

# AR18

**CODE: 18IET212**

**SET-2**

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

**II B.Tech II Semester Regular & Supplementary Examinations, September-2021**

**NUMERICAL METHODS**

**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) Find the square root of 25 given  $x_0 = 2.0$  &  $x_1 = 7.0$ . Using Bisection method **6M**  
b) Find the positive root of  $xe^x = 3$ , by using Regula-Falsi method. **6M**

**(OR)**

2. a) Find the negative root of  $x^3 + 2x^2 + 0.4 = 0$ , by using Newton-Raphson method. **6M**  
b) Find the root of  $x^3 - 2x - 5 = 0$ , by using Iteration method. **6M**

## UNIT-II

3. Find  $y(1.1)$  and  $y(2.1)$  by using Newton's forward and backward difference formula from the table **12M**

$x$	1	1.4	1.8	2.2
$y$	3.49	4.82	5.96	6.5

**(OR)**

4. Find the interpolating polynomial from the table and the value of  $f(2)$  **12M**

$x$	0	1	4	5
$f(x)$	4	3	24	39

### UNIT-III

5. The table given below reveals the velocity  $v$  of a body during the specified time  $t$ . Find the acceleration at  $t = 1$  and  $t = 1.4$  **12M**

$t$	1.0	1.1	1.2	1.3	1.4
$v$	43.1	47.7	52.1	56.4	60.8

(OR)

6. Using the table find the first two derivatives at  $x = 0$  &  $x = 9$  **12M**

$x$	0	2	3	4	7	9
$f(x)$	4	26	58	112	466	922

### UNIT-IV

7. Evaluate the following integral  $\int_0^2 e^{-x^2} dx$ , by using Trapezoidal rule and Simpson's 3/8 rule. **12M**

(OR)

8. Evaluate  $\int_1^2 \int_2^3 e^{-(x+y)} dx dy$  by using Simpson's 1/3 rule here take  $h = 0.5$  &  $k = 0.5$  **12M**

### UNIT-V

9. Find the approximate value of  $y$  for  $x = 0.2$  if  $\frac{dy}{dx} = x - y, y(0) = 1$  using Picard's method. Compare the numerical solution obtained with exact solution **12M**

(OR)

10. Apply the Fourth order Runge-Kutta method, to find an approximate value of  $y$  when  $x = 0.1$  &  $0.2$  in steps of 0.1, given that  $\frac{dy}{dx} = xy + y^2, y(0) = 1$ . **12M**

# AR18

**CODE: 18IET213**

**SET-2**

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

**II B.Tech II Semester Regular & Supplementary Examinations, September-2021**

**INTRODUCTION TO NUMBER THEORY**

**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) Obtain gcd of 595 and 252. Express 595 and 252 in the form of  $(m.252 + n.595)$  6M  
b) Show that  $5^n - 8^n - 1$  is divisible by 8 6M
- (OR)
2. a) Show that the product of two numbers of the form  $6n+1$  is also  $6n+1$ . 6M  
b) Obtain sum of divisors of 360 & Number of divisors of 360 6M

## UNIT-II

3. a) Show that  $10^n + 3.4^{n+2} + 5 \equiv 0 \pmod{9}$  6M  
b) Solve the congruence  $342x \equiv 5 \pmod{13}$  6M
- (OR)
4. a) Show that  $3^{n+2} - 8n - 9 \equiv 0 \pmod{64}$  6M  
b) Solve the congruence  $259x \equiv 5 \pmod{11}$  6M

## UNIT-III

5. a) Define Euler-Fermate theorem. Hence, Show that  $n^5 - n$  is divisible by 30 6M  
b) Define Wilson theorem. Show that  $(12! + 1)$  is divisible by 13 6M
- (OR)
6. Obtain all integers that leave remainders 1 or 2 when they are divided by each of 3, 5 and 7. 12M

## UNIT-IV

7. Define Mobius function  $\mu$ . Determine  $\mu(n)$  for  $n = 11, 12, 13, 14, 15, 16, 17, 18, 19, 20$ . 12M
- (OR)
8. Define Euler Totient Function  $\phi$ . Determine  $\phi(n)$  for  $n = 50, 125, 600, 1150, 1900$  12M

## UNIT-V

9. a) Trace residue class for  $p=19$  and classify NRP and  $\overline{NRP}$  6M  
b) Evaluate  $(73/383)$  and  $(17/223)$  6M
- (OR)
10. Determine whether 85 is quadratic residue of 223 or not 12M

# AR18

**CODE: 18IET214**

**SET-1**

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

**II B.Tech. II Semester Regular & Supplementary Examinations, September-2021**

## **WATER SHED MANAGEMENT**

**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 the system of classification of watershed in India **4 M**  
b) Explain the concept and objectives of watershed development **8M**  
(OR)
2. Explain by flow chart the process of integrated watershed management? **12 M**

### **UNIT-II**

3. a) How erosion is classified and enumerates the factors responsible for the same? **6 M**  
b) Explain with a neat sketch about contour trenching. **6 M**  
(OR)
4. a) Explain the Universal Soil Loss Equation (USLE). **6 M**  
b) What are the differences between geologic erosion and accelerated erosion? **6 M**

### **UNIT-III**

5. a) What is the need for water harvesting in a watershed? How do you harvest rainwater from rooftop? Explain with neat sketch. **7 M**  
b) Explain how soil moisture can be harvest by spreading manure or compost in a watershed? **5 M**  
(OR)
6. a) What you understand about artificial recharge and explain the advantages of it? **6 M**  
b) Explain the sources of water for recharge in a watershed **6 M**

### **UNIT-IV**

7. Explain how you manage the forest land by Shelter Wood Harvest, Seed Tree Harvest and Prescribed Burning practices? **12 M**  
(OR)
8. Define Land use and Land capability? How land capability classes are classified based on the suitable for cultivation of row crops? **12 M**

### **UNIT-V**

9. List and explain the various types of cropping patterns? **12 M**  
(OR)
10. Explain the role of social forestry in watershed management. **12M**

# AR18

**CODE: 18IET216**

**SET-1**

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

**II B.Tech II Semester Regular & Supplementary Examinations, September-2021**

**INTRODUCTION TO MATHEMATICAL SIMULATION AND MODELING**

**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 MATLAB? Write its history and applications. 6 M
- b) Name the commands used for arithmetic operations with scalars. 6 M

**(OR)**

2. a) Discuss the typical uses of MATLAB. 6 M
- b) Name the commands used for relational operations and explain with examples. 6 M

## **UNIT-II**

3. a) What is the list of matrix operations are performed in MATLAB? Explain each matrix operation with example. 6 M
  - b) Express the results for following commands? 6 M
- $A = [2 \ 4 \ 5 \ 6; 3 \ 1 \ 4 \ 7; 1 \ 2 \ 6 \ 8]; B = [2 \ 1; 4 \ 2; 3 \ 5; 1 \ 6];$
- i)  $A(2,3)+B(3,2)$
  - ii)  $A(2,4)$
  - iii)  $B(:,1)$
  - iv)  $A(2,:) = [ \ ]$
  - v)  $B'$
  - vi)  $B(:, 2)$

**(OR)**

4. a) How to create the multi-dimensional arrays and strings in MATLAB and explain them briefly. 6 M
- b) List the common statistics functions available in MATLAB. 6 M

### UNIT-III

5. a) Explain the operation of “**while**” loop with one simple example 6 M  
b) Write the differences between “for loop” and “while loop”. 6 M  
(OR)
6. a) Explain the operation of “for” loop with one simple example 6 M  
b) List out various conditional statements available and write the MATLAB syntax for each. 6 M

### UNIT-IV

7. a) Write a short note on creating plots and subplots briefly. 6 M  
b) Explain the procedure for solving following equation using MATLAB. 6 M

i)  $\sin(x) = e^x - 5;$

ii) 
$$\begin{cases} 5x - 3y + 2z = 10 \\ -3x + 8y + 4z = 20 \\ 2x + 4y - 9z = 9 \end{cases}$$

(OR)

8. a) How to plot the multiple data sets in one graph? Explain briefly by taking any example. 6 M  
b) Explain the procedure for solving the systems of four equations given below using MATLAB. 6 M

$$\begin{aligned} 2w + x + 3y + 5z &= 19 \\ 3w - x + 5y + 7z &= 22 \\ 5w - 3x + 12y + 18z &= -56 \\ 7w + 8x - 15y + 21z &= 72 \end{aligned}$$

### UNIT-V

9. a) Write a short note on basic tools that are available with Simulink. 6 M  
b) How to create the Simulink model in MATLAB? Explain briefly by taking any example. 6 M  
(OR)
10. a) What is Simulink? Write down the importance of Simulink 6 M  
b) Convert the following mathematical model into Simulink model 6 M

$$x(t) = 2x(t) + u(t)$$

# AR18

**CODE: 18IET217**

**SET-1**

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

**II B.Tech II Semester Regular & Supplementary Examinations, September-2021**

**FUNDAMENTALS OF MATERIAL SCIENCE**

**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) Classify materials and define Atomic Packing Factor. 5  
b) Calculate Atomic Packing Factor for FCC and BCC crystal structures. 7
- (OR)
2. a) What are bonds in solids? Define crystal structure. 4  
b) Briefly explain all Bravais lattice crystal structures. 8

## UNIT-II

3. a) What are defects in crystals? 2  
b) Explain point defects and line defects with neat sketch. 10
- (OR)
4. a) What are the deformation in crystals 2  
b) Briefly explain plastic deformation by slip. 10

## UNIT-III

5. a) Define recrystallization temperature. 2  
b) What are the difference between hot working and cold working? 10
- (OR)
6. a) Briefly explain Planar growth with neat sketch. 6  
b) Describe Dendrite growth. 6

## UNIT-IV

7. a) Define Hardness and Ductility. 4  
b) Explain about Rockwell hardness test and Brinell hardness test with neat sketch. 8
- (OR)
8. a) Draw stress - strain curve of a mild steel work piece and explain various zone in stress strain curve. 10  
b) Define Stress and Strain. 2

## UNIT-V

9. a) Briefly explain about the Charpy impact test with neat sketch. 8  
b) Define Impact strength and Creep strength. 4
- (OR)
10. a) Define fatigue strength. 2  
b) Briefly explain about the creep curve and creep test procedure? 10

# AR18

CODE: :18IET219

SET 1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, September-2021

INTRODUCTION TO ELECTRONIC MEASUREMENTS

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 and explain all dynamic characteristics. 6M  
b) Explain the different types of errors that may occur in measurements. Describe their sources and precautions to minimize them. 6M
- (OR)
2. a) With a neat sketch explain the solid state voltmeter. 6M  
b) Explain how the range of D.C Voltmeter is extended 6M

## UNIT-II

3. a) With the help of a block diagram explain the principle of operation of a Function generator. 12 M
- (OR)
4. a) Explain the operation of a wave analyzer with a neat diagram. 6M  
b) Explain the working of heterodyne type wave analyzer 6M

## UNIT-III

5. a) Discuss the features of CRT 6M  
b) Explain the operation of a dual beam Oscilloscope and explain its working. 6M
- (OR)
6. a) Draw the block diagram of a basic Oscilloscope and explain the functions of each block. 6M  
b) Describe the procedure for making amplitude and frequency measurements on an oscilloscope. 6M

## UNIT-IV

7. a) Draw the circuit diagram of Maxwell's bridge and derive conditions of balance. 6M  
b) Draw the circuit diagram of Schering bridge and derive conditions of balance. 6M
- (OR)
8. a) Draw the circuit diagram of Anderson bridge, explain it and derive the equations for unknown variables. 6M  
b) With neat sketch explain how unknown resistance is measured by means of wheatstone bridge 6M

## UNIT-V

9. a) With proper examples differentiate between active and passive Transducers. 6M  
b) Explain the operation of Capacitive transducer with Neat diagram. 6M
- (OR)
10. a) Explain piezo-electric transducer 6M  
b) Write notes on thermistors 6M



# AR18

**CODE: 18IET21A**

**SET-2**

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

**II B.Tech II Semester Regular & Supplementary Examinations, September-2021**

## **UNIX UTILITIES**

**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 about System administration. 6m  
b) Explain about kernel data structures 6m
- (OR)**
2. a) Explain the architecture of UNIX Operating System 6m  
b) Explain the Features of UNIX 6m

### **UNIT-II**

3. a) Explain the following commands with examples 6m  
i) passwd ii) rm iii) echo  
b) Discuss the following commands with examples 6m  
i) rmdir ii) ls iii) more
- (OR)**
4. a) Explain the following commands with examples 6m  
i) mv ii) printf iii) wc  
b) Discuss the following commands with examples 6m  
i) uname ii) cp iii) cat

### **UNIT-III**

5. a) Explain the security by file permissions with examples 6m  
b) Discuss the following commands with examples 6m  
i) head ii) grep iii) uniq
- (OR)**
6. a) Explain the following commands with examples 6m  
i) tr ii) nl iii) join  
b) Discuss the following commands with examples 6m  
i) diff ii) cmp iii) comm

### **UNIT-IV**

7. a) Explain the following 6m  
i) Aliases ii) Predefined Variables  
b) Explain about standard streams in UNIX 6m
- (OR)**
8. a) Explain the following 6m  
i) Quotes ii) pipes  
b) What is a redirection? Explain the types of redirection with one example 6m

### **UNIT-V**

9. a) Explain looping statements or repetition statements with one example 6m  
b) Write a shell script to print factorial value of given integer 6m
- (OR)**
10. a) Explain selection statements or decision making statements with one example 6m  
b) Explain break and continue statements with one example 6m

# AR18

**CODE: 18IET21B**

**SET-2**

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

**II B.Tech II Semester Regular & Supplementary Examinations, September-2021**

**IT SYSTEMS MANAGEMENT**

**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 the evolutions of systems since 1960's and their management. 6M  
b) What are the Current business demands and IT systems Issues? 6M
- (OR)**
2. a) Explain the various IT systems components. 6M  
b) Define IT Infrastructure. Explain IT infrastructure Management Activities. 6M

## **UNIT-II**

3. a) Explain the Waterfall model. List out the advantages and disadvantages of Waterfall model. 6M  
b) Explain about software economics. 6M
- (OR)**
4. a) Explain Conventional Software Management Performance. 6M  
b) Explain Software Development life cycle and types of SDLC Models. Discuss about software economics. 6M

## **UNIT-III**

5. a) Explain about People-Process-Technology (PPT) approach in detail. 6M  
b) Explain Service level management and Financial Management. 6M
- (OR)**
6. a) Explain about Models in IT System Design. 6M  
b) Explain about System Context diagram in brief. 6M

## **UNIT-IV**

7. a) Define Emerging Trends in IT E-Commerce and GSM. 6M  
b) Explain Intrusion Detection in detail. 6M
- (OR)**
8. a) Explain Computer Security, Internet Security, Physical Security in detail. 6M  
b) Define Access control System in detail. 6M

## **UNIT-V**

9. a) Explain Storage Management Process and Activities. 6M  
b) Explain in detail about Disaster Recovery. 6M
- (OR)**
10. a) Explain in detail Hierarchical storage management. 6M  
b) Explain Backup Requirements and Restore policies. 6M

# AR16

CODE: 16OE2021

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, September, 2021

TRANSFORM THEORY

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) Find the values of  $Z(\cos nt)$  and  $Z(a^n \cos nt)$ . 7 M
- b) Using Linearity property, find  $Z(an^2 + bn + c)$  and  $Z(2n - 5\sin \frac{n\pi}{4} + 3a^4)$ . 7 M

(OR)

2. If  $Z(u_n) = \frac{2n^2 + 4n + 12}{(z-1)^4}$  find  $u_2$  and  $u_3$ . 14 M

## UNIT-II

3. Evaluate  $Z^{-1}[\frac{z^5}{(z-1)^2(z+1)}]$ . 14 M

(OR)

4. a) Using Convolution Theorem, evaluate  $Z^{-1}[\frac{z^2}{(z-a)(z-b)}]$ . 7 M
- b) Evaluate  $Z^{-1}[\frac{z}{(z-1)(z-2)}]$ . 7 M

## UNIT-III

5. Using Fourier integral show that  $e^{-ax} - e^{-bx} = \frac{2(a^2 - b^2)}{\pi} \int_0^\infty \frac{\lambda \sin \lambda x}{(\lambda^2 + a^2)(\lambda^2 + b^2)} d\lambda, a, b > 0$ . 14 M

(OR)

6. Find the Fourier Cosine transform of  $e^{-a^2 x^2}$  and hence evaluate Fourier Sine transform of  $x e^{-a^2 x^2}$ . 14 M

## UNIT-IV

7. Find the inverse Fourier sine Transform  $f(x)$  of  $F_s(p) = \frac{e^{-ap}}{p}$  and hence deduce  $F_s^{-1}\left\{\frac{1}{p}\right\}$ . 14 M

(OR)

8. Evaluate the following by using Parseval's identity  $\int_0^\infty \frac{dx}{(x^2 + a^2)^2} (a > 0)$ . 14 M

## UNIT-V

9. Solve the difference equation, using Z-transform  $u_{n+2} - 7u_{n+1} - 12u_n = 0$ , given that  $u_0 = 1, u_1 = 2$ . 14 M

(OR)

10. Solve the difference equation, using Z-transform  $u_{n+2} + 2u_{n+1} + u_n = n$ , given that  $u_0 = u_1 = 0$ . 14 M

# AR16

**CODE: 16OE2022**

**SET-2**

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

**II B.Tech II Semester Supplementary Examinations, September, 2021**

## **FUNDAMENTALS OF BUILDING PLANNING**

**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 any seven points about the wood and characteristics of wood? 7M
- b) Write a short note about cement and chemical compositions of cement? 7M

**(OR)**

2. a) Short note on Ready to use building materials currently available in the market? 7M
- b) What are the modern building materials? 7M

### **UNIT-II**

3. a) What are the requirements of different rooms and their grouping? 7M
- b) Write a short note about minimum standards for various parts of buildings? 7M

**(OR)**

4. a) What are the characteristics of various types of residential buildings? 9M
- b) What are the minimum standards for septic tank? 5M

### **UNIT-III**

5. a) State the estimation of approximate cost of buildings? 8M
- b) Explain the study of drawings pertaining to Roofs? 6M

**(OR)**

6. a) What are the prefabricated buildings and toilets? 7M
- b) How to study of drawings pertaining to windows and ventilators? 7M

### **UNIT-IV**

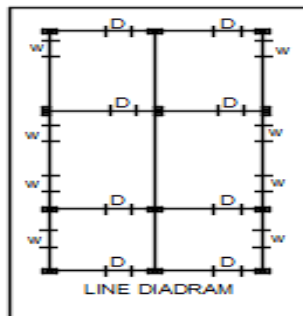
7. a) What are the objectives of building bye-laws? 6M
- b) Explain floor area ratio and floor space index? 8M

**(OR)**

8. a) Explain the requirements of open space in the buildings? 5M
- b) What are the built up area limitations and height of buildings? 9M

### **UNIT-V**

9. Study of drawings pertaining to the plan, elevation and section of the residential building from the given line diagram. Assume necessary data. 14M



**(OR)**

10. a) Study of drawings pertaining to the sections of the residential buildings? 8M
- b) Draw the line diagram of residential buildings? 6M

# AR16

**CODE: 16OE2024**

**SET-2**

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

**II B.Tech II Semester Supplementary Examinations, September, 2021**

**PRINCIPLES OF MECHANICAL MEASUREMENTS**

**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. Explain the Basic Functional description of measuring Instruments 14M  
(OR)
2. Explain the dynamic characteristics of measuring instrument 14M

## UNIT-II

3. a) With a neat sketch explain working principle and operation of bourdon mechanical pressure gauge? 7M  
b) Explain the operation of Ring balance manometer with neat sketch? 7M  
(OR)
4. Describe the different types bellows gauges with neat sketch and write advantages and disadvantages 14M

## UNIT-III

5. Briefly discuss working principle and operation of resistance temperature detector with neat sketch? 14M  
(OR)
6. a) Explain the working of liquid metal thermometer with neat sketch? 7M  
b) Explain the working of liquid gas thermometer with neat sketch? 7M

## UNIT-IV

7. Explain working principle and operation of LVDT and state their advantages and application? 14M  
(OR)
8. Describe about the Linear or translational displacement transducers with neat sketch and write the advantages and disadvantages 14M

## UNIT-V

9. With a neat sketch explain working principle and operation of stroboscope and list merits, demerits and applications? 14M  
(OR)
10. a) Write a short note on optical torsion meter? 7M  
b) Write a short note on elastic force meter? 7M

# AR16

**CODE: 16OE2025**

**SET-2**

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

**II B.Tech II Semester Supplementary Examinations, September, 2021  
PRINCIPLES OF COMMUNICATIONS**

**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) Discuss different types of signals with examples. 10M  
b) Obtain the Fourier Transform of a signum function 4M  
(OR)
2. a) What is correlation? Explain auto correlation function. 4M  
b) Explain different elements of general communication system with neat diagram. 10M

## **UNIT-II**

3. a) Explain the generation of amplitude modulation with neat diagram. 10M  
b) Compare Frequency Modulation & Phase Modulation. 4M  
(OR)
4. a) Explain about narrow band and wide band FM 10M  
b) List out the advantages of Frequency modulation over Amplitude modulation 4M

## **UNIT-III**

5. a) What is multiplexing? Discuss about TDM and FDM. 10M  
b) Define sampling and Nyquist rate 4M  
(OR)
6. a) What is sampling. State and explain sampling theorem for band limited signals 10M  
b) Compare PWM and PPM 4M

## **UNIT-IV**

7. a) What are the elements of PCM Modulation and explain the functions with neat diagram. 10M  
b) Describe about phase shift keying 4M  
(OR)
8. a) Draw and explain the block diagram of a simple delta modulation circuit 10M  
b) Compare Delta Modulation and Adaptive Delta Modulation 4M

## **UNIT-V**

9. a) Explain about Shannon – Fano code with an example 10M  
b) Explain about the rate of information and entropy 4M  
(OR)
10. a) Develop Huffman code with an example and find coding efficiency. 10M  
b) What is source coding? 4M

# AR16

**CODE: 16OE2027**

**SET-2**

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

**II B.Tech II Semester Supplementary Examinations, September,2021**

## **INTRODUCTION TO PYTHON**

**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) State the history of PYTHON. 7M  
b) Explain PYTHON environment setup and execute the program in different ways. 7M  
(OR)
2. a) Define Identifier. List out the reserved words in PYTHON. 7M  
b) Explain the type conversion in PYTHON with an example. 7M

### **UNIT-II**

3. a) Exemplify the use of 'else suite' with loops with an example in PYTHON. 7M  
b) Distinguish loop control statements (break, continue, pass) in PYTHON. 7M  
(OR)
4. a) Describe Boolean expression in PYTHON with an example. 7M  
b) Write a PYTHON program to test whether a number is even or odd. 7M

### **UNIT-III**

5. a) Define slicing or indexing operation in PYTHON sequence with an example. 7M  
b) Define string. Explore the operations on string with a PYTHON program. 7M  
(OR)
6. a) Define **set**. Explore the operations on **set** in PYTHON. 7M  
b) Define function. Explore the 'built-in' and 'user-defined' functions in PYTHON. 7M

### **UNIT-IV**

7. a) Define Exception. Write some important built-in exceptions in PYTHON. 7M  
b) Write a PYTHON program to handle single and multiple exceptions. 7M  
(OR)
8. a) Explore the text processing related file operations in PYTHON. 7M  
b) Write a PYTHON program to count no. of lines, words & characters in a text file. 7M

### **UNIT-V**

9. a) Summarize the OOPs concepts in PYTHON. 7M  
b) Differentiate 'class' and 'object' with a suitable PYTHON program. 7M  
(OR)
10. a) Differentiate Encapsulation and Abstraction in PYTHON. 7M  
b) Illustrates concept of Multiple Inheritance with a PYTHON program. 7M

# AR16

**CODE: 16OE202A**

**SET-2**

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

**II B.Tech. II Semester Supplementary Examinations, September-2021**

## **REMOTE SENSING**

**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. Describe the stages of remote sensing with neat sketch? 14  
(OR)
2. With a suitable diagram, explain Electromagnetic Spectrum and different regions of the spectrum? 14

### **UNIT-II**

3. Describe the sensors with a neat sketch? Explain about aerial camera and video camera? 14  
(OR)
4. Define the term sensor? Illustrate the laser scanner, radar altimeter and imaging radar? 14

### **UNIT-III**

5. What is meant by spaceborne remote sensing and describe the characteristics of orbit? 14  
(OR)
6. List and discuss the types of remote sensing platforms with neat sketch? 14

### **UNIT-IV**

7. Discuss the process of carrying out visual interpretation? 14  
(OR)
8. Briefly discuss about the concept of filtering technique of an image enhancement? 14

### **UNIT-V**

9. Describe the various levels involved in image classification? 14  
(OR)
10. Elucidate the supervised classification? 14