FBD-11-23

Roll No. : _____

Objective Paper Code **6183**

**Intermediate Part First**

# STATISTICS ( Objective )

Time: 20 Minutes Marks: 17

**Q.No.1** **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.**

| S.# | Questions | A | B | C | D |
|---|---|---|---|---|---|
| 1 | In hypergeometric experiment, total number of successes are denoted by: | n | k | N | N-k |
| 2 | The mean and S.D of binomial distribution will be: | np and npq | np and nq | np and $\sqrt{np}$ | np and $\sqrt{npq}$ |
| 3 | In a binomial distribution, if P = 0.6, then distribution will be: | Symmetrical | Negatively skewed | Positively skewed | All these |
| 4 | The S.D of a random variable X is given by: | $\sqrt{E(X^2)-(E(X))^2}$ | $\sqrt{E(X^2)+(E(X))^2}$ | $E(X^2)-(E(X))^2$ | $E(X^2)-E(X)$ |
| 5 | If $P(X)=\frac{1}{10}$ and X=100, then E(X) is: | 1 | 10 | 100 | Zero |
| 6 | If A and B are dependent events, then $P(A \cap B)$ is: | $P(A)\cdot P(B)$ | $P(A)\cdot P(\frac{B}{A})$ | $P(A)\cdot P(\frac{A}{B})$ | Both "B" and "C" |
| 7 | The probability of selecting a red ball from a bag containing 100 red balls is: | Zero | 1 | $\frac{1}{100}$ | $\frac{2}{100}$ |
| 8 | If $\sum p_n q_0 = 400$, $\sum p_0 q_0 = 200$, then Laspeyre's index is: | 400 | 200 | 100 | 140 |
| 9 | The index $\frac{\sum p_n}{\sum p_0}\times 100$ is called: | Chain index | Weighted index | Simple aggregative index | Link relative |
| 10 | First moment about mean is always equal to: | Zero | S.D | Variance | A.M |
| 11 | The value of mean deviation is minimum if the deviations are taken from: | A.M | G.M | Mode | Median |
| 12 | If S.D(X) = 2, then S.D(X+12) will be: | 14 | 12 | 2 | 4 |
| 13 | The G.M of two values a and b is: | $\frac{a+b}{2}$ | $\sqrt{ab}$ | $\frac{2ab}{a+b}$ | $\frac{a+b}{2ab}$ |
| 14 | Which is affected by extreme values: | Quartile | Median | Mode | A.M |
| 15 | The quartiles are the values which divides an arrayed set of data into equal parts: | 4 | 2 | 10 | 100 |
| 16 | Class mark of the class 65 – 84 is: | 74 | 75 | 75.5 | 74.5 |
| 17 | The life of T.V. tube is an example of: | Discrete variable | Continuous variable | Qualitative variable | Constant |

Intermediate Part First Roll No. _____

# STATISTICS ( Subjective )

FBD-11-23 Time: 02:40 Hours Marks: 68

## SECTION – I

2. **Write short answers of any EIGHT parts.** 16

(i) Define statistics. (ii) What is difference between constant and variable?
(iii) Define mode. (iv) Define weighted mean.
(v) Define quartiles. (vi) What is the relation between AM, GM and HM?
(vii) Write any two merits of median. (viii) Define link relatives.
(ix) What is composite index number? (x) What is CPI?
(xi) The sum of deviations of 15 values from 20 is 45. Find arithmetic mean.
(xii) If Laspeyre's index number = 105.4 and Paasche's index number = 103.5, find Fisher's index.

3. **Write short answers of any EIGHT parts.** 16

(i) Define classification. (ii) What is meant by class interval?
(iii) Find the range of –1 , –3 , 0 , 2 and 3. (iv) Define kurtosis.
(v) Define coefficient of variation. (vi) Define sample space.
(vii) Write any two properties of variance. (viii) What is conditional probability?
(ix) What is meant by mutually exclusive events?
(x) Write different methods of measuring absolute dispersion.
(xi) Given that $\bar{x} = 200$ and CV = 7, then find the value of variance.
(xii) State addition law of probability for mutually exclusive events.

4. **Write short answers of any SIX parts.** 12

(i) Define discrete random variable. (ii) Define probability density function.
(iii) If E(X) = 7, $E(X^2) = 54.83$, find Var(X). (iv) Define continuous random variable.
(v) Define trial. (vi) What is Bernoulli's trail?
(vii) If n = 4, $P = \frac{1}{2}$ find P(X = 3) (viii) What is hypergeometric experiment?
(ix) When binomial distribution is negatively skewed?

## SECTION – II Attempt any THREE questions. Each question carries 08 marks.

5. (a) Compute $P_5$ and mode from the following data: 04

| Classes | 2 – 4 | 4 – 6 | 6 – 8 | 8 – 10 | 10 – 12 |
|---|---|---|---|---|---|
| f | 2 | 10 | 12 | 8 | 4 |

(b) The frequency distribution given below has been derived from the use of working origin. If D = X – 18, Compute geometric mean: 04

| D | –12 | – 8 | – 4 | 0 | 4 | 8 | 12 | 16 |
|---|---|---|---|---|---|---|---|---|
| f | 2 | 5 | 8 | 18 | 22 | 13 | 8 | 4 |

6. (a) Calculate standard deviation from the following frequency distribution: 04

| Wages | 30 – 35 | 35 – 40 | 40 – 45 | 45 – 50 | 50 – 55 |
|---|---|---|---|---|---|
| frequency | 12 | 18 | 32 | 16 | 8 |

(b) Compute first three moments about mean for the following set of examination marks:
45 , 32 , 37 , 46 , 39 , 36 , 41 , 48 and 36. 04

7. (a) Compute chain indices for the following data taking 2009 as base year: 04

| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|
| Prices | 1800 | 1850 | 1940 | 2000 | 2040 | 2180 | 2200 |

(b) Two cards are drawn from a well-shuffled pack of 52 cards. Find the probability that:
(i) One is king and other is queen (ii) Both are of different colours? 04

8. (a) Find the missing probability from the given probability distribution of X: 04

| X | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| f(x) | 0.01 | 0.25 | 0.40 | A | 0.20 |

Also find Var(X)

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

$f(x) = \frac{x+1}{8}$ for x = 2 to x = 4. Find $P(2.4 < X < 3.5)$ 04

9. (a) If 20% of the bolts produced by a machine are defective, determine the probability that out of 4 bolts chosen at random:
(i) None is defective (ii) 2 bolts are defective 04

(b) A committee of size 5 is to be selected at random from 3 women and 5 men. Find mean number of women on committee. 04