AR18

CODE: 18CEE311 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022
ADVANCED DESIGN OF REINFORCED CONCRETE
(Professional Elective-1)
(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 cantilever retaining wall has 6m high wall from the top of the base slab and retains earth with an inclined fill(25^o to the horizontal). Density of the soil retained is $17kN/m^3$ and its angle of repose is 30^o. Estimate the reinforcement and design the base section of the wall for flexure. 12M

(OR)

2. A counterfort retaining wall has a total height of 10m from foundation level. The backfill has a horizontal top. The density and angle of internal friction of soil are $16kN/m^3$ and 30^o respectively. Base slab width and thickness are 5m and 300mm respectively. Toe width from the face of wall is 600mm. Thickness of wall is 260mm. The counterforts are spaced at 3m centre to centre thickness of counterfort is 300mm. Determine the pressure under the base and design the toe slab. 12M

UNIT-II

3. Design a circular water tank to hold 6,00,000 liters of water. Assume rigid joints between the wall and base slab. Adopt M25 concrete and Fe:415 steel. Sketch details of reinforcements. 12M

(OR)

4. Design a rectangular water tank 4m x 6m with depth of storage 3m, resting on ground and whose walls are rigidly joined at vertical and horizontal edges. Assume M25 concrete and Fe500 grade steel. Sketch the details of reinforcement in the tank. 12M

UNIT-III

5. Design a roof slab for a circular room 5m inside diameter. The thickness of wall is 230mm and the slab projects outside the walls by 1m all around. The live load on the slab is $3kN\backslash m^2$ at service Use M25 concrete and Fe 415 steel. 12M

(OR)

6. Design a typical flat slab which is supported on 500mm diameter circular columns spaced 6mx5m apart in both the directions. The live load on the flat slab is $4kN\backslash m^2$. Use Fe 415 steel and M20 concrete. 12M

UNIT-IV

7. Design a pile under a column transmitting an axial load of 500kN. The **pile** is to be driven to a hard stratum available at a depth of 8m. Use M25 concrete and Fe:415 steel. 12M

(OR)

8. A column 600mm x 600mm carries an axial load of 1000kN and is supported on **three piles**. The piles are driven to hard strata available at the depth of 12m. Use M20 concrete and Fe:415 steel. Design the pile. 12M

UNIT-V

9. Explain the parameters affecting the ductility of RC sections and discuss various methods of improving the ductility. 12M

(OR)

10. A reinforced concrete building of size 50m x 30m consists of six stories and each storey height is 3.3m. It is braced in the transverse direction by frame action and by reinforced concrete in fill walls in the longitudinal direction. Determine wind force on the building 12M

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CODE: 18MEE311 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, September-2022

ROBOTICS

(Professional Elective-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

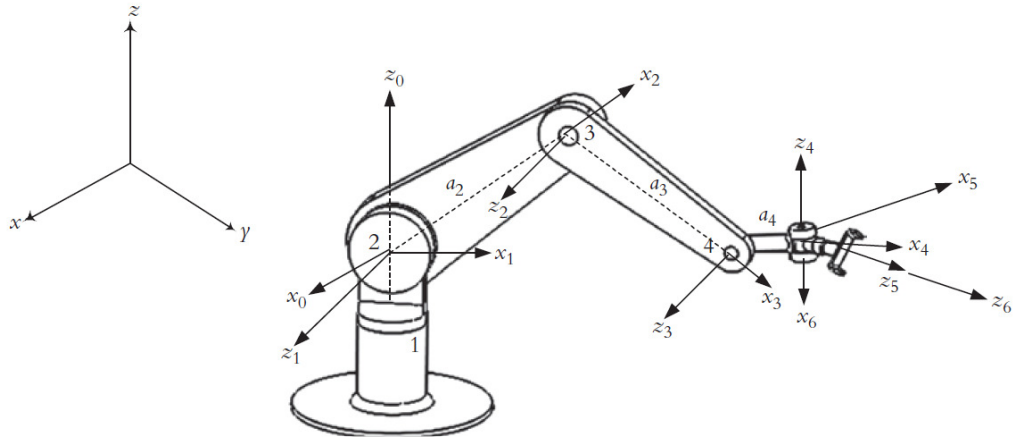
1. Define Robot? Explain the Components of Robots with a neat sketch 12M

(OR)

2. Explain working principle of vacuum gripper with neat sketch 12M

UNIT-II

3. For the simple 6-DOF robot shown in figure, assign the necessary coordinate frames based on the D-H representation, fill out the accompanying parameters table, and derive the forward kinematic equation of the robot 12M



(OR)

4. a) Two points $a_{uvw} = (4,3,2)^T$ and $b_{uvw}=(6,2,4)^T$ with respect to the rotated OUVW coordinate system, determine the corresponding points a_{xyz}, b_{xyz} with respect to the reference coordinate system if it has been rotated 60^0 about the OZ axis 6M

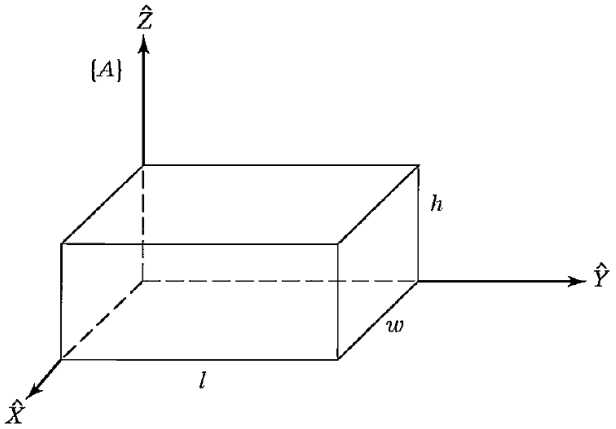
   b) Derive Homogeneous transformation matrix for a Cartesian Robot 6M

UNIT-III

5. The trajectory of a particular joint is specified as follows: Path points in degrees: 10, 35, 25, 10. The duration of these three segments should be 2, 1, 3 seconds, respectively. The magnitude of the default acceleration to use at all blend points is 50 degrees/second^2. Calculate all segment velocities, blend times, and linear times. 12M

(OR)

6. Find the inertia tensor for the rectangular body of uniform density 'ρ' with respect to the coordinate system shown in figure also find the inertia tensor 12M



UNIT-IV

7. Explain the construction and working principle of a Force sensor and Potentiometer with neat sketch 12M

(OR)

8. Give the classification of motion interpolation strategies and explain straight- line motion interpolation 12M

UNIT-V

9. Write short notes on Tangent graph base obstacle avoidance 12M

(OR)

10. Explain about clean room robots and their applications 12M

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CODE: 18CSE324 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, Sepember-2022

CRYPTOGRAPHY AND NETWORK SECURITY

(Professional Elective – II)

(Common to CSE & 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)	What is threat and attack? What is the difference between both? List some examples of attacks which have arisen in real world cases.	6M
	b)	Differentiate between passive attacks and active attacks.	6M
		(OR)	
2.	a)	Discuss any two transposition Techniques of Cryptography	6M
	b)	Explain role of buffer in program execution? How programmer can use this for buffer overflow attack?	6M

UNIT-II

3.	a)	Draw the general structure of DES. Explain in detail the encryption and decryption process.	6M
	b)	Describe Block cipher design criteria's in detail.	6M
		(OR)	
4.	a)	Explain the model of conventional crypto system.	6M
	b)	Explain the DES design criteria.	6M

UNIT-III

5.	a)	Consider a Diffie-Hellman scheme with a common prime q=11 and a prime root α =2 i) If user 'A' has public key YA=9, what is A's private key XA? ii) If user 'B' has public key YB=3, what is shared secret key 'K'?	6M
	b)	Perform encryption and decryption using RSA algorithm for p=3,q=11,e=7and M=5.	6M
		(OR)	
6.	a)	Sketch the diagram for Generic Model of Digital Signature Process. List two disputes that can arise in the context of message authentication.	6M
	b)	Formulate the requirements for a digital signature.	6M

UNIT-IV

7.		What cryptographic functions are used in PGP and show that functions providing confidentiality and authentication to mail in PGP with suitable diagrams	12M
		(OR)	
8.	a)	Explain how Authentication header guards against the replay attack.	6M
	b)	Explain the overview of IP Security.	6M

UNIT-V

9.	a)	With a neat diagram explain the working principle of packet-filtering router firewall? And compare with application level gateway.	6M
	b)	Describe steps involved in the SSL record protocol transmission.	6M
		(OR)	
10.	a)	In which protocol dual signature is used? What is its purpose? Discuss how it can be used in that protocol?	6M
	b)	"SSL protocol works with the help of Record protocol, Change cipher Spec protocol, Alert protocol and Handshaking protocol." Then what is the purpose and explain the function of the Record protocol?	6M

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CODE: 16EC3022 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, September-2022

COMPUTER ORGANIZATION AND ARCHITECTURE

(Electronics and Communication 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)	Distinguish between system software and application software.	[6M]
	b)	Design one stage of an arithmetic logic shift unit (ALSU) and explain its operation.	[8M]
		(OR)	
2.	a)	Explain about the various types of bus structures used in a computer.	[6M]
	b)	Discuss the shift micro operations with examples.	[8M]

UNIT-II

3.	a)	Perform the subtraction using 2`s complement method: i) 11010-10001 ii) 10101-10110	[4M]
	b)	Show the step-by-step multiplication process using Booth's algorithm for multiplication of (+15) x (-13) in binary.	[10M]
		(OR)	
4.	a)	Show the hardware register configuration for Signed-magnitude addition and subtraction.	[6M]
	b)	Draw the flowchart for performing binary division using restoring algorithm.	[8M]

UNIT-III

5.	a)	Discuss cache hit and cache miss. If processor gets the data from a cache memory 80 times successfully for 100 requests, what is the hit rate and miss rate?	[6M]
	b)	What is virtual memory technique? Explain different virtual memory techniques.	[8M]
		(OR)	
6.	a)	With the help of a block diagram, explain about the memory hierarchy in a computer.	[6M]
	b)	Draw the block diagram of 128x8 RAM chip and write the function table.	[8M]

UNIT-IV

7.	a)	What is the need of input-output interface?	[6M]
	b)	Distinguish between memory mapped I/O and Isolated I/O.	[8M]
		(OR)	
8.	a)	Describe the strobe control mode of data transfer using the timing diagram and sequence of events.	[8M]
	b)	With a neat diagram explain the programmed I/O mode of transfer.	[6M]

UNIT-V

9.	a)	Define the parallel processing and draw the processor with multiple functional units.	[6M]
	b)	Draw the block diagram for address sequencer in a micro programmed control unit and explain the operation in detail	[8M]
		(OR)	
10.	a)	Draw the flowchart for an Arithmetic pipeline and explain. Show the timing diagram.	[8M]
	b)	Describe the process for mapping a macro instruction code to a micro instruction address.	[6M]

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CODE: 13CS3024 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, September-2022

SOFTWARE PROJECT MANAGEMENT

(Computer Science & Engineering)

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

PART-A

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

1. a) Analyze the term software and mention any two characteristics of software
   b) What is a phase in project management?
   c) Define pareto principle or 80/20 principle.
   d) List out each levels of CMMI
   e) Compare verification and validation
   f) Define risk evaluation.
   g) How the check points are useful in the process
   h) Mention any two guidelines for iterative process planning
   i) Write two management indicators in the process control and instrumentation
   j) Why is process instrumentation is important ,justify your answer

PART-B

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

UNIT-I

2. Explain the evaluation of water fall model in detail. 12M

(OR)

3. a) illustrate briefly about the activities covered by spiral model 6M
   b) Why it is many software developers don't pay enough attention to requirements engineering? Are there ever circumstances where you can skip it. 6M

UNIT-II

4. State and explain principles of conventional software engineering. 12M

(OR)

5. a) Examine the technical perspective in Model based software architectures. 6M
   b) Elucidate in detail about the sequencing and scheduling activities 6M

UNIT-III

6. a) Analyze the Software process and Iteration workflows 6M
   b) Discuss in detail about the categories of factors in hazard identification 6M

(OR)

7. a) Identify Checkpoints of the process of Major mile stones 6M
   b) Mention different Periodic status assessments in software process 6M

UNIT-IV

8. a) Explain the planning guidelines in Iterative Process 6M
   b) Write about evolution of Organizations in Iterative Process 6M

(OR)

9. Explain in detail about project organizations. 12M

UNIT-V

10. Examine different quality indicators and tailoring of process control in detail 12 M

(OR)

11. Write about Software Metrics and why automation is required 12 M