AR20

CODE: 20AIT201 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech. II Semester Regular Examinations, July, 2022

COMPUTATIONAL STATISTICS AND DATA ANALYSIS

(Honors / Minor Courses)

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.	List the different types of mean's and solve the following problem A student has gotten the following grades on his tests: 87, 95, 76, and 88. He wants an 85 or better overall. What is the minimum grade he must get on the last test to achieve that average?	10M	CO1	L6
	(OR)			
2.	Compare the different Data Visualization techniques and explain any one technique.	10M	CO1	L3
	UNIT-II	Marks	CO	Blooms Level
3.	Define the Baye's Theorem and explain the prerequisites of Baye's Theorem.	10M	CO2	L1
	(OR)			
4.	Explain about probability and solve following problem "A fair coin is tossed 100 times. What is the probability of getting tails an odd number of times?".	10M	CO2	L5
	UNIT-III	Marks	CO	Blooms Level
5.	Explain about T-test, Z-test with suitable example.	10M	CO3	L1
	(OR)			
6.	Discuss about Hypothesis and list the differences between Z-scores and p-values with any example	10M	CO3	L3
	UNIT-IV	Marks	CO	Blooms Level
7.	List the different Performance metrics and explain each.	10M	CO4	L2
	(OR)			
8.	Explain the following methos a. Min-Max scaling b. Z-score	10M	CO4	L1
	UNIT-V	Marks	CO	Blooms Level
9.	Define Principal Component Analysis (PCA) and explain the importance of Scaling of the data before performing PCA with example.	10M	CO5	L5
	(OR)			
10.	List the different Outliers detection methods and explain any one method.	10M	CO5	L1
	UNIT-VI	Marks	CO	Blooms Level
11.	Define Machine learning and list the merits and demerits of the Supervised machine learning.	10M	CO6	L3
	(OR)			
12.	Explain any one classification algorithm with a suitable example.	10M	CO6	L2

AR20

CODE: 20DSI201 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech.II Semester Regular Examinations, July, 2022

STATISTICAL ANALYSIS AND PROGRAMMING FOR DATA SCIENCE

((Honors / Minor Courses)

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.	Write about probability distributions in data science? Explain different probability distributions with example.	10	1	2
	(OR)			
2.	Discuss about statistical parameters used in data science with examples.	10	1	2
	UNIT-II	Marks	CO	Blooms Level
3.	Summarize the Essential Python Libraries: NumPy, Pandas, matplotlib	10	2	2
	(OR)			
4.	Apply built in data types and their methods in python with examples.	10	2	4
	UNIT-III	Marks	CO	Blooms Level
5.	Perform various Statistical and Comparison operations on rows/columns on CSV file.	10	3	3
	(OR)			
6.	Create NumPy arrays using Universal Functions and Mathematical methods.	10	3	5
	UNIT-IV	Marks	CO	Blooms Level
7.	Explain the basics of Pandas, briefly state the pandas Data Structures.	10	4	2
	(OR)			
8.	Explain Pandas Dataframe. Discuss how many ways to create a DataFrame.	10	4	2
	UNIT-V	Marks	CO	Blooms Level
9.	Explain how to Handle missing data by detecting and dropping/ filling missing values in pandas data frame.	10	5	2
	(OR)			
10.	Explain Vectorized String operations on Pandas Series.	10	5	2
	UNIT-VI	Marks	CO	Blooms Level
11.	Discuss about methods and principles of data visualization.	10	6	2
	(OR)			
12.	Briefly discuss plotting with pandas and visualize the data using Line Plots, Bar Plots, Histograms and Density Plots, Scatter or Point Plots	10	6	2

AR20

CODE: 20EVT201 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.TechII Semester Regular Examinations, July, 2022

INTRODUCTION TO ELECTRICAL VEHICLE TECHNOLOGY

((Honors / Minor Courses)

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.		Compare conventional vehicle with Hybrid electric vehicle?	10	1	Understanding
		(OR)			
2.		Explain the benefits of electric vehicles and discuss few standards and norms concerned with the electric vehicles.	10	1	Understanding
		UNIT-II	Marks	CO	Blooms Level
3.		Explain the different power flow control modes of a typical parallel hybrid system with the help of block diagrams?	10	2	Remembering
		(OR)			
4.		Explain the major components in a electric power train	10	2	Remembering
		UNIT-III	Marks	CO	Blooms Level
5.		Explain in detail about selection of a motor in electric vehicle	10	3	Understanding
		(OR)			
6.		Explain Constant Power Speed Ratio as applied to an electric motor?	10	3	Understanding
		UNIT-IV	Marks	CO	Blooms Level
7.		Explain the configuration of v/f controlled induction motor drive with field- weakening mode and constant-torque mode.	10	4	Understanding
		(OR)			
8.		Discuss about electric propulsion unit in electric vehicle with the help of a neat sketch	10	4	Understanding
		UNIT-V	Marks	CO	Blooms Level
9.	a)	What are factors affecting the performance of batteries used in EVs?	5	5	Understanding
	b)	What is meant by Peukert capacity of a battery? What is its significance?	5	5	Understanding
		(OR)			
10.		Discuss about the importance and functions of battery management system with regard to the batteries used in electric vehicle	10	5	Understanding
		UNIT-VI	Marks	CO	Blooms Level
11.		Explain the two-quadrant operation of chopper DC motor drive with suitable waveforms for electric vehicle.	10	6	Understanding
		(OR)			
12	a)	Explain the AC voltage controllers used in electric vehicle	5	6	Remembering
	b)	Explain the role of controlled rectifiers (Convertor) in electric vehicle	5	6	Remembering

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CODE: 20IOT201 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular Examinations, July, 2022

INTRODUCTION TO INTERNET OF THINGS

((Honors / Minor Courses)

Time: 3 Hours **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.	List out the characteristics of IOT.	2M	1	Remember
	b.	Explain the networking components of IOT.	8M	1	Understand
		(OR)			
2.	a.	What is IOT? Explain the characteristics of IOT-WOT.	5M	1	Understand
	b.	Discuss the evaluation of IOT.	5M	1	Understand
		UNIT-II			
3.	a.	Describe data link layer.	5M	2	Remember
	b.	Discuss in detail Internet protocol suite	5M	2	Understand
		(OR)			
4.	a.	Explain OSI model.	7M	2	Understand
	b.	What are the advantages of OSI model?	3M	2	Remember
		UNIT-III			
5.	a.	Explain IOT sensors and Actuators.	7M	3	Understand
	b.	Mention the applications of sensors.	3M	3	Understand
		(OR)			
6.	a.	What are the types of Actuators?	2M	3	Remember
	b.	Analyze the characteristics of Actuators	8M	3	Analyze
		UNIT-IV			
7.	a.	Draw and Explain EPO.	5M	4	Understand
	b.	Describe the Web socket.	5M	4	Understand
		(OR)			
8.	a.	What is µ-code.? Explain µ-code.	5M	4	Understand
	b.	Discuss about EPC.	5M	4	Understand
		UNIT-V			
9.	a.	Explain aboutbIEEE802.15.4 standard.	5M	5	Apply
	b.	Discuss about communication topologies in Zigbee.	5M	5	Understand
		(OR)			
10.	a.	Explain about wireless HART n/w architecture.	5M	5	Understand
	b.	Analyze LORA communication architecture.	5M	5	Analyze
		UNIT-VI			
11.	a.	Explain the details of IOT in Agriculture.	5M	6	Understand
	b.	List out the advantages of IOT	5M	6	Understand
		(OR)			
12.	a.	Explain how IOT is used in Healthcare systems	5M	6	Understand
	b.	Analyze the risks of healthcare IOT.	5M	6	Analyze

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CODE: 20ROT201 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular Examinations, July, 2022

INTRODUCTION TO ROBOTICS AND MECHATRONICS

(Honors / Minor Courses)

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 different configurations of the robot with a neat sketch	10	1	Understanding
	(OR)			
2.	Explain Cartesian, Cylindrical, SCARA, Articulated Robots with a neat sketch	10	1	Remembering
	UNIT-II	Marks	CO	Blooms Level
3.	Explain the working principle of Hydraulic actuation systems and its components with a neat sketch	10	2	Understanding
	(OR)			
4.	Explain the working principle of Pneumatic actuation systems and its components with a neat sketch	10	2	Understanding
	UNIT-III	Marks	CO	Blooms Level
5.	Explain the working principle of Tactile sensors with suitable illustrations and also explain the applications	10	3	Understanding
	(OR)			
6.	Explain the working principle of Torque sensors with suitable illustrations and also explain the applications	10	3	Understanding
	UNIT-IV	Marks	CO	Blooms Level
7.	List the key elements in the mechatronics and their role in functioning	10	4	Remembering
	(OR)			
8.	Differentiate open and closed loop systems and list their applications	10	4	Remembering
	UNIT-V	Marks	CO	Blooms Level
9.	What is DAC system and write down example with interconnections for a system with four sensors and Two Actuators	10	5	Applying
	(OR)			
10.	What are the devices used for data conversation and write the function of each	10	5	Remembering
	UNIT-VI	Marks	CO	Blooms Level
11.	Explain about rate feedback compensator design	10	6	Understanding
	(OR)			
12.	Differentiate Adaptative control and Velocity control and write their applications	10	6	Understanding

AR20

CODE: 20SCT201 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular Examinations, July, 2022

URBAN PLANNING & ESSENTIALS OF SMART CITIES

(Honors / Minor Courses)

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.	Outline the trends of urbanisation	10	CO1	3
	(OR)			
2.	Explain the terms: Urban area, Urbanisation, Suburbanisation, Urban sprawl, Peri urban areas.	10	CO1	2
	UNIT-II	Marks	CO	Blooms Level
3.	List the considerable parameters for special economic zones?	10	CO2	3
	(OR)			
4.	Discuss the development of small city with a case study	10	CO2	3
	UNIT-III	Marks	CO	Blooms Level
5.	List the constraints of implementing the urban development project.	10	CO3	3
	(OR)			
6.	Briefly explain the different financing methods of urban development projects	10	CO3	3
	UNIT-IV	Marks	CO	Blooms Level
7.	Define smart city. Briefly outline the characteristics of smart cities.	10	CO4	3
	(OR)			
8.	Discuss the challenges of smart city?	10	CO4	3
	UNIT-V	Marks	CO	Blooms Level
9.	Explain the prerequisites of smart cities?	10	CO5	3
	(OR)			
10.	Simplify and share your observations on the policy and mission of India 100 smart cities.	10	CO5	3
	UNIT-VI	Marks	CO	Blooms Level
11.	Discuss the various Initiatives and implementation stages of smart governance?	10	CO6	3
	(OR)			
12.	Explain the concept of smart governance and list the models of smart governance	10	CO6	3

AR18

CODE: 18IET216 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Suppl. Examinations, July, 2022

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 athematic 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

$$2w + x + 3y + 5z = 19$$
$$3w - x + 5y + 7z = 22$$
$$5w - 3x + 12y + 18z = -56$$
$$7w + 8x - 15y + 21z = 72$$

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

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

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AR18

CODE: 18IET217 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Suppl. Examinations, July, 2022

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)	Find the packing factor of F C C, B C C space lattices	**[8 M]**
	b)	Define metallic bonding and its characteristics?	**[4 M]**
		(OR)	
2.	a)	Briefly explain about zero dimensional (point) defects?	**[6 M]**
	b)	Explain with neat sketch types bonding?	**[6 M]**

UNIT-II

3.	a)	Briefly explain about the deformation by twinning and slip mechanism?	**[8 M]**
	b)	Explain the Hume Rothery rules for maximum solid solubility	**[4 M]**
		(OR)	
4.	a)	Explain why fine grained materials have superior properties than coarse grained materials?	**[8M]**
	b)	What is the significance of the dislocations?	**[4 M]**

UNIT-III

5.	a)	What are the difference between hot working and cold working?	**[8M]**
	b)	Briefly explain about solidification mechanism?	**[4 M]**
		(OR)	
6.	a)	Briefly explain about planar and dendritic growth?	**[6 M]**
	b)	What are the advantages and disadvantage of hot working and cold working?	**[6 M]**

UNIT-IV

7.	a)	Draw the stress strain diagram for mild steel material and explain various curves in str stress strain diagram?	**[8M]**
	b)	Explain about Brinell hardness test	**[4 M]**
		(OR)	
8.		Explain any six following terms	**[12M]**

A. Stress B. Strain C. Hardness D. Modules of elasticity E. Proof stress
F. Ductility G. malleability H .Toughness

UNIT-V

9.	a)	Briefly explain about the Charpy impact test?	**[8M]**
	b)	Factors Affecting Charpy Impact Energy	**[4 M]**
		(OR)	
10.	a)	Write a short note on Fatigue Testing.	**[6 M]**
	b)	What is meant by Creep? Explain different Creep mechanisms.	**[6 M]**

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AR18

CODE: 18IET219 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Suppl. Examinations, July, 2022

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)	List out static characteristics? Define any four of them?	[6M]
	b)	Draw and explain the DC ammeter circuit and derive the expression for shunt?	[6M]
		(OR)	
2.	a)	Discuss thermocouple type RF ammeter in detail?	[6M]
	b)	Draw and explain the working of series type ohmmeter?	[6M]

UNIT-II

3.	a)	Draw and explain the operation of standard AF sine and square wave generator?	[6M]
	b)	Explain the working of the wien's bridge method of harmonic distortion analyzer?	[6M]
		(OR)	
4.	a)	Draw and explain the operation of the basic wave analyzer?	[6M]
	b)	Draw and explain the operation of frequency selective wave analyzer?	[6M]

UNIT-III

5.	a)	Explain different features of CRT?	[6M]
	b)	Explain the measurement procedure of amplitude and time period?	[6M]
		(OR)	
6.	a)	Draw and explain the working of digital storage oscilloscope?	[6M]
	b)	With a block diagram explain the operation of a simple CRO?	[6M]

UNIT-IV

7.	a)	Draw and explain the Maxwell Bridge with neat diagram and derive the expression for unknown inductance?	[6M]
	b)	A Maxwell bridge is used to measure inductive impedance. Utilizing the bridge constants at balance are C1=0.01 μF, R1=470k Ω, R2=5.1k Ω and R3=100k Ω, find the series equivalent of the unknown impedance?	[6M]
		(OR)	
8.	a)	Draw the circuit diagram of a wien's bridge, explain its working and derive the equation for frequency of oscillation?	[6M]
	b)	In a wien's bridge Utilizing R_1, R_3 and C_1, C_3 are 3.1k, 12.4k and 5.2 μF,20.3pF respectively, find the frequency of oscillation?	[6M]

UNIT-V

9.	a)	What is an electrical transducer? Define active and passive transducers and give examples?	[6M]
	b)	Explain the principle, construction and working of LVDT?	[6M]
		(OR)	
10.	a)	Explain how the temperature is measured using Thermocouple?	[6M]
	b)	Explain the Principle, Construction and different forms of thermistor?	[6M]

AR18

CODE: 18IET21A **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Suppl. Examinations, July-2022

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 Architecture of Unix ?	6M
	b)	Write about features of Unix ?	6M
		(OR)	
2.	a)	Write about Unix file system?	6M
	b)	Explain about user level security in Unix ?	6M

UNIT-II

3.	a)	Explain the following commands with examples i)ls ii)cat iii)who	6M
	b)	Discuss the following commands with examples i)echo ii)passwd iii)pwd	6M
		(OR)	
4.	a)	Write short note on the following commands with examples i)rmdir ii)mkdir iii)wc	6M
	b)	Discuss the following commands with examples. i)date ii)cd iii)cp	6M

UNIT-III

5.	a)	Explain vi editor with examples?	6M
	b)	List and explain various file handling utilities?	6M
		(OR)	
6.	a)	Describe various text processing utilities?	6M
	b)	List and explain various disk processing utilities?	6M

UNIT-IV

7.	a)	Write about Redirection?	6M
	b)	Define a shell & Explain about shell variables?	6M
		(OR)	
8.	a)	Explain pipes with examples?	6M
	b)	Discuss about command line editing and command substitution.?	6M

UNIT-V

9.	a)	Explain shell responsibilities?	6M
	b)	List and explain different arithmetic operations in shell programming?	6M
		(OR)	
10.	a)	Write in detail about control structures in unix?	6M
	b)	Briefly discuss about environment variables?	6M

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AR16

CODE: 16OE2021 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Suppl. Examinations, July, 2022
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) Show that $Z(n^2) = \frac{z^2+z}{(z-1)^3}$ **7M**
   b) Find the values of $Z(\cos n\theta)$ and $Z(sinn\theta)$ **7M**

(OR)

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

UNIT-II

3. a) Find $Z^{-1}[\frac{z}{z^2+11z+24}]$ **7M**
   b) Using Convolution Theorem, evaluate $Z^{-1}[\frac{z^2}{(z-1)(z-3)}]$ **7M**

(OR)

4. a) Find $Z^{-1}[\frac{z+1}{z^2-3z+2}]$ **7M**
   b) Using Convolution Theorem, evaluate $Z^{-1}[\frac{1}{n!} * \frac{1}{n!}]$ **7M**

UNIT-III

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

(OR)

6. Find the Fourier cosine transform of $e^{-a^2x^2}$ and hence evaluate Fourier sine transform of $x\, e^{-a^2x^2}$. **14M**

UNIT-IV

7. Find the Fourier transform of $f(x)$ defined by $f(x) = \begin{cases} 1, |x| < a \\ 0, \ |x| > a \end{cases}$ and hence evaluate $\int_{-\infty}^{\infty} \frac{sinapcospx}{p}\, dp$ and $\int_0^\infty \frac{sinp}{p}\, dp$ **14M**

(OR)

8 Using Parseval's identity, show that $\int_0^\infty \frac{dx}{(x^2+a^2)(x^2+b^2)} = \frac{\pi}{2ab(a+b)}$ **14M**

UNIT-V

9. Solve the difference equation, using Z-transform $y(n+2) + 3y(n+1) + 2y(n) = 0$, given $y(0) = 0, y(1) = 1$ **14M**

(OR)

10. Solve the difference equation, using Z-transform $y(n+2) - 5y(n+1) + 6y(n) = 5^n$, given $y(0) = 0, y(1) = 1$ **14M**

AR16

CODE: 16OE2024 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July, 2022

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. Distinguish between the following. **4+3+4+3**
   i. Accuracy and precision
   ii. Resolution and Threshold
   iii. Reproducibility and repeatability
   iv. Dead zone and Hysteresis

(OR)

2. Explain the following terms: **5+5+2+2**
   i. Speed of response
   ii. Sensitivity
   iii. Dead time
   iv. Dead Zone

UNIT-II

3. Describe the construction, working and theory of Bourdon tube for measurement of pressures? **14**

(OR)

4. Explain the working of ultrasonic flow meters. Explain the different techniques used for measurement of flow velocity. What are the advantages and disadvantages of these flow meters? **14**

UNIT-III

5. What is thermocouple? With a neat sketch explain its construction, working principle and applications. **14**

(OR)

6. Explain working of gas filled thermometer with neat sketches? **14**

UNIT-IV

7. Describe in detail the construction and working of an inductive and a capacitive transducers to measure linear displacement. **14**

(OR)

8. Differentiate between resistive, inductive, capacitance type transducers? **14**

UNIT-V

9. Explain principle and working of proving ring and its applications? **14**

(OR)

10. Describe in detail the construction and working of dynamo meter? **14**

AR16

CODE: 16OE2029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Suppl. Examinations, July, 2022
COMPUTATIONAL NUMBER 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 Obtain gcd of 858 and 325 **7M**

   b Express 858 and 325 in the form of m.858 + n.325 **7M**

(OR)

2. Prove that $9^n - 8^n - 1$ is divisible by 8 **14M**

UNIT-II

3. Show that $10^n + 3.4^{n+2} + 5 \equiv 0\ (Mod\ 9)$ **14M**

(OR)

4. Solve the congruence $13x \equiv 10\ \ (Mod\ 28)$ **14M**

UNIT-III

5. Define Euler-Fermate theorm . Hence, Show that $n^{16} - a^{16}$ is divisible by 85 if n and a are co-prime to 85. **14M**

(OR)

6 Define Wilson theorem. Hence, show that $(6! + 1)$ is divisible by 7. **14M**

UNIT-IV

7. Define Mobius function μ. Determine $\mu(11), \mu(15)$ **14M**

(OR)

8. Define Euler Totient Function Φ. Determine $\Phi(180)$ **14M**

UNIT-V

9. Evaluate (2/3) and (2/19) **14M**

(OR)

10. Determine whether 85 is quadratic residue of 223 or not **14M**

AR16

CODE: 16OE202A **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Suppl. Examinations, July, 2022

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. Define the term remote sensing and explain about basic components of an ideal remote sensing system with neat sketch? 14

(OR)

2. What is meant by electromagnetic energy and List the two models used to describe the electromagnetic energy with neat sketch? 14

UNIT-II

3. Define passive sensors and discuss about characteristics of Gamma-ray Spectrometer, Multi Spectral Scanner, Imaging Spectrometer and Thermal Scanner? 14

(OR)

4. What do you mean by active sensors and discuss about its characteristics? 14

UNIT-III

5. Define platform and explain about air-born platforms? 14

(OR)

6. List and describe the various orbit characteristics? Enumerate the characteristics of Sun-synchronous satellites? 14

UNIT-IV

7. Write a detailed description on the elements of visual interpretation quoting suitable examples for each? 14

(OR)

8. Define the term image enhancement and elucidate about non-linear contrast enhancement? 14

UNIT-V

9. What is meant by image classification? Explain about the principles of image classification? 14

(OR)

10. Explain about the unsupervised classification? 14