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S. Y. B. Sc. (Sem. - III) Examination

March - 2023

Statistical Method - (ID)

સૂચના : / Instructions

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નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **S. Y. B. Sc. (Sem. - III)**

Name of the Subject :

☛ **Statistical Method - (ID)**

Subject Code No.: **1903001103040001**

Seat No.:

Student's Signature

(૨) બધા જ પ્રશ્નો ફરજિયાત છે.

(2) All questions are compulsory.

(૩) પ્રોગ્રામ રહિતસાયન્ટિફિક કેલક્યુલેટરનો ઉપયોગ થઈ શકશે.

(3) Use of non programmable scientific calculator is allowed.

(૪) નાચેના પ્રશ્નોમાં સૌથી યોગ્ય વિકલ્પ પસંદ કરો.

(4) In the following questions select most suitable choice.

(5) SECTION - A : Q. 1 to 16 Multiple Choice Questions : 1 Mark

(6) SECTION - B : Q. 17 to 33 Multiple Choice Questions : 2 Marks

***O.M.R. Sheet* ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ**
***O.M.R. Sheet*ની પાછળ છાપેલ છે.**
Important instructions to fillup O.M.R. Sheet
are given on back side of the provided O.M.R. Sheet.

P1363

વિભાગ - A (Section - A) (1 mark)

Q. 1. Probability can take values _____.

(a) $-\infty$ to $+\infty$ (b) $-\infty$ to 1

(c) -1 to $+1$ (d) 0 to 1

Q. 2. $P(A) + P(A') =$ _____.

(a) 0 (b) 1

(c) –1 (d) ∞

Q. 3. If A and B are two independent events, then $P(\overline{A} \cap \overline{B}) =$ _____.

(a) $P(\overline{A}).\ P(\overline{B})$ (b) $P(\overline{A}) + P(\overline{B})$

(c) [1–P(A)] + [1–P(B)] (d) All the above

Q. 4. If a and b are constant then $V(ax - b) =$ _____.

(a) $a^2\ V(x)$ (b) $b^2\ V(x)$

(c) $a^2\ V(x) - b$ (d) $a^2\ V(x) + b$

Q. 5. "Statistics is both a science and an art", definition given by:

(a) R. A. Fisher (b) Tippet

(c) Boddington (d) A. L. Bowley

Q. 6. Which measure is based on all observations?

(a) Range (b) Median

(c) Mode (d) Mean

Q. 7. The Geometric mean = _____ of observation 3, 7, 9, 3/7

(a) 3 (b) 6

(c) 7 (d) 9

Q. 8. Harmonic mean for: 4,8, 10

(a) 5.60 (b) 5.79

(c) 6.32 (d) 6.65

Q. 9. The relation between Q_2, D_5 and P_{50} is _____.

(a) $Q_2 = D_5 > P_{50}$ (b) $Q_2 < D_5 < P_{50}$

(c) $Q_2 > D_5 > P_{50}$ (d) $Q_2 = D_5 = P_{50}$

Q. 10. The mode of the given distribution is:

Weight (in kg.)	40	43	46	49	52	55
No. of Children	5	8	16	9	7	3

(a) 16 (b) 40

(c) 46 (d) 55

Q. 11. For a moderately asymmetrical distribution, the median and mean are 9 and 10 respectively then mode = _____.

(a) 6 (b) 7

(c) 8 (d) 9

Q. 12. Algebraic sum of the deviation of the observations taken from mean is _____.

(a) 0 (b) 1

(c) 2 (d) None of these.

Q. 13. $\mu_4' - 4\mu_3'\mu_1' + 6\mu_2'(\mu_1')^2 - 3(\mu_1')^4 =$ _____.

(a) μ_1 (b) μ_2

(c) μ_3 (d) μ_4

Q. 14. The relation between β_2 and γ_2 is _____.

(a) $\gamma_2 = \beta_2 - 3$ (b) $\gamma_2 = \beta_2 + 3$

(c) $\gamma_2 = \beta_2$ (d) $\gamma_2 = \beta_2/3$

Q. 15. For a symmetrical distribution mean is 164, then which statement is true?

(a) mean = median = mode (b) mean < median < mode

(c) mean > median > mode (d) mean = mode

Q. 16. Moment generating function, $M_X[t]$ = _____.

(a) $E[e^{tx}]$ (b) $E[e^t]$

(c) $E[e^x]$ (d) e^{tx}

વિભાગ - B (Section - B) (2 marks)

Q. 17. If the Q_3 and Q_1 quartiles are 56.36 and 22.16 respectively, then the quartile deviation is:

(a) 0 (b) 1.71

(c) 17 (d) 17.10

Q. 18. If N = 100, $\Sigma(X - \overline{X})^2 = 2500$, then find the standard deviation.

(a) 5 (b) 10

(c) 15 (d) 25

Q. 19. For a series its minimum value is 21 and range 16, then maximum value is _____.

(a) 37 (b) 21

(c) 16 (d) 36

Q. 20. The mean of 9 observation is 100 and that of 16 is 80, the combined mean of all the 25 observations will be:

(a) 88.5 (b) 88.0

(c) 87.5 (d) 87.2

Q. 21. From the given information, find weighted mean:

X	10	15	20	25	30
W	0.3	0.5	0.8	0.7	1.5

(a) 20.0 (b) 23.42

(c) 16.58 (d) None of these.

Q. 22. The mean of the observations 8, 12, 13, 15, 17, 19 and y is 13.75 then y = _____.

(a) 8 (b) 12.25

(c) 14 (d) 20

Q. 23. For a random variable x, mean and variance are 10 and 5 respectively then find E[x(x + l)].

(a) 95 (b) 100

(c) 105 (d) 115

Q. 24. Probability function of random variable X is, $f(x) = \frac{x}{21}$; x = 1, 2, 3, 4, 5, 6 then E(X) = _____.

(a) 4.78 (b) 4.50

(c) 4.33 (d) 4.20

Q. 25. If x and y are independent variables with standard deviation of x = 2 and standard deviation of y = 3 then find the value of V(2x + 2y).

(a) 16 (b) 36

(c) 52 (d) 64

Q. 26. Find E(X) for the probability distribution.

X	0	1	2
p(x)	0.7	0.2	0.1

(a) 0.4 (b) 1

(c) 1.2 (d) 2.1

Q. 27. Let A and B be two events such that P(A) = 3/10, P(A∪B) = 2/5 and P(B) = x. Find x such that A and B are mutually exclusive events.

(a) 0 (b) 1/10

(c) 2/10 (d) 3/10

Q. 28. If P(A) = 1/3, P(B) = ¼, P(A/B) = 1/6, then P(B/A) = _____.

(a) ¼ (b) ¾

(c) 1/8 (d) 1/2

Q. 29. If P(A) = 0.8, P(B) = 0.5, P(A∪B) = 0.6, then P(A∩B) is:

(a) 0.4 (b) 0.6

(c) 0.7 (d) 0.8

Q. 30. If $\mu_2 = 4$ and $\mu_3 = -4$ then β_1 = _____.

(a) 0.25 (b) –1.0

(c) –4 (d) None of these.

Q. 31. If $\mu_1' = 9$ and $\mu_2' = 144$, then μ_2 = _____.

(a) 9 (b) 63

(c) 144 (d) 150

Q. 32. If mean is 10 and coefficient of variation is 5, then standard deviation is:

(a) 5 (b) 10

(c) 50 (d) None of these.

Q. 33. If N = 20, $\Sigma X = 1000$, , $\Sigma X^2 = 84000$ then find variance.

(a) 1500 (b) 1600

(c) 1700 (d) 1800

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SPACE FOR ROUGH WORK