AR13

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Regular / Supplementary Examinations, December, 2015
ENGINEERING MATHEMATICS-II
(Common to CIVIL, MECH, CSE & IT)

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

PART-A

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

1 a) Write the formula of bisection method.
   b) Newton's iterative formula to find the value of $\sqrt{N}$ is
   c) By Trapezoidal rule, $\int_a^b f(x)dx=$
   d) Newton's divided difference formula is_____
   e) Taylor's series solution of $y^1 = -xy$, y(0)=1 up to x^4 is_____
   f) The second order Runge-Kutta formula is_____
   g) If $L^{-1}[\varphi(S)] = f(t)$, then $L^{-1}[e^{-as}\varphi(S)]$
   h) $L^{-1}\left[\frac{1}{(s+a)^2)}\right]$
   i) Solution of p-q=log (x+y) is
   j) A solution of (y-z) p+(z-x)q=x-y is

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

UNIT-I

2 a) Use the method of false position, to find the fourth root of 32 correct to three decimal places   [6 M]
   b) Solve   10x-7y+3z+5u=6,   -6x+8y-z-4u=5,   [6 M]
       3x+y+4z+11u=2,   5x-9y-2z+4u=7   by gauss elimination method.

(OR)

3 a) Find a root of the equation $x^3-4x-9=0$, using the bisection method in 4 stages.   [6 M]
   b) Fit a second degree parabola for the following data   [6 M]

x	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

UNIT-II

4 a) Find the missing values in the following table   [6 M]

x	45	50	55	60	65
y	3.0	-	2.0	-	2.4

   b) Use simpson's 1/3rd rule to find $\int_0^{0.6} e^{-x^2}$ dx by taking seven ordinates   [6 M]

(OR)

5 a) Determine f(x) as a polynomial in x for the following data, using Newtons divided   [6 M]
       difference formulae

x	-4	-1	0	2	5
f(x)	1245	33	5	9	1335

   b) Given the values   [6 M]

x	5	7	11	13	17
f(x)	150	392	1452	2366	5202

       Evaluate f(9) using Lagrange's formula

UNIT-III

6 a) Find the value of y for x=0.1 by Picard's method given that $\frac{dy}{dx} = \frac{y-x}{y+x}, y(0) = 1$ [6 M]

   b) Solve $y^1=y^2+x$, $y(0)=1$ using Taylor's series method and compute y(0.1) and y(0.2)   [6 M]

(OR)

7 a) Solve the following by Euler's method (modified) $\frac{dy}{dx}$=log (x+y), y (0)=2 at   [6 M]

       x=1.2 and 1.4 with h=0.2

   b) Apply miline's method, to find a solution of the differential equation $y^1=x-y^3$ in the   [6 M]
       range 0≤x≤1 for the boundary condition y=0 at x=0

UNIT-IV

8 a) Find the Laplace transform of i) $\sin 2t \ \sin 3t$ ii) $\cos^2 2t$ [6 M]

   b) Find $L\left[\int_0^t e^{-t} \cos t \, dt\right]$ [6 M]

(OR)

9 a) Using unit step function find Laplace transform of   [6 M]

       $f(t) = \sin t \qquad \quad 0 \le b < \pi$
       $\quad\ = \sin 2t \qquad \pi \le t \le 2\pi$
       $\quad\ = \sin 3t \qquad \quad b \ge 2\pi$

   b) Evaluate i) $L^{-1} = \left(\frac{e^{-S}- 3e^{-3S}}{S^2}\right)$ ii) $L^{-1} = \left(\frac{Se^{-aS}}{S^2-\omega^2}\right)$, a > 0   [6 M]

UNIT-V

10. a) Solve $\frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial x\, \partial y} = \cos x \cos 2y$ [6 M]

    b) Solve $r-4s +4t = e^{2x+y}$ [6 M]

(OR)

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

    b) Solve $\frac{\partial^2 u}{\partial x\, \partial t} = e^{-t} \cos x$ [6 M]

AR13   **SET-1**

13HS1003
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B. Tech I Semester Regular / Supplementary Examinations, December, 2015

ENVIRONMENTAL STUDIES
(Common to EEE & ECE)

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

PART- A

Answer all questions   [10 X 1=10M]

1. Comment on the following Terms

    a).Water logging
    b).Lithosphere
    c).Genetic Diversity
    d).Ecosystem
    e).Biomagnification
    f).Surface water pollution
    g).Resettlement
    h).Disaster
    i).Population Growth
    j).GIS

PART -B

Answer one question from each unit   **[5×12= 60M]**

UNIT-I

2.   a)   Write an explanatory note on multidisciplinary nature of environmental science.   [6M]
     b)   What are natural resources? How will you classify the global natural resources?   [6M]

(OR)

3.   a)   How individuals can involve themselves with process of improving environment.   [5M]
     b)   What are the major causes for conflict over water? Discuss on national and one interstate conflict.   [7M]

UNIT-II

4.   a)   Define ecosystem. Give an account of the structure and functions of ecosystem.   [6M]
     b)   What is meant by in-situ and ex-situ conservation of bio-diversity? Give examples.   [6M]

(OR)

5. a) Write the structure and function of Grassland ecosystem. [6M]
    b) Write a detailed note on value of bio-diversity. [6M]

UNIT-III

6. a) Briefly describe the sources, effects and control of water pollution. [6M]
    b) Classify solid waste? What are the sources of urban and industrial solid waste [6M]

(OR)

7. a) Write a short note Bhopal gas tragedy and Chernobyl nuclear disaster [6M]
    b) How can an individual prevent environmental pollution? Why such an effort at individual level is important? [6M]

UNIT-IV

8. a) What are the urban problems related to energy? Write the concept of unsustainable and sustainable development. [6M]
    b) Write a note on global warming and acid rain. [6M]

(OR)

9. a) Discuss briefly the salient features AIR (Prevention and Pollution control of Pollution)Act ,1981. [6M]
    b) What are the major limitations to successful implementation of the environmental legislation? [6M]

UNIT-V

10. a) Explain the impact of population growth on environment. [6M]
     b) Write a document on a visit to a polluted local industrial site. [6M]

(OR)

11. a) Write a detailed note on role of information technology in environment and human health. [6M]
     b) Write a document on a visit to a local forest area. [6M]