QUESTION PAPER-9 : JULY 2022

SECTION-A

1. (D) Retail price
2. (A) 400
3. (B) −0.5
4. (A) Perfect positive
5. (C) $y - \hat{y}$
6. (B) Sir Francis Galton
7. (D) t
8. (A) Decrease in the share prices due to recession in share market.
9. (D) Impossible Event
10. (A) $P(A \cap B) = P(A) \times P(B)$
11. (B) Birth year of a student
12. (C) $np > npq$
13. (A) 10
14. (B) 0.5
15. (A) $\dfrac{4}{5}\sigma$
16. (D) 20
17. (B) 10
18. (D) $|x - 5| < 0.02$
19. (A) $-\dfrac{p}{x} \cdot \dfrac{dx}{dp}$
20. (B) $-\dfrac{8}{x^3}$

SECTION-B

21. The appropriate average for the construction of index number is weighted mean.
22. The main limitation of scatter diagram is that it does not give exact degree of relationship between two variables.
23. Linear Regression Model is $Y = \alpha + \beta X = u$
24. The data collected and arranged according to the time is called time-series. **OR** A time series is a set of observations taken at specified time periods.
25. The experiment which can be independently repeated under identical conditions and all its possible outcomes are known but which of the outcomes will appear cannot be predicted with certainty before conducting the experiment is called a random experiment.
26. The relation between the probability of success and failure is $p + q = 1$.
27. This statement is true.
28. $f(x) = \dfrac{1}{\sigma\sqrt{2\pi}}\, e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$
29. $4x + k = 6$
    $4(-1) + k = 6$
    $-4 + k = 6$
    $\therefore k = 6 + 4$
    $\therefore k = 10$
30. The change in revenue due to small change in demand is called marginal revenue.
31. $2015 = 29{,}166.67;\ 2016 = 26{,}666.67;\ 2017 = 32{,}307.69;\ 2018 = 31{,}250$
32. 0.67
33. $\bar{x} = 10$
36. $n = 8$ and $p = \dfrac{1}{2}$
37. $k_2 = 20.5$
38. $f''(0) = 6$
40. $2016 = 110;\ 2016 = 123.20;\ 2017 = 134.29;\ 2018 = 145.03;\ 2019 = 152.28;\ 2020 = 169.03$
41. 145.50
42. $r \cong 0.86$

43. $\hat{y} = 37.5 + 0.75t$

44. $\hat{y} = 146.12$ (quintal per hectare)

45. $\hat{y} = 81.79 + 0.49t$

46. $P(A) = \dfrac{m}{n} = \dfrac{40}{120} = \dfrac{1}{3}$

$P(B) = \dfrac{m}{n} = \dfrac{30}{120} = \dfrac{1}{4}$

$P(A \cap B) = \dfrac{m}{n} = \dfrac{10}{120} = \dfrac{1}{12}$

47. (1) 0.97 (2) 0.03 (3) 0.7

48. $P(A/B) = \dfrac{5}{6}$

49. (i) $K = \dfrac{24}{17}$ (ii) $p(1 < x < 4)\ \dfrac{5}{17}$

50. $0.54432 \approx 0.5443$

51. 2500

52. 78.81%

53. 30 Celsius and Standard deviation is 2 Celsius.

54. $\dfrac{1}{2\sqrt{3}}$

55. 39 at x = 3

56. $I_L = 106.70;\ I_P = 101.65;\ I_F = 104.14$

57. $r \simeq 0.94$

58. $r = 0.90$

59. 88.73

60. $\hat{y} \doteq 36.5$ (thousands)

61. 274.88; 280.38; 273.88; 263.00; 265.38; 269.25; 272.63; 275.88

QUESTION PAPER-10

SECTION-A

1. (D) Geometric mean

2. (D) Lack of correlation

3. (B) $R^2 \geq 0.5$

4. (D) C_t

5. (C) Difference event

6. (B) 2

7. (C) $f(x) = \dfrac{1}{\sigma\sqrt{2\pi}}\ e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2};\ -\infty < x < \infty$

8. (B) $N(\mu, \sigma^2)$

9. (C) −2

10. (A) 0

15. $A \cap B = \left\{ x \,\middle|\, \dfrac{1}{4} \leq x < 1 \right\}$

21. Real wage Rs.16,392.85 and loss to worker Rs.1,642.85 (decrease in purchasing power).

23. $S_x = 5$

25. OR $p = \dfrac{3}{4}$, ∴ it is negative

28. 2   OR

28. $k_1 = 20\ k_2 = 20.5$

29. $f'(x) = nx^{n-1}$

31.

Index Number	CBIN	(2010 + 2011) Average Index No.
100	100	95.83
108.70	108.70	104.17
100	92	95.83
108.70	108.7	104.17
117.39	108	112.5
121.74	103.7	116.67
130.43	107.14	125
130.43	100	125

32. $r = -0.96$

33. (i) $r^2 = 0.64$

(ii) $b = -0.8$

(left margin fragments):
ified time

can be
r identical
possible
ich of the
annot be
y before
is called a

probability
+ q = 1.

e to small
1 marginal

26,666.67;
= 31,250

20; 2017 =
9 = 152.28;