AR16

CODE: 16HS1003 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, August, 2022

ENVIRONMENTAL STUDIES

(Common for CE, ME, CSE & IT)

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

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UNIT-I

1.	Why is environmental studies considered as a multi-disciplinary subject?	14M
	(OR)	
2.	Define natural resources. How will you classify natural resources? Explain major reasons of the resource depletion.	14M

UNIT-II

3.	Discuss about conservation of biodiversity.	14M
	(OR)	
4.	What are biogeochemical cycles? Explain any two with the help of a diagram.	14M

UNIT-III

5.	What are the main sources of air pollution? Discuss its effects and control measures.	14M
	(OR)	
6.	What is Hazardous Waste? Discuss various methods of safe disposal of these wastes. Enumerate the difficulties in actual implementation of the same.	14M

UNIT-IV

7.	What are the major issues and problems related to rehabilitation of the displaced tribal's?	14M
	(OR)	
8.	Discuss the salient features of a) Wildlife protection Act 1972 b) Forest conservation Act 1980.	14M

UNIT-V

9.	Discuss the role of information technology in environment and human health?	14M
	(OR)	
10.	What is meant by 'Population Explosion'? Discuss the Indian scenario.	14M

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CODE: 16EC1001 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, August-2022

ELECTRONIC DEVICES

(Electronics and Communication Engineering)

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

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UNIT-I

1.	a)	Explain the motion of a charged particle under uniform magnetic field.	8M
	b)	Discuss any three applications of cathode ray oscilloscope.	6M
		(OR)	
2.		Explain the operation of CRT with a neat diagram and derive the expression for deflection sensitivity.	14M

UNIT-II

3.	a)	Explain the phenomena of Hall effect and diffusion.	8M
	b)	Distinguish between metals, semiconductors and insulators based on energy band diagram.	6M
		(OR)	
4.	a)	What are extrinsic semiconductors? Explain the formation of N-type semiconductor with a neat sketch.	8M
	b)	Discuss about the expression for conductivity of a semiconductor and find the intrinsic conductivity for germanium. Assume $n_i = 2.5x10^{13}cm^{-3}$, μ_n=3800 and μ_p=1800cm^2/V-s respectively.	6M

UNIT-III

5.	a)	Explain the forward and reverse bias characteristics of PN junction diode and its dependency on temperature.	8M
	b)	Discuss the characteristics of tunnel diode.	6M
		(OR)	
6.	a)	What is the difference between avalanche and Zener breakdown? Explain the application of Zener diode.	8M
	b)	Derive the expression for diffusion capacitance in a PN junction diode.	6M

UNIT-IV

7.	a)	Explain the VI characteristics and applications of photo transistor.	8M
	b)	Compare the three configurations of bipolar junction transistor.	6M
		(OR)	
8.	a)	Explain the input and output characteristics of bipolar junction transistor in CB configuration.	10M
	b)	Calculate the value of emitter current in a BJT with □=80 and collector current of 40mA.	4M

UNIT-V

9.	a)	Explain the working principle and characteristics of SCR with a neat sketch.	8M
	b)	Define FET parameters and obtain the relation between them.	6M
		(OR)	
10.	a)	Explain the characteristics of enhancement mode MOSFET with neat diagram.	8M
	b)	List few applications of SCR and UJT.	6M

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13BS1002 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech II Semester Supplementary Examinations, August,2022
ENGINEERING MATHEMATICS-II
(Common to EEE & ECE)

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

PART-A

Answer all questions **[10 X 1 = 10M]**

1 a) The Bisection method for finding root of an equation f(x)=0 is
b) The order of convergence of Newton-Raphson method is_____
c) If $f(x)=8x^3-2x^2+1$, then $\Delta^3 f(x) =$ _____
d) Lagrange's Interpolation formula states that
e) The disadvantage of Picard's method is
f) Miline's predictor formula is
g) Inverse Laplace transform of $(S+2)^{-2}$ is _____
h) Laplace transform of $t^4 e^{-at}$ is
i) The solution of $\frac{\partial^2 z}{\partial y^2} = \sin(xy)$ is
j) The complementary function of $(D^2-4DD^I+4D^{I2})Z=(x+y)$ is

PART-B

Answer one question from each Unit [5 x 12=60M]

UNIT-I

2 a) Find a real root of the equation $x^3-2x-5=0$ by method of false position correct to 3 decimal places [6 M]
b) Find the root of the equation $xe^x = \cos x$ using the regular-falsi method correct to 4 decimal places [6 M]

(OR)

3 a) Using Newton iterative method, find the real root of $x \log_{10} x = 1.2$ correct to 5 decimal places [6 M]
b) Using the method of least squares fit a relation of the form $y=ab^x$ to the following data [6 M]

x	2	3	4	5	6
y	144	172.8	207.4	248.8	298.5

UNIT-II

4 a) Evaluate (i) $\Delta \tan^{-1} x$ (ii) $\Delta(e^x \log 2x)$ (iii) $\Delta(x^2/\cos 2x)$ (iv)$\Delta^2 \cos 2x$ [6 M]
b) From the following tables estimate the number of students who obtained marks between 40 and 45. [6 M]

Marks	30-40	40-50	50-60	60-70	70-80
No.of Students	31	42	51	35	31

(OR)

AR13

13BS1002 **SET-1**

5 a) Apply Lagrange's formula inversely to obtain a root of the equation f(x)=0, given that f(30)= -30, f(34)= -13 f(33)=3 and f(42)=18. [6 M]

b) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using trapezoidal rule [6 M]

UNIT-III

6 a) Find by Taylor's series method the value of y at x=0.1 and x=0.2 to five places of decimals from $\frac{dy}{dx} = x^2y-1$, y(0)=1 [6 M]

b) Obtain Picard's second approximate solution of the initial value problem $y^1=x^2(y^2+1)$, y(0)=0 [6 M]

(OR)

7 a) Apply Euler's method to solve $y^1= (x + y)$, y(0)=0 choosing the step length = 0.2 (carryout 6 steps) [6 M]

b) Using Range-Kutta method of 4th order solve $\frac{dy}{dx} = \frac{y^2-x^2}{y^2+x^2}$ with y(0)=0 at x=0.2, 0,4 [6 M]

UNIT-IV

8 a) Find the Laplace transform of $\left(\sqrt{t} - \frac{1}{\sqrt{t}}\right)^3$ [6 M]

b) Find Inverse Laplace transform of (i) $\frac{1}{s^3-a^3}$ (ii) $\frac{s^3}{s^4-a^4}$ (iii) $\frac{s}{(s^2-1)}$ [6 M]

(OR)

9 a) Evaluate (i) $\int_0^\infty \sin 2t \; f\left(t - \frac{\pi}{4}\right) dt$ (ii) $L\frac{1}{t}f(t-\alpha)$ [6 M]

b) An Impulse voltage E δ(t) is applied to a circuit consisting of L,R.C in series with zero initial condition. If I be the any subsequent time t, find the limit of i as t→0 [6 M]

UNIT-V

10. a) Solve $\frac{\partial^3 z}{\partial x^2 \partial y} + 18xy^2 + \sin(2x - y) = 0$ [6 M]

b) Solve $\frac{\partial^2 z}{\partial x^2} + z = 0$, given that when x = 0 , z = e^y and $\frac{\partial z}{\partial x} = 1$ [6 M]

(OR)

11. a) Solve $\frac{y^2 z}{x} p + x^2 zq = y^2 x$ [6 M]

b) Solve $(x^2 - y^2 - z^2)\, p + 2xyq = 2xz$ [6 M]

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