RWP-11-19

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Roll No. 76252 (to be filled in by the candidate)

Inter (Part-I) 2019

(For all sessions)

| Paper Code | 6 | 1 | 8 | 3 |
|---|---|---|---|---|

# Statistics (Objective Type)

**Time: 20 Minutes** **Marks: 17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given.Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1. Expected value of a random variable is equal to
   (A) Standard Deviation (B) Mean Deviation (C) Variance (D) Mean
2. For a random variable X if var(X)=4 then var(2X+4) will be
   (A) 12 (B) 16 (C) 20 (D) 32
3. For a binomial distribution with parameters n and P,mean and variance are related as
   (A) Mean=Variance (B) Mean>Variance (C) Mean<Variance (D) Always coincide
4. In hypergeometric distribution with n=5, K=10 and N=20 the mean is
   (A) 2.5 (B) 10 (C) 40 (D) 3/4
5. A characteristic that does not vary from individual to individual is called
   (A) Variable (B) Constant (C) Continuous variable (D) Discrete random variable
6. A chart in which adjacent rectangles are used
   (A) Simple Bar Chart (B) Pie Chart (C) Histogram (D) Component Bar Chart
7. If in a certain data range=1000 and number of classes are 20 then class interval will be
   (A) 40 (B) 50 (C) 60 (D) 100
8. If $\bar{x} = 10$ and $y=6+2x$ then $\bar{y}$ will be
   (A) 20 (B) 24 (C) 26 (D) 30
9. Which of the following is based on all values of a data set?
   (A) $Q_1$ (B) Median (C) Mode (D) Geometric Mean
10. The geometric mean of 0,2,4 and 6 is
    (A) 2 (B) 0 (C) 4 (D) 6
11. Which of the following is a measure of dispersion?
    (A) First quartile (B) 2nd quartile (C) Coefficient of Skewness (D) Range
12. The standard deviation is
    (A) The square of variance (B) Half of the variance
    (C) Square root of the variance (D) Two times of the variance
13. The first moment about mean is equal to
    (A) 1 (B) 0 (C) Variance (D) Standard Deviation
14. $\frac{\sum P_1 q_1}{\sum P_0 q_0} \times 100$ is called
    (A) Paasche's index (B) Laspeyre's index (C) Fisher's index (D) Value index
15. Fisher's index number is_____of Laspeyre's and Paasche's index numbers
    (A) Arithmetic mean (B) Geometric mean (C) Harmonic mean (D) Median
16. The probability of obtaining an even number when a fair die is rolled
    (A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) 1
17. If A and B are two non-mutually exclusive events then P(AUB) be
    (A) P(A)+P(B) (B) P(A)P(B) (C) P(A)+P(B)-P(A∩B) (D) P(A/B)P(B)

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# Statistics (Essay type)

Time: 2:40 Hours

## SECTION-I

Marks: 68

**2- Write short answers of any eight parts from the following.** 2 x 8 =16

i. Define statistics and data.
ii. What is population and sample?
iii. Write two merits of arithmetic mean.
iv. Define Median and give its formula
v. Write two merits of median.
vi. What is Fisher's Index number?
vii. What are Deciles?
viii. What is composite index number?
ix. Define Value Index.
x. What is consumer price index number?
xi. Define Mean.What is formula for calculation of mean for group data?
xii. What are the types of weighted aggregative index number?

**3- Write short answers of any eight parts from the following.** 2 x 8 =16

i. What do you mean by TABULATION?
ii. If second moment about mean is 5,what is fourth moment for a mesokurtic distribution?
iii. Define the term DISPERSION
iv. Define Mutually Exclusive Events.
v. Define HISTOGRAM.
vi. If Var(x)=16, then find the variance of 5x-100.
vii. Define moments.
viii. Define Mean Deviation.
ix. Define Conditional Probability.
x. What is the probability of a Red card in a pack of 52 cards?
xi. $C_r^n$=_____, $P_r^n$=_____.
xii. State Multiplicative Law of probability for dependent events.

**4- Write short answers of any six parts from the following.** 2 x 6 =12

i. Define Random Variable.
ii. Describe two properties of discrete probability distribution.
iii. What is mean and variance of bionomial distribution with parameters n and p?
iv. Write down any two properties of Expectation.
v. If E(x)=0.63, var(x)=0.2331 then find $E(x^2)$
vi. Define bionomial experiment.
vii. Define probability density function(p.d.f).
viii. Define Hypergeometric probability distribution.
ix. In hypergeometric distribution N=7,n=5 and K=2 Find P(x=0)

## SECTION-II

**Note: Attempt any three questions from the following.** 8x3=24

**5. (a)** For the following frequency distribution if D=x-18,Find GM 4

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

**(b)** A bus traveling 200 miles has 10 stages at equal intervals.The speed of bus at various stages was observed to be 10,15,20,75,20,30,40,50,30 and 40 miles per hour.Find average speed at which the bus has traveled. 4

**6. (a)** Calculate co-efficient of variation from the following frequency distribution 4

| X | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| f | 17 | 9 | 6 | 5 | 3 |

**(b)** First four moments of a distribution about x=2 are 1,2,5,5 and 16.Calculate mean and Co-efficient of variation. 4

**7. (a)** The following data gives prices and quantities of four commodities for the years 2000 and 2002.Find Paasche's index. 4

| Commodity | Prices | | Quantities | |
|---|---|---|---|---|
| | 2000 | 2002 | 2000 | 2002 |
| A | 70 | 75 | 300 | 310 |
| B | 72 | 80 | 240 | 275 |
| C | 25 | 32 | 132 | 148 |
| D | 60 | 85 | 280 | 360 |

**(b)** If the probability of a horse A winning a race is 1/5 and that of a horse B is 1/6.What is the probability that one of them wins? 4

**8. (a)** The probability distribution of a random variable x is given as. 4

| x | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| P(x) | 0.1 | 0.2 | 0.3 | 0.4 |

Show that E(5x+8)=5E(x)+8

**(b)** For a continuous random variable X,Probability density function is 4

f(x)=cx $0 \le x \le 2$. Find (i) value of c (ii) $P(\frac{1}{2} \le x \le \frac{3}{2})$

**9. (a)** A fair coin is tossed four times.Find the probability that there will appear 4

(i) Atleast 2 heads. (ii) Atmost 2 heads.

**(b)** In hypergeometric distribution determine the following 4

(i) n=4, N=10, K=3. Find P(x=2) (ii) n=7, N=12, K=8 Find P(x=6)



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