AR13

CODE: 13CE4033 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular Examinations, April-20177
Ground Water Development and Management
(Elective-III)
(Civil Engineering)

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

PART-A

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

1. a) What is vadose water?
   b) What is a flowing well?
   c) What is Darcy's Law?
   d) Define Specific yield.
   e) Define porosity.
   f) Define transmissibility.
   g) What is unconfined aquifer?
   h) What is cone of depression in case of well under steady flow?
   i) What is injection well?
   j) Define storage coefficient.

PART-B

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

UNIT-I

2. a) Describe Darcy's Law. **4**
   b) Derive differential equation governing ground water flow in three dimensions. **8**

(OR)

3. a) Differentiate specific yield and specific retention. **4**
   b) The water table levels in two observation wells 350 m apart are +210.5 m and +206.5 m respectively. If the hydraulic conductivity and porosity of the aquifer are 12.5 m/day and 15 per cent, what is the actual velocity of flow in the aquifer ? **8**

UNIT-II

4. a) Derive Theim's equation of steady ground water flow towards a well in a unconfined aquifer. **6**
   b) An unconfined aquifer has a thickness of 30 m. A fully penetrating 20 cm diameter well in this aquifer is pumped at a rate of 35 lit/s. The drawdown measured in two observation wells located at distances of 10 m and 100 m from the well are 7.5 m and 0.5 m respectively. Determine the average hydraulic conductivity of the aquifer. **6**

(OR)

5. a) Explain the unsteady flow towards a well with a neat sketch. **6**
   b) What are the modifications suggested by Jacob to simplify the Theis method. **6**

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CODE: 13CE4033 **SET-2**

UNIT-III

6. Explain any two methods of surface exploration **12**

(OR)

7. Write a note on applications of aerial photogrammetry in subsurface investigations **12**

UNIT-IV

8. Briefly explain the concept of artificial recharge and describe various methods of it. **12**

(OR)

9. How RS & GIS is applied in case of artificial recharge of ground water **12**

UNIT-V

10. Write a brief note on saline water intrusion into an aquifer. Explain Ghyben- Herzberg relation **12**

(OR)

11. How the concept of conjunctive use of water is useful in basin water management? Describe any three methods of control of sea water intrusion. **12**

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AR13

CODE: 13EE4030 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular Examinations, April-2017

DIGITAL CONTROL SYSTEMS

(Elective-III)

(Electrical and Electronics Engineering)

Time: 3 hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1x10=10 M]**

1. a) Define ideal sampler.
   b) What is the function of holding circuits?
   c) What are the limitations of z-transforms?
   d) Obtain the Z-transform of $X(s) = \frac{s}{s^2+1}$.
   e) Write the expression for state transition matrix.
   f) Write the general state equation for discrete time systems.
   g) Write the relation between state equation and pulse transfer function
   h) Define state and state variable.
   i) What is meant by observability?
   j)What is the condition for stability of system according to Jury's stability test?

PART-B

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

UNIT-I

2. a)Discuss the elements of discrete data control systems. [6M]
   b) Explain briefly the Zero Order Hold and First Order Hold. [6M]

(OR)

3. a) Briefly explain the properties of s-plane. [6M]
   b) Explain with the help of neat diagram the sampling theorem. [6M]

UNIT-II

4. a) Explain the mapping between s-plane and z-plane. [6M]
   b) Find the inverse z-transform of the following function [6M]

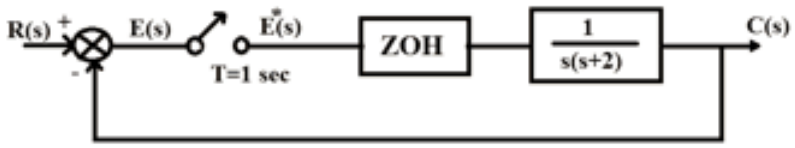
$$F(z) = \frac{2z}{z^2 - 1.2z + 0.5}$$

(OR)

5. a) Obtain the z-transform of the following sequence [4M]

$$x(k) = 8k(2^{k-1}) - 3k + 3$$

   b) Obtain the pulse transfer function for the system shown in figure [8M]



UNIT-III

6. a) Determine the state model for the following difference equation
   $y(k+2) + 2y(k+1) + 4y(k) = 4^k$ and $y(0), y(1)=1$.
   Find the complete solution of the above system. [7M]
   b) Write the properties of state transition matrix. [5M]

(OR)

7. a) Briefly explain recursive method for solving state equation. [6M]
   b) Solve the following difference equation using the Z- transforms method
   $c(k+2) - 1.5c(k+1) + c(k) = 2us(k)$ Where $c(0)= 0$, $c(1)=1$ [6M]

UNIT-IV

8. Obtain the discrete time state and output equation of pulse transfer function(when the sampling period T= 1sec) of the following continuous time system [12M]

$$G(s) = \frac{y(s)}{U(s)} = \frac{1}{s(s+3)}$$

(OR)

9. a) Explain the relation between state equation and transfer function. [6M]
   b) Briefly explain z-transform method of computing state transition matrix. [6M]

UNIT-V

10. A system described by the following state model

$$x(k+1) = \begin{bmatrix} -0.4 & 0 \\ 0 & -1 \end{bmatrix} x(k) + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(k) \; and \; y(k) = [0 \quad 1] x(k)$$

   Test its i) State controllability ii) Observability [12M]

(OR)

11. a) Using Jury's stability criterion, determine the stability of the following discretetime systems.
   $Z^3 - 1.1Z^2 - 0.1Z + 0.2 = 0$ [6M]
   b) Determine the range of k for the system shown below to be stable.
   $G(z) = \frac{kz(z+0.5)}{(z-1)(z-1.5)}$ [6M]

AR13

CODE: 13ME4034 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular Examinations, April-2017
INDUSTRIAL AUTOMATION
(ELECTIVE-III)
(Mechanical Engineering)

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

PART-A

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

1. a) Define industrial automation.
   b) List any two automatic tool changers
   c) What is the function of the workpart transfer system
   d) Name the mechanisms used to generate rotary power required by rotary indexing machines.
   e) What is Cycle time?
   f) State differences between Manual Assembly Lines and Automated Assembly System
   g) What is precedence diagram?
   h) What is a material-handling system?
   i) State unit load principle
   j) What is the working principle of Stereolithography?

PART-B

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

UNIT-I

2. a) Write about Automation Principles and Strategies. **[4 M]**
   b) Compare between Hydraulic and Pneumatic Systems. **[8 M]**

(OR)

3. a) Sketch positioning system consisting of lead screw driven by DC motor. Explain controls in automated system. **[8 M]**
   b) Elaborate types of automation. **[4 M]**

UNIT-II

4. a) Where to Use Automated Production Lines? **[4 M]**
   b) Elaborate the function of the Storage Buffers in Production Lines **[4 M]**
   c) Control Functions in an Automated Production Line **[4 M]**

(OR)

5.	a)	What are the design and fabrication considerations for Automated Production lines?	**[6 M]**
	b)	Sketch and explain line transfer mechanisms.	**[6 M]**

UNIT-III

6.	a)	Explain line balancing algorithms.	**[8 M]**
	b)	How Line balancing is improved?	**[4 M]**
		(OR)	
7.	a)	Define assembly line and Elaborate flexible assembly systems.	**[8 M]**
	b)	List part delivery work systems.	**[4 M]**

UNIT-IV

8.	a)	List Principles of Material Handling.	**[4M]**
	b)	Categorize various material handling equipment.	**[8 M]**
		(OR)	
9.	a)	Explain Automatic storage/retrieval systems with advantages and limitations.	**[8M]**
	b)	Discuss about Unit load AS/RS, Miniload AS/RS	**[4M]**

UNIT-V

10.	a)	Define Accuracy and Precision.	**[4M]**
	b)	Explain different physical configurations exist for the mechanical structure of the CMM.	**[8M]**
		(OR)	
11.	a)	Differentiate between contact and non contact inspection methods.	**[4M]**
	b)	Write about Rapid Prototyping applications and benefits.	**[8M]**

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AR13

CODE: 13EC4037 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular Examinations, April-2017
OPTICAL COMMUNICATIONS & NETWORKS
(ELECTIVE – III)
(Electronics & Communication Engineering)

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

PART-A

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

1. a) What is an index profile?
   b) Mention the losses responsible for attenuation in optical fibers?
   c) Why is carrier confinement used in LED?
   d) What is stimulated emission?
   e) What is group delay?
   f) What is pulse broadening?
   g) Define quantum noise?
   h) What is meant by bit error rate?
   i) Define Broadcast-and-select WDM network?
   j) Mention the key features of WDM?

PART-B

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

UNIT-I

2.	a)	What are the various elements of an optical communication system? Explain each element in brief.	**7**
	b)	Explain various fiber materials.	**5**
		(OR)	
3.	a)	Define an optical fiber. Explain in detail different types of optical fibers with neat sketches.	**6**
	b)	Explain Rayleigh scattering and Mie Scattering	**6**

UNIT-II

4.	a)	Explain how temperature effects on Avalanche gain in a p-i-n diode.	**6**
	b)	Write short notes on radiation patterns of a Lambertian source with necessary Equations.	**6**
		(OR)	
5.	a)	Derive the expression for threshold condition for LASER oscillations?	**6**
	b)	Differentiate between the photo diode parameters, 'Quantum limit' and 'Dark current'	**6**

UNIT-III

6.	a)	Write about Intermodal dispersion in step index and graded index fibers .	**6**
	b)	Explain the power launching in optical sources.	**6**
		(OR)	
7.	a)	Explain about fiber miss alignments losses?	**6**
	b)	Explain with signal distortion in single mode fibers?	**6**

UNIT-IV

8.	a)	Explain various factors involving in overall optical system rise time.	**6**
	b)	What are the system consideration for design a optical link?	**6**
		(OR)	
9.	a)	Explain about digital signal transmission in an optical link?	**6**
	b)	What are the various disturbances in the optical pulse detection mechanism?	**6**

UNIT-V

10.	a)	Explain Wavelength division multiplexing for optical communication system.	**6**
	b)	Explain about optical amplifiers	**6**
		(OR)	
11.	a)	Explain about optical CDMA?	**6**
	b)	Explain about optical splicers	**6**

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AR13

CODE: 13CS4034 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular Examinations, April-2017
HUMAN COMPUTER INTERACTION
(Computer Science & Engineering)

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

PART-A

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

1. a) What is the advantage in using GUI?
   b) Draw the design structure of 1990s screen
   c) What is indirect manipulation?
   d) Define usability.
   e) List any three difficulties with poor design.
   f) Define Menu
   g) What is the purpose of a screen?
   h) Explain any 2 goals of website navigation.
   i) What is icon?
   j) What are the uses of color?

PART-B

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

UNIT-I

2. What are the principals of user interface design? Explain in detail. **12 M**

(OR)

3. a) Describe about the impact of inefficient screen design on processing time. **6 M**
   b) What are the benefits of good design? Explain. **6 M**

UNIT-II

4. a) Discuss about the importance of user's tasks and needs in the design. **6 M**
   b) Discuss about the indirect method of requirement determination in detail. **6 M**

(OR)

5. Explain in detail various human aspects that are important and must be considered in designing a good interface. **12 M**

UNIT-III

6. Explain about different selecting menu choices in detail. **12 M**

(OR)

7. Define Menu. Explain different structures and functions of Menus in detail. **12 M**

AR13

CODE: 13CS4034 SET-2

UNIT-IV

8.	a)	Write about various window presentation styles.	**6 M**
	b)	Explain how to select the Proper Device-Based Controls.	**6 M**
		(OR)	
9.		Explain the various types of windows with suitable examples.	**12 M**

UNIT-V

10.	a)	What are the possible problems in choosing colors for screen design	**6 M**
	b)	Describe about choosing colors for categories of information in detail.	**6 M**
		(OR)	
11.	a)	What is Color? Give effective Foreground/Background combinations.	**6 M**
	b)	Focus on the uses of color to avoid in detail.	**6 M**

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AR13

CODE: 13IT4006 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular Examinations, April-2017
NETWORK MANAGEMENT SYSTEMS
(Elective-III)
(Information Technology)

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

PART-A

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

1. a) List out SNMP Services
   b) Constituents of IP Address Table.
   c) SNMP data Types
   d) Get and Set type PDU
   e) SNMP Community.
   f) What is Remote Monitoring?
   g) Encode the IP address 10.20.30.40 in TLV format?
   h) TMN implementation issues
   i) TMN Standards in brief.
   j) Future Trends of NMS.

PART-B

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

UNIT-I

2. a) Draw the Telephone Network Model from user perspective and describe it's functions
   b) Explain about logical Network Model.

(OR)

3. a) Discuss in brief about Internet configuration.
   b) Summarize the services provided by OSI Layers

UNIT-II

4. a) With a neat sketch Discuss about 3–Tier Organisational Model
   b) Demonstrate any five parameters of Managed Object Structure.

(OR)

5. a) Summarize the specifications for an Aggregate Managed Object
   b) Discuss about IP Address Table.

UNIT-III

6. a) Distinguish between SNMP Communication Model and Functional Model
   b) Illustrate about SNMP Access Policy

(OR)

7. a) Mention the protocol Entities for SNMP Messages
   b) Generalise the Get_Request operations for System Group

UNIT-IV

8. a) Discuss about TMN Service Architecture
   b) Illustrate the TMN Conceptual Model

(OR)

9. a) List Out TMN Services and its Functions.
   b) Significance of TMN Operational Architecture

UNIT-V

10. Demonstrate the Packet Loss Measurement and also explain the reasons for losses

(OR)

11. a) Role of SNMP Command tools
    b) Summarize about Network Management system Components

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