

UNIT-IV

8. The ages of ten husbands and wives are given in years at the time of their marriage : [10]

Age (Husband) in Years	Age (Wife) in years
25	21
27	25
28	27
30	29
31	32
32	28
34	37
37	33
39	41
42	43

Find the correlation of the above data.

9. Fit a straight line to the following data : [10]

x :	1	2	3	4	5	6
y :	3	5	8	11	13	17

-----X-----

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(4)

Question Paper Code : 6479

B.Voc. (Semester - IV) Examination, 2018

APPLIED MATHEMATICS - II

[RET-402]

Time : Three Hours]

[Maximum Marks:70

Note : Answer **five** questions in all. Question **No.1** is **compulsory**. Besides this, attempt **one** question from each unit.

1. Answer the following : [3x10=30]

(a) Solve $\frac{dy}{dx} + y = e^{-x}$

(b) Solve $\frac{d^2x}{dt^2} + 2\frac{dx}{dt} + x = 0$

(c) Find the Laplace transform of $f(t) = t^n$, $n > 0$

(d) Find the function $f(t)$ whose Laplace transform is

$$\frac{1}{(s+1)(s+2)}$$

(e) Find the Laplace transform of $t \sin t$.

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(1)

[P.T.O.]

- (f) Find an approximate root of $f(x) = x^3 - 11 \equiv 0$
- (g) Use trapezoidal rule to evaluate $\int_0^6 \frac{dx}{1+x}$, take $h=2$
- (h) Find the arithmetic mean of the marks obtained by 10 students : 25, 30, 45, 51, 62, 57, 50, 57, 60, 35.
- (i) Prove that the coefficient r is the geometric mean of the two correlation coefficients.
- (j) Find an approximate solution of :
- $$x + 10y = 11$$
- $$10x + y + z = 21$$
- $$y + 10z = 31$$

UNIT-I

2. Find a complete solution of : [10]

$$\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = 0, \text{ given that } \frac{dy}{dx} = 1, \text{ if } x = 0 \text{ and } y = -1$$

if $x = 0$

3. Solve : $\frac{dy}{dx} = \frac{x+2y+3}{2x+y+5}$ [10]

UNIT-II

4. Find the function $f(t)$ whose Laplace Transformation is $\frac{1}{(s^2+1)(s^2+4)}$. [10]
5. Using Laplace Transform, solve : [10]
- $$\frac{d^2x}{dt^2} + 4x(t) = 1 \text{ given that } \frac{dx}{dt} = 0 \text{ when } t = 0 \text{ and } x(t) = 0 \text{ when } t = 0$$

UNIT-III

6. Solve the system of linear equations (Use Jacobi's method/Gauss-Seidel method) : [10]
- $$20x + y + z = 41$$
- $$x + 20y + z = 51$$
- $$x + y + 20z = 61$$
7. Find polynomial that interpolates the given data: [10]
- | | | | | |
|--------|----|----|----|----|
| x = 0 | 2 | 3 | 4 | 5 |
| y : 10 | 21 | 32 | 36 | 40 |
- (Use Newton's divided difference)