **7M**

UNIT-II

3. a) Explain the working of Star – Delta starter for three phase Induction Motor. **6M**

   b) A 400V, 40HP, 50 Hz, three phase Induction Motor gave the following test data: No load Test :400V, 20A, 1200W,20A, 1200W;; Blocked Rotor Test: 100V, 45A, 2750W; Stator DC resistance per phase is 0.01 ohm. The ratio of AC to DC resistance is 1.5. The friction and windage loss is 300W. Calculate the circuit elements of the approximate equivalent circuit of the motor. **8M**

(OR)

4. a) Explain the cascade arrangement for controlling the speed of three phase Induction Motor. Derive the equation for speeds at which the cascade set operates. **7M**

   b) Explain the principle and operation of Induction Generator. Also write their applications. **7M**

UNIT-III

5. a) Explain the advantages of stationary armature in Synchronous Machine? **4M**

   b) Derive the expression for generated EMF in alternator. What is the effect of distribution factor (Kd) and pitch factor (Kc) on it and derive the same factors? **10M**

(OR)

6. a) Why harmonics are produced in generated EMF of alternator? How these harmonics are minimized? **7M**

   b) A 3 phase , 4 Pole,50Hz,star connected alternator has flux per pole of 0.12 Wb. It has 4 slots/pole/phase and 4 conductors per slot. If the coil span is 150 degrees. Find the induced emf/phase? **7M**

UNIT-IV

7. a) Explain how potier triangle is developed from OCC and ZPFC. **7M**

   b) A 3phase star connected 1000KVA and 11Kv alternators as a rated current of 52.5A. The Resistance of a stator/phase =0.45Ω. The tests results are given below. The OC Test If=12.5A voltage between lines=422V. ; The SC Test If=12.5A line current =52.5A Determine full load voltage regulation of alternator at 0.8 pf lagging by synchronous impedance method. **7M**

(OR)

8. a) Explain the method of synchronization of 3-phase alternator by Lamp method. **6M**

   b) Explain Blondel's two reaction theory. Draw phase diagram (Lagging Power Factor and drive expression for no load terminal voltage. **8M**

UNIT-V

9. a) Explain the principle of operation of Synchronous Motor, what do you understand by term Normal Excitation, Under Excitation & Over Excitation with the help of phasor diagrams. **7M**

   b) A 2200V, 3-phase star connected Synchronous motor has an effective resistance and synchronous reactance of 0.4 ohm and 2.4 ohm per phase respectively. The input is 900KW at normal voltage and the induced line emf is 2700V. Calculate the line current and power factor. **7M**

(OR)

10. a) Explain the effect of increased load on the synchronous motor when the excitation is kept constant. Draw necessary phasor diagrams. **7M**

    b) A factory has a total load of 1800KW at a pf of 0.6 lagging. If it is desired to improve the factory pf to 0.95 lagging with the installation of a synchronous condenser, then calculate : (i) The KVA rating of the synchronous condenser. (ii) Total KVA of the Factory. **7M**

AR13

CODE: 13EC2009 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM SUPPLEMENTARY EXAMINATIONS, MAY, 2023

ANALOG COMMUNICATIONS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define modulation index?
   b) What is envelope distortion?
   c) What is the advantage of SSB over DSB?
   d) What are the advantages of Ring Modulator?
   e) What is Angle modulation? What are different types of Angle modulation?
   f) What is frequency deviation & phase deviation?
   g) What is the difference between High level and low-level transmitters?
   h) Define image frequency.
   i) Write Merits and Demerits of PAM
   j) Write SNR expressions for FM and AM.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) The RC load for a diode envelope detector consists of a 1000 pF capacitor in parallel with a 10-K resistor. Calculate the maximum modulation depth that can be handled for sinusoidal modulation at a frequency of 10 KHz if diagonal peak clipping is to be avoided — 6
   b) Explain the generation of AM signal using Linear time invariant circuits? — 6

(OR)

3. a) Explain the demodulation of AM signal using envelope detector? — 6
   b) The output power of an AM transmitter is 1KW when sinusoidally modulated to a depth of 100%. Calculate the power in each side band when the modulation depth is reduced to 50%. — 6

UNIT-II

4. a) Draw the diagram of balanced modulator using transistors and show that it produces DSB-SC wave. — 6
   b) Explain the generation of SSB signal .Also explain the power and bandwidth requirements of SSB. — 6

(OR)

5. a) What is the effect of frequency and phase over error in demodulation of DSB-SC wave using synchronous detector 6
   b) Discuss the generation of SSB signal using phase discrimination method. 6

UNIT-III

6. a) Which method of FM signal generation is the preferred choice, when the stability of the carrier frequency is of major concern? Discuss about the method in detail. 6
   b) An FM radio link has a frequency deviation of 30 kHz. The modulating frequency is 3 kHz. Calculate the bandwidth needed for the link. What will be the bandwidth if the deviation is reduced to 15 kHz? 6

(OR)

7. a) Compute the bandwidth requirement for the transmission of FM signal having a frequency deviation 75 KHz and an audio bandwidth of 10KHz. 6
   b) With neat sketch explain the Frequency Division Multiplexing. 6

UNIT-IV

8. a) Describe the variable reactance type and phase modulated FM transmitter. 6
   b) List and discuss the factors influencing the choice of the intermediate frequency for a radio receiver. 6

(OR)

9. a) With neat sketch explain AM Transmitter. 6
   b) What is simple automatic gain control? What are its functions? 6

UNIT-V

10. a) Explain the demodulation procedure for PWM signal demodulation. 6
    b) Derive the expression for figure of merit of AM system for large value of modulation index (m>1). 6

(OR)

11. a) With neat sketch explain the generation of PPM from PWM. 6
    b) Explain the need for Pre-emphasis and Deemphasis circuits in FM system 6

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