

I Choose the correct Answer:

1) ~~a~~, 2 and 2

2) a, $\sqrt{1+x^2}$

3) a, $\frac{e^{5x}}{6}$

4) c) number of Parameters

5) ~~a~~ $m^2 + m = 0$

6) b, $E^2 f(x) = f(x+2h)$

7) a) functional relationship

8) c) b

9) ~~...~~ M.A

10) a, $\frac{1}{11}$

11) c) $N(0,1)$

12) c, $\frac{1}{\sigma\sqrt{2\pi}}$

13) c, $\frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}(x-5)^2}$

14) b) As the sample size increases and becomes larger

15) a) Type I error

16) c) Principle of statistical regularity

17. c) alternative hypothesis

18. a) in percentages

19. d) none of these

20. a) three control lines

$$\begin{aligned} \text{II } 21. \text{ C.L.I} &= \frac{\sum Pv}{\sum v} \\ &= \frac{12441.4}{100} \rightarrow (1) \\ &= 124.41 \\ &\quad \rightarrow (1) \end{aligned}$$

$$22. \text{ C-F} = Ae^{-x} + Be^{-x/3} \rightarrow (1/2)$$

$$\text{P-I} = \frac{x}{2} 3e^{-x/3} \rightarrow (1/2)$$

Soln:

$$\begin{aligned} y. &= Ae^{-x} + Be^{-x/3} \\ &\quad + \frac{x}{2} 3e^{-x/3} \rightarrow (1) \end{aligned}$$

$$23. E(x) = -1.25 \rightarrow (2)$$

$$24. P(x < 2) = \frac{5^{10}}{6^{10}} (3)$$

$$(or) \frac{5^9}{6^{10}} \times 15 \rightarrow (2)$$

$$\frac{5^9}{6^{10}} \times 15 \rightarrow (2)$$

$$25. f(2) = 19 \rightarrow (2)$$

$$26. (59.41, 66.97) \rightarrow (2)$$

$$27. \sum x = 45, \sum y = 108, \sum x^2 = 285, \sum y^2 = 1356$$

$$\sum xy = 597$$

$$\text{Correlation coefficient} = 0.95 \rightarrow (2)$$

PART - C

III 28. Difference between middle

$$\text{Period} = 4$$

$$\text{Diff. between Semi Avg} = 35$$

$$\text{Annual decrease in trend} = 8.75$$

$$\text{Half yearly trend} = 4.375 \rightarrow (1)$$

$$255.625 \quad 246.875 \quad 238.125 \quad 229.375 \quad 220.625 \quad 211.875$$

$$203.125 \quad 194.375$$

$$\text{For the year 2005} = 159.375 \rightarrow (2)$$

$$29) \frac{dp}{dt} = \frac{6.5}{100} p$$

$$p = ce^{0.065t} \rightarrow (1)$$

$$t=0, p=59000$$

$$c = 59000 \rightarrow (1)$$

$$\rightarrow p = 59000 e^{0.065t}$$

$$t=10, p = 95,775 \rightarrow (1)$$

$$30) i) K = \frac{1}{2\pi} \rightarrow (1)$$

$$ii) P(0 < x < \frac{\pi}{2}) = \frac{1}{4} \rightarrow (1)$$

$$iii) P(\frac{\pi}{2} < x < \frac{3\pi}{2}) = \frac{1}{2} \rightarrow (1)$$

$$31) \Delta^5 y_0 = 0$$

$$y_1 - y_4 = -130 \rightarrow (1)$$

$$\Delta^5 y_1 = 0$$

$$10y_4 - y_1 = 3280 \rightarrow (1)$$

$$y_1 = 220 \quad y_4 = 350$$

In the year 1962 = 220 tons

$$1965 = 350 \text{ tons} \rightarrow (1)$$

$$32) x_4 = 60$$

$$y_4 = 68.48$$

$$\Delta y_4 = -6.00$$

$$\Delta^2 y_4 = 2.84$$

$$\Delta^3 y_4 = -1.16$$

$$\Delta^4 y_4 = 0.68 \rightarrow (2)$$

$$u = -0.4$$

$$y = 70.59 \rightarrow (1)$$

33)

$$y' e^{-2x} - 2e^{-2x} = -3A \sin(3x+B) \rightarrow (1)$$

$$y'' - 4y' + 13y = 0 \rightarrow (2)$$

$$34) n=1000, p=0.23$$

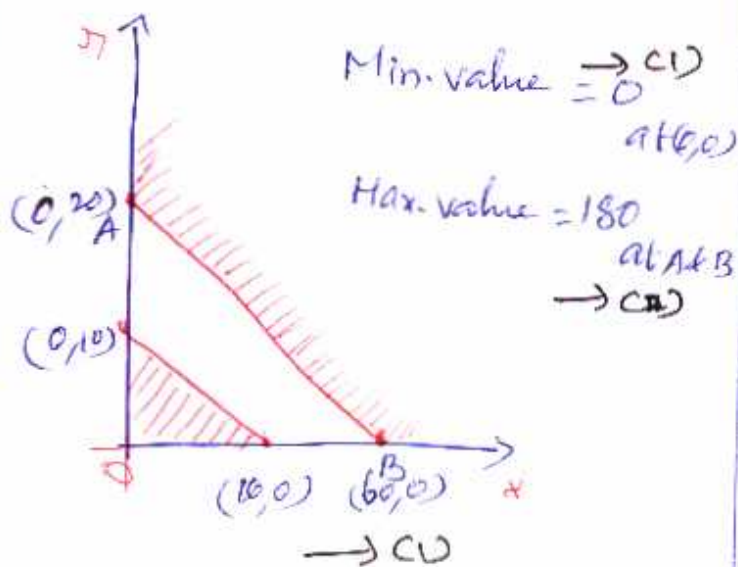
$$q = 0.77 \rightarrow (1)$$

$$19.577, 26.437$$

$$\hat{p} \pm 2 \sqrt{\frac{pq}{n}} \rightarrow (2)$$

35) $(0, 20), (60, 0)$

$(0, 10), (10, 0) \rightarrow C2)$



36) $n = 200$

$\bar{x} = 4.94$

$S = 0.21$

Null hypothesis, $\mu_0 = 5$

Alternate hypo, $\mu \neq 5$

$Z = -2.841$

$|Z| = 2.841 \rightarrow C3)$

critical region $|Z| \geq 2.58$

$\rightarrow C1)$

Acceptance region $|Z| \leq 2.58$

Hypothesis rejected $\rightarrow C1)$

37) $\sum y = b \sum x + na$

i) $\sum xy = b \sum x^2 + a \sum x$

$\sum x = 71$ $\sum y = 386$

$\sum x^2 = 1021$ $\sum xy = 5136$

$71b + 6a = 386 \rightarrow C1)$

$1021b + 71a = 5136 \rightarrow C1)$

$a = 27.14, b = 3.143$
 $\rightarrow C2)$

Line of best fit

$y = 3.143x + 27.14$
 $\rightarrow C1)$

ii) $y = 80.571$

38. Let $y = vx$

$\frac{dy}{dx} = v + x \frac{dv}{dx} \rightarrow C1)$

$\frac{v dv}{24 - 2v^2} = \frac{dx}{x} \rightarrow C2)$

$\left(\frac{24x^2 - 2v^2}{2^2} \right)^{-1/4} = Cx$

$y^2 = 12x^2 - \frac{128}{x^2} \rightarrow C2)$

39)

$$K = \frac{1}{49} \rightarrow (1)$$

$$P(x < 4) = \frac{16}{49}$$

$$P(x \geq 5) = \frac{24}{49}$$

$$P(3 < x \leq 6) = \frac{33}{49} \rightarrow (2)$$


cdf =

0	, $x < 0$
$\frac{1}{49}$, $0 \leq x < 1$
$\frac{4}{49}$, $1 \leq x < 2$
$\frac{9}{49}$, $2 \leq x < 3$
$\frac{16}{49}$, $3 \leq x < 4$
$\frac{25}{49}$, $4 \leq x < 5$
$\frac{36}{49}$, $5 \leq x < 6$
1	, $x \geq 6$ $\rightarrow (2)$

HANDLING TEACHER'S

1. S. SOPI 

2. R. PRABHAKARN

3. K. SUNDARI 

40) $\mu = 34, \sigma = 16$

i) $N = 1000$

$X = 30, z = -0.25$

$X = 60, z = 1.625$

$P(30 < x < 60) = 0.5471$

No of students = 547 $\rightarrow (3)$

ii) $z_1 = -1.04, z_2 = 1.04$

$X_1 = 50.64, X_2 = 17.36$
 $\rightarrow (2)$

lies between 17.36 and 50.64

41) $\sum P_{0,0} = 700, \sum P_{1,2} = 658$
 $\sum P_{0,2} = 532, \sum P_{2,0} = 875$

$P_{0,1}^L = 125, P_{0,1}^P = 123.68$

$P_{0,1}^F = 124.34 \rightarrow (3)$

T.R.T = 1 $\rightarrow (1)$

F.R.T = $\frac{658}{700} \rightarrow (1)$