

AR13

CODE: 13CE4033

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

Ground Water Development and Management

(Elective-3)

(Civil Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Define specific capacity
b) What is perched ground water
c) Define specific yield of an aquifer
d) What is an aquitard
e) Define coefficient of permeability
f) What is darcy's law
g) What is ground water table
h) What is aquiclude
i) What is flowing well
j) Define specific retention

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Differentiate between confined and unconfined aquifer with neat sketch **6M**
b) Explain the following terms: (i) Radius of influence (ii) Water table (iii) artesian well (iv) cone of depression **6M**
(OR)
3. a) Explain groundwater hydrology with a neat sketch **6M**
b) Explain the following parameters a) permeability b) transmissivity **6M**

UNIT-II

4. a) Derive an expression for discharge from a well fully penetrating a confined aquifer. **6M**
b) Design a tube well with the following data. Yield required = 0.35 cumecs **6M**
Thickness of confined aquifer = 30m Radius of influence = 300m Permeability coefficient = 90m/day Draw down = 5.50m
(OR)
5. a) Explain the unsteady flow towards a well with a neat sketch **6M**
b) A 25cm well penetrates 50 m below the water table. After a long period of pumping at a rate of 1000 lpm, the drawdown in the wells 20 m and 40 m from the pumped well is found to be 4 m and 2.5 m respectively. Determine the transmissibility of the aquifer. What is the draw down in the pumped well? **6M**

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UNIT-III

6. a) Explain the principle of electrical resistivity method with a neat sketch. **6M**
b) Explain the necessity and importance of geophysical investigations **6M**
(OR)
7. Give an account of different methods used for exploration of ground water. **12M**

UNIT-IV

8. a) Explain the concept of artificial recharge. Write a note on advantages of artificial recharge. **6M**
b) Explain in detail about the recharge well method. **6M**
(OR)
9. a) Explain in brief about induced recharge with a neat sketch **6M**
b) Write a short notes on artificial recharge structures. **6M**

UNIT-V

10. a) Explain Ghyben-Herzberg relation between fresh water and saline water. **6M**
b) What is meant by conjunctive use of water explain **6M**
(OR)
11. a) What are the different methods of controlling salt water intrusion in coastal aquifers? Discuss **6M**
b) Explain ground water basin management. **6M**

AR13

CODE: 13EE4030

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

IV B.TECH II SEM REGULAR/SUPPLEMENTARY EXAMINATIONS, APRIL, 2018

DIGITAL CONTROL SYSTEMS (Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is periodic sampling?
b) What is acquisition time?
c) Define Pulse Transfer Function.
d) What is asymptotic stability?
e) Mention the inference when any one of the row is zero in routh table.
f) Give the formulae to find the asymptotic path to reach infinite pole/zero.
g) Define observability.
h) What is direct transmission matrix?
i) Mention the Advantages of Direct realisation.
j) List the different canonical representations.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) State the advantages of sampling process in control systems. 4M
b) State and prove Shanon's sampling theorem with relevant waveforms. 8M

(OR)

3. a) With neat sketches explain the principle of sample and hold circuit. 6M
b) Explain briefly about fractional and exponential hold devices. 6M

UNIT-II

4. a) Discuss the mapping between the S-plane and Z-plane and show that the mapping is not unique. 6M
b) Find the Z-transform of the transfer function $F(s) = \frac{1}{s(s+5)^2}$. 6M

(OR)

5. a) List out the limitations of Z-Transforms. 4M
b) Find the inverse Z-Transform of $F(Z) = \frac{1}{z^2(z-1)^2(z+1)}$. 8M

UNIT-III

6. a) Explain the solution of Discrete LTI system using Z-transformation. 6M
b) Find the state space representation for the discrete time system $y(k+3) + 6y(k+2) + 11y(k+1) + 8y(k) = 10u(k)$. 6M

(OR)

7. a) Given the pulse transfer function $G(z) = \frac{10}{z(z+2)^2(z+4)}$ Draw the state diagram and obtain state equations in parallel decomposition. 6M
b) A discrete time system is represented by the state model $x(k+1) = \begin{bmatrix} 0 & 1 \\ -0.16 & 1 \end{bmatrix} x(k) + \begin{bmatrix} 1 \\ 1 \end{bmatrix} r(k)$; $y(k) = [1 \ 0] x(k)$; $x(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$. Determine the discrete unit step response of the system. 6M

UNIT-IV

8. a) Derive the relation between state equation and transfer function. 6M
b) Obtain the Controllable canonical form for the pulse transfer $G(z) = \frac{(z+1)(z+2)}{z(z+5)^2(z+4)}$. 6M

(OR)

9. a) Given $G = \begin{bmatrix} 0 & 1 \\ -3 & 4 \end{bmatrix}$ Determine G^n . 6M
b) Obtain the pulse transfer function from state models? 6M
 $G = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 5 \\ -1 & 2 & 4 \end{bmatrix}$; $H = \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}$; $C = [1 \ 0 \ 1]$; $D = [0]$.

UNIT-V

10. a) Consider the characteristic polynomial $\Delta(z) = z^4 - 0.9z^3 + 0.14z^2 + 0.216z + 0.032 = 0$. Determine the stability of the system using jury's stability test. 6M
b) Consider the plant defined by the following state variable model 6M
 $G = \begin{bmatrix} 0.5 & 1 & 0 \\ -1 & 0 & 1 \\ 0 & 0 & 0 \end{bmatrix}$; $H = \begin{bmatrix} 1 & 4 \\ 0 & 0 \\ -3 & 2 \end{bmatrix}$; $C = [1 \ 0 \ 0]$ determine whether the system is completely Observable.

(OR)

11. a) Consider the characteristic polynomial $\Delta(z) = z^3 - 1.1z^2 - 0.1z + 0.2 = 0$. Determine the stability of the system using Bilinear Transformation. 6M
b) How the stability of the system is determined using root locus for the above equation? 6M

**INDUSTRIAL AUTOMATION
(Mechanical Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Define automation
b) What are feeding devices
c) Define USA principle
d) Define transfer lines
e) Define line balancing
f) What are flexible balancing lines
g) What are bar codes
h) What is tracking systems
i) Define reengineering
j) What is prototyping

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Write about various layouts used in automated plants [6M]
b) Explain various reasons of automation [6M]
(OR)
3. a) Discuss about Feeding devices [6M]
b) Explain various hydraulic and pneumatic components used in automation [6M]

UNIT-II

4. a) Explain about Classification of transfer lines [6M]
b) Discuss about Mechanical buffer storage [6M]
(OR)
5. a) Write about Work part transfer mechanisms [6M]
b) Describe the terms storage buffer and partial automation [6M]

UNIT-III

6. Discuss in detail about various manual assembly systems [12 M]
(OR)
7. Explain Line balancing with an example [12 M]

UNIT-IV

8. a) Explain Principles of material handling [6M]
b) Discuss about Automated Guided Vehicle systems [6M]
(OR)
9. a) Explain various types of automated storage and retrieval systems. [6M]
b) Discuss about Identification & Tracking Systems [6M]

UNIT-V

10. a) Write short notes on Machine vision [6M]
b) Write short notes on Coordinate Measuring Machine [6M]
(OR)
11. a) Explain Business Process Re-engineering [6M]
b) Discuss in detail about Concurrent Engineering [6M]

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CODE: 13EC4037

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

OPTICAL COMMUNICATIONS & NETWORKS

(Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1x10=10 M]

1. a) State Snell's Law.
- b) What are the types of scattering losses?
- c) Why silicon is not used to fabricate LED or Laser diode?
- d) What are the advantages of photodiodes?
- e) Define dispersion in optical fibers.
- f) What is group delay?
- g) Define the probability of error
- h) What is Multiplexing
- i) What is meant by bidirectional WDM
- j) What are the advantages of a trans-impedance amplifier?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) What are the various elements of Optical communication system? **6M**
Explain each element in brief?
 - b) A typical relative refractive index difference for an optical fiber designed for long distance transmission is 1%. Estimate the NA and the solid acceptance angle in air for the fiber when the core index is 1.46. Further, calculate the critical angle at the core-cladding interface within the fiber. It may be assumed that the concepts of geometric optics hold for the fiber. **6M**
- (OR)**
3. a) What are different types of bending losses in optical fiber? **6M**
 - b) Explain about linear scattering losses in optical fiber. **6M**

UNIT-II

4. a) Explain the resonant frequencies of a Laser Diode. **5M**
b) Draw the structure of edge emitting LEDs and explain its operation. **7M**

(OR)

5. a) Explain the external quantum efficiency. **5M**
b) Draw and explain the structure of InGaAs APD (avalanche photo diode). **7M**

UNIT-III

6. a) Explain the intermodal dispersion measurement technique in frequency domain. **6M**
b) A multimode graded index fiber exhibits total pulse broadening of 0.1 μ s over a distance of 15 km. Estimate:
(a) the maximum possible bandwidth on the link assuming no intersymbol interference;
(b) the pulse dispersion per unit length. **6M**

(OR)

7. a) Explain the concept of Polarization mode dispersion **6M**
b) Explain the pulse broadening due to inter model dispersion in different types of optical fibers **6M**

UNIT-IV

8. a) Explain digital signal Transmission in optical detectors. **6M**
b) Explain optical receiver and its configuration with a neat sketch. **6M**

(OR)

9. a) What are different error sources in optical detector? Explain. **6M**
b) What is link power budget? Discuss with an example. **6M**

UNIT-V

10. a) What are the principles of the WDM technique? List various advantages? **6M**
b) Explain different splicing techniques. **6M**

(OR)

11. a) Write short notes on optical CDMA. **6M**
b) Explain Wavelength division multiplexing couplers **6M**

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CODE: 13CS4034

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

HUMAN COMPUTER INTERACTION

(Computer Science and Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are Principles of user interface?
b) Give two differences between Internet, Intranet?
c) List out any two indirect methods for determining basic Business functions?
d) What is statistical graphics?
e) What are the functions of menus?
f) How can we choose the colors for perfect system consideration?
g) Write the differences between radio button and checkboxes?
h) What are Types of Windows?
i) Define Image?
j) What are possible problems with colors?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Compare and contrast the graphical user interface and the web user interface. 8M
b) What are the goals of User Interface Design? 4M

(OR)

3. a) Explain the concept of indirect manipulation. 4M
b) Explain Advantages and Disadvantages of Graphical Systems 8M

UNIT-II

4. a) Explain about business definition and requirement analysis. 8M
b) How to organize screen elements? Explain in detail. 4M

(OR)

5. Explain the process of determining basic business functions. 12M

UNIT-III

6. Explain Structures of Menus in detail 12M

(OR)

7. Explain types of Menus in detail. 12M

UNIT-IV

8. a) Describe in detail about organizing windows. 6M
b) Describe in detail about the guidelines for selecting device based controls. 6M

(OR)

9. a) What are components of windows? Explain. 8M
b) What are characteristics of device based controls. 4M

UNIT-V

10. a) Explain in detail about icons. 6M
b) Explain about Choosing Colors for Web Pages 6M

(OR)

11. a) Explain about Choosing Colors for Statistical Graphics Screens. 7M
b) Explain about Choosing Colors for Categories of Information. 5M

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CODE: 13CS4030

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

CLOUD COMPUTING
(Information Technology)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 X 10=10 M]

1. a) Define Cloud Computing.
b) List the drawback of Cloud.
c) Write any two examples for IaaS.
d) Define Weak SLA.
e) What are the main components of Hadoop Frame work?
f) What are the different types of Calendars we can create with Google?
g) Define Hypervisor.
h) What is REST?
i) What is the purpose of Open Cloud Consortium?
j) What are the characteristics of Cloud?

PART-B

Answer one question from each unit

[5X12=60 M]

UNIT-I

2. a) What are the categories of cloud deployment models? And compare them in at least any six aspects. [7M]
b) Explain the key players in cloud. What are the benefits of cloud computing? [5M]
- (OR)
3. a) Compare Distributed Computing with Cloud Computing. [6M]
b) Explain Business models around the cloud. [6M]

UNIT-II

4. a) What are the characteristics of PaaS? Explain how it is differ with traditional On-Premises Mode. [6M]
b) Write about GFS and compare GFS with HDFS. [6M]
- (OR)
5. a) What are the different services provided by the cloud? Explain any three services. [7M]
b) Write short notes on Microsoft Azure. [5M]

UNIT-III

6. a) Explain about Event Planning and workflow Management. [6M]
b) What are the advantages of storing files in cloud? Discuss about risks of storing data in cloud. [6M]

(OR)

7. a) What are the promises and drawbacks given by web-based word processing to the end user? [6M]
b). Write about collaboration via Social Networking. [6M]

UNIT-IV

8. a) What are the needs of virtualization? Explain Pros and Cons of virtualization. [6M]
b) Write about web conference tools in detail. [6M]

(OR)

9. a) Define full virtualization. Draw a neat sketch of paravirtualization architecture. [6M]
b) Write about Interpretation and binary translation. [6M]

UNIT-V

10. a) Explain Cloud Security Challenges. [6M]
b) Write about distributed Management Task Force. [6M]

(OR)

11. a) Explain standards of Application Developer in Cloud. [6M]
b) Write about security Assertion Markup Language. [6M]