1119-XI124

Intermediate Part First

Roll No. _____

STATISTICS (Subjective)

Time: 02:40 Hours Marks: 68 FSD-24

SECTION – I

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

(i) Explain the concept of cost of living index number.
(ii) What is Laspeyre's price index number. Write its formula.
(iii) Given $\sum P_0q_n = 950$ and $\sum P_nq_n = 1310$ find Paasche's price index number.
(iv) Define harmonic mean and write its formula for grouped data.
(v) If mean = 5, median = 6, find mode.
(vi) Describe two uses of index number.
(vii) Describe two demerits of geometric mean.
(viii) Given $\sum(x-10) = 0$, n = 5 find mean.
(ix) What is difference between simple arithmetic mean and weighted mean?
(x) What is meant by secondary data? Write sources of secondary data.
(xi) Narrate differences between descriptive and inferential statistics.
(xii) Define discrete variable with an example.

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

(i) Write a note on two way classification.
(ii) Differentiate between ungrouped and grouped data.
(iii) Describe the main parts of a table.
(iv) What are the raw moments?
(v) Find the range of: $-1, -4, 0, 7, 4$
(vi) Compute the value of σ_y if $Y = 3X + 10$ and $V(X) = 2$
(vii) Define the mesokurtic distribution.
(viii) Give any two properties of the mean deviation.
(ix) Verify that: ${}^{10}C_4 = {}^{10}C_6$
(x) State the addition law of probability.
(xi) Differentiate between mutually and not mutually exclusive events.
(xii) Find $P(\frac{B}{A})$ so that $P(A \cap B) = 0.25$ and $P(A) = 0.75$.

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

(i) What is difference between discrete and continuous random variables?
(ii) Define probability density function and write its properties.
(iii) If E(X) = 3 and Variance (X) = 1.2 find E(2X – 1) and Var (2X – 1)
(iv) For a binomial distribution n = 10 and p = 0.7. Find P(X = 7)
(v) Given $f(x) = \frac{k}{x}$ for x = 1, 2. 3. Find k.
(vi) Explain what is meant by Bernoulli trials.
(vii) Explain and write the formula for hypergeometric distribution.
(viii) Find P(X = 0) for hypergeometric distribution with n = 4, N = 10 and K = 3.
(ix) Point out the fallacy if any if mean of a binomial distribution is 5 and its standard deviation is 3.

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

5. (a) Find arithmetic mean for the given data: 04

Marks	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34
f	8	10	15	7	4

(b) Find geometric mean from the following frequency distribution: 04

X	2	3	4	5	6
f	5	7	8	3	2

(Continued P . . . . . 2)

FSD-24

6. (a) Calculate variance for the marks of 100 students given in the following frequency distribution: 04

Marks	1 – 3	3 – 5	5 – 7	7 – 9
f	40	30	20	10

(b) First three moments of distribution about Y = 2 are 1, 2.5 and 5.5. Calculate mean and co-efficient of variation. 04

7. (a) Compute index number of prices for the following data taking 2000 as base year using median as an average: 04

Years	Prices		
	A	B	C
2000	18	85	52
2001	22	76	60
2002	28	80	66
2003	31	95	80

(b) If $P(A) = 0.60$, $P(B) = 0.08$ and $P(A \cap B) = 0.01$, calculate $P(A \cup B)$, if:
(i) A and B are not mutually exclusive (ii) A and B are mutually exclusive 04

8. (a) Let X be random variable with probability distribution as follows: 04

x	1	2	3	4	5
f(x)	0.125	0.450	0.250	0.050	0.125

Find mean and variance.

(b) A continuous random variable X having values only between 0 and 4 has a density function given by:

$f(x) = \frac{1}{2} - ax$, where "a" is any constant: Find (i) a (ii) $P(1 < X < 2)$ 04

9. (a) An event has the probability $P = \frac{2}{5}$. Find the complete binomial distribution for n = 5 trials. 04

(b) An urn contains nine balls. Five of them are red and four blue. Three balls are drawn without replacement. Find the probability distribution for number of red balls. 04