LHR-11-18

Roll No _____ (To be filled in by the candidate) (Academic Sessions 2015 – 2017 to 2017 – 2019 )

**STATISTICS**                                  218 -(INTER PART – I)                Time Allowed : 20 Minutes
Q.PAPER – I ( Objective Type )      **PAPER CODE = 6183**        Maximum Marks : 17

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

| 1-1 | In qualitative data, the most suitable average is : |
|---|---|
| | (A) Arithmetic mean   (B) Geometric mean   (C) Harmonic mean   (D) Mode |
| 2 | If $\beta_2 < 3$ the distribution is : |
| | (A) Mesokurtic   (B) Leptokurtic   (C) Platykurtic   (D) Symmetrical |
| 3 | If X and Y are two random variables then $E(X-Y)=$ : |
| | (A) $E(X)+E(Y)$   (B) $E(X)-E(Y)$   (C) $E(X)E(Y)$   (D) $XE(Y)$ |
| 4 | In hyper-geometric distributions, trials are : |
| | (A) Independent   (B) Dependent   (C) Mutually exclusive   (D) Not fixed |
| 5 | Brand of a soap is ---- variable : |
| | (A) Quantitative   (B) Qualitative   (C) Imaginary   (D) Continuous |
| 6 | Probability of an event cannot be : |
| | (A) 0   (B) Negative   (C) 1   (D) Positive |
| 7 | Headings for different columns in a table are called : |
| | (A) Stub   (B) Title   (C) Column captions   (D) Prefatory note |
| 8 | Laspayre's index number is also named as : |
| | (A) Current year weighted   (B) Base year weighted |
| | (C) Ideal index number   (D) Simple index number |
| 9 | If $p=q=\dfrac{1}{2}$ , the binomial distribution is a : |
| | (A) Skewed   (B) Asymmetrical   (C) Symmetrical   (D) Positively skewed |
| 10 | $S.D(y+a)=$ ---- : |
| | (A) $SD(y)+a$   (B) $|a|SD(y)$   (C) $SD(y)$   (D) $a^2 SD(y)$ |
| 11 | A graph of cummulative frequency curve is called : |
| | (A) Histogram   (B) Pie chart   (C) Bar chart   (D) Ogive |
| 12 | If $\sqrt{\beta_1}=0$ , the distribution is : |
| | (A) Positively skewed   (B) Symmetrical |
| | (C) Negatively skewed   (D) Leptokurtic |
| 13 | In a symmetrical distribution : |
| | (A) Mean = median = mode   (B) Mean > median > mode |
| | (C) Mean < median < mode   (D) Mean > median < mode |
| 14 | In index number base year should be : |
| | (A) First year   (B) Second year   (C) Last year   (D) Normal year |
| 15 | $\Sigma(y-\bar{y})=$ : |
| | (A) 0   (B) 1   (C) Least   (D) Minimum |
| 16 | If A and B are mutually exclusive events then $P(A\cup B)$ equal to : |
| | (A) $P(A)+P(B)$   (B) $P(A)+P(B)+P(A\cap B)$ |
| | (C) $P(A)+P(B)-P(A\cap B)$   (D) $P(A)-P(B)-P(A\cap B)$ |
| 17 | A random variable is also named as : |
| | (A) Chance variable   (B) Qualitative variable |
| | (C) Attribute   (D) Discrete variable |

4. (v) Given $X = 1, 2, 3, 4, 5$ and $P(X) = \frac{1}{10}, \frac{3}{10}, P, \frac{2}{10}, \frac{1}{10}$. Find the value of P.

(vi) Define a Bernoulli trial.

(vii) A random variable X has a binomial distribution with $n = 5$ and $P = 0.2$, find $P(X = 2)$.

(viii) Define hypergeometric experiment.

(ix) Given $N = 10$, $n = 4$ and $K = 5$, find $E(X)$.

## SECTION – II

Note : Attempt any THREE questions.

5. (a) (i) A man gets a rise of 10% in salary at the end of his first year of service and further rises of 20% and 25% at end of the second and third year respectively. The rise in each case being calculated on his salary at the beginning of the year. What is annual percentage average increase?    2

(ii) Find average of 10 km / h, 20 km / h and 25 km / h.    2

(b) (i) Compute mode of the data given below :    2

| Wages | 4 – 6 | 6 – 8 | 8 – 10 | 10 – 12 | 12 – 14 | 14 – 16 |
|-------|-------|-------|--------|---------|---------|---------|
| Employees | 13 | 110 | 180 | 105 | 18 | 8 |

(ii) Also find median of data of part (i) of Q.No. 5 (b).    2

6. (a) Following are the heights (cms) of 5 students, measured at the time of registration. Compute mean deviation about mean and mean coefficient of dispersion.    4
Heights (cms) : 88.03 , 94.50 , 94.90 , 95.50 , 84.60

(b) The first three moments of a distribution about the value 2 of a variable X, are 1, 16 and – 40. Show that the mean is 3, variance is 15 and third moment about mean $m_3$ is – 86.    4

7. (a) Find chain indices for the following data :    4

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------|------|------|------|------|------|------|------|
| Price | 114 | 118 | 119 | 125 | 130 | 131 | 135 |

(b) Three coins are tossed. Find the probability that :
(i) Exactly 3 tails appear.    (ii) At most 2 tails appear.    4

8. (a) The probability distribution of a random variable X is given below :

| x | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P(x) | 0.1 | 0.3 | 0.3 | 0.2 | 0.1 |

Find mean and variance of X.    4

(b) A continuous random variable X has probability density function :

$$f(x) = \frac{2}{27}(x + 1) \quad 2 \le x \le 5$$    4

Find : (i) $P(x < 4)$ (ii) $P(3 \le X \le 4)$

9. (a) Five dice are tossed 960 times. Find the expected frequencies when throwing of 4, 5, or 6 is regarded as success.    4

(b) Given that X is a hypergeometric random variable with $N = 8$, $n = 3$ and $K = 5$, compute $P(X \le 2)$    4

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