AR18

CODE: 18IET216 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, September, 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

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

AR18

CODE: 18IET219 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

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

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AR18

CODE: 18IET21A **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, September-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 with neat diagram.	6M
	b)	Write about features of Unix.	6M
		(OR)	
2.	a)	Explain Unix file system with tree graph.	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) ls ii) passwd iii) pwd	6M
		(OR)	
4.	a)	Write short note on the following commands with examples i) mkdir ii) rmdir 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 backup utilities.	6M

UNIT-IV

7.	a)	Explain about Redirection operators in Unix.	6M
	b)	Define a shell & Explain about shell variables.	6M
		(OR)	
8.	a)	Explain pipe with examples.	6M
	b)	Discuss about command substitution with example.	6M

UNIT-V

9.	a)	Explain shell responsibilities in Unix.	6M
	b)	List and explain different arithmetic operators 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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CODE: 18IET21B SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

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

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 IT Infrastructure. Explain IT infrastructure Management Activities.	7M
	b)	Explain Complexity of today's Computing Environment.	5M
		(OR)	
2.	a)	Define the evolutions of systems since 1960's and their management.	6M
	b)	Define Network? Explain Growth of Internet and its Application.	6M

UNIT-II

3.	a)	Explain Software Development life cycle and types of SDLC Models.	8M
	b)	Discuss about software economics.	4M
		(OR)	
4.	a)	Explain the Waterfall model. List out the advantages and disadvantages of Waterfall model.	8M
	b)	Explain Conventional Software Management Performance.	4M

UNIT-III

5.	a)	Define Model? Explain about Use Case Diagram in modelling.	5M
	b)	Describe the common tasks in IT system Management.	7M
		(OR)	
6.	a)	Explain about System Context diagram in brief.	6M
	b)	Explain about Strategy-Tactics-Operations (STO) approach in detail.	6M

UNIT-IV

7.	a)	Define Access control System in detail.	4M
	b)	Explain Emerging Trends in IT E-Commerce and GSM.	8M
		(OR)	
8.	a)	Explain Computer Security, Internet Security.	6M
	b)	What are Identity Management and Intrusion Detection?	6M

UNIT-V

9.	a)	Explain in detail about Disaster Recovery.	4M
	b)	Explain the traditional division of storage hierarchy.	8M
		(OR)	
10.	a)	Explain the mechanism of Back up Process.	6M
	b)	Explain Storage Management Process and Activities.	6M

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AR16

CODE: 16OE2021 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, September, 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 $Z\left(\frac{1}{n}\right) = log\ \frac{z}{(z-1)}$ **7M**
   b) Find the value of $Z(\sin n\theta)$ and $Z(\sin(3n+5))$ **7M**

(OR)

2. a) Find $Z(2.3^n + 5.n)$ and deduce $Z(2.3^{n+3} + 5(n+3))$ using shifting theorem **8M**
   b) Find the value of $Z(n^2a^n)$ **6M**

UNIT-II

3. a) Find $Z^{-1}[\frac{z^3-20z}{(z-2)^3(z-4)}]$ **14M**

(OR)

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

UNIT-III

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

(OR)

6. Find the Fourier cosine transform of $f(x)$ defined by $f(x) = \frac{1}{1+x^2}$ and hence find the Fourier sine transform of $f(x) = \frac{x}{1+x^2}$ **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 Find the Fourier cosine transform of $e^{-ax}, a>0$ and hence deduce the inversion formula **14M**

UNIT-V

9. Solve the difference equation, using Z-transform $u_{n+2} - 3u_{n+1} + 2u_n = 0$, given $u_0 = 0, u_1 = 1$ **14M**

(OR)

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

AR16

CODE: 16OE2023 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

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

RENEWABLE ENERGY SOURCES

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 solar irradiance, solar constant, extra-terrestrial and terrestrial Radiations? What is the standard value of solar constant?	**14M**
		(OR)	
2.	a)	Explain the role and potential of renewable energy sources	**6M**
	b)	Explain the working of a Pyranometer solar energy measuring instrument?	**8M**

UNIT-II

3		Explain different types of concentrating type collectors?	**14M**
		(OR)	
4.	a)	How is the performance of a flat plate collector evaluated?	**8M**
	b)	Compare the performance of various types of solar collectors	**6M**

UNIT-III

5.		Give the detailed classification of wind machine. Explain anyone type of wind machine with neat sketch	**14M**
		(OR)	
6.	a)	What are the main advantages and disadvantages of bio-mass energy? Explain the process of photosynthesis	**7M**
	b)	Explain the process of anaerobic fermentation	**7M**

UNIT-IV

7.	a)	What are the different types of geothermal resources	**8M**
	b)	With neat sketch explain the various methods of Tidal power generation	**6M**
		(OR)	
8.		Discuss the theory and working principle of ocean thermal energy conversion system	**14M**

UNIT-V

9.	a)	Explain the principles of direct energy conversion	**8M**
	b)	Explain the principle of MHD power generation.	**6M**
		(OR)	
10.		Write a short note on i) thermodynamic aspects of direct energy conversion ii) Carnot cycle iii) Faraday's laws	**14M**

AR16

CODE: 16OE2029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI (AUTONOMOUS)

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