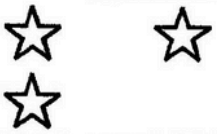
Roll No. : _____

Objective
Paper Code
6185

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.**

FBD-22

S.#	Questions	A	B	C	D
1	If $\bar{x}$ = mean = 50 and standard deviation = S = 9, then coefficient of variation will be:	28 %	18 %	10 %	None of these
2	If there is no variation in data, then the standard deviation is:	Large	Zero	Small	Negative
3	The mean of two numbers 2 and 8 is 5. Then their median will be:	5	3	1	None of these
4	Which is least if $\bar{x} = 100$:	$\Sigma(x-200)^2$	$\Sigma(x-100)^2$	$\Sigma(x-50)^2$	$\Sigma(x-150)^2$
5	The sum of deviations is zero, when the deviations are takes from:	Mean	Median	Mode	Geometric mean
6	Histogram is a graph of :	Frequency distribution	Time series	Qualitative data	None of these
7	In a relative frequency distribution, the total of relative frequency is:	100	One	Undefined	None of these
8	The word Statistics came from the Latin word:	Status	Statistik	Statista	Statistique
9	Hypergeometric distribution has:	One parameter	Two parameters	Three parameters	No parameter
10	The binomial distribution is negatively skewed if:	$\rho = 0$	$\rho > \frac{1}{2}$	$\rho < \frac{1}{2}$	$\rho = \frac{1}{2}$
11	An expected value of a random variable is equal to:	Mean	Variance	Standard deviation	None of these
12	Total area under the curve of a continuous probability distribution is equal to:	Zero	One	0.5	–1
13	Two events A and B are called mutually exclusive if:	$A \cup B = S$	$A \cap B = \phi$	$A \cap B = S$	$A \cap B = 0$
14	The term sample space is used for:	All possible outcomes	Few outcomes	Dispersion	None of these
15	If Laspeyre's index = 119.89 and Paasche's index = 119.65. Fisher index will be:	119.67	119.86	119.77	119.07
16	In chain base method, the base period is:	Fixed	Constant	Not fixed	None of these
17	The value of standard deviation changes by the change of:	Origin	Scale	Algebraic signs	None of these

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Intermediate Part First Roll No. _____

STATISTICS (Subjective)

Time: 02:40 Hours Marks: 68 FBD-22

SECTION – I

2. **Write short answers of any EIGHT parts.** 1(
   (i) Define statistics.
   (ii) Differentiate between sample and population.
   (iii) Write at least two properties of an ideal average.
   (iv) State any two properties of arithmetic mean.
   (v) What is the relation between A.M, G.M and H.M?
   (vi) A person spent Rs. 6000 for purchase of 10 items. What is the average price per item?
   (vii) If x = 1 , 3 and 9. Find G.M.
   (viii) If sum of deviations from 2250 for 5 different values is 500. Find mean.
   (ix) Write a short note on consumers price index.
   (x) Narrate at least two uses of index numbers.
   (xi) Compare simple index numbers with composite index numbers.
   (xii) Define weighted index number.

3. **Write short answers of any EIGHT parts.** 1(
   (i) What is the class interval?
   (ii) Define the relative frequency.
   (iii) If $Q_1 = 88.03$ and $Q_3 = 94.90$ find coefficient of quartile deviation.
   (iv) Differentiate between relative and absolute dispersion.
   (v) Write the properties of mean deviation.
   (vi) What is kurtosis? Relate with S.D.
   (vii) Distinguish between positively and negatively skewed distribution.
   (viii) Define moments about mean with application.
   (ix) What are the equally likely events?
   (x) Differentiate between permutation and combination.
   (xi) A fair coin is tossed, find the probability of tail.
   (xii) What is the classical definition of probability?

4. **Write short answers of any SIX parts.** 1(
   (i) Define probability distribution.
   (ii) Explain giving examples the concept of random variable.
   (iii) What are properties of probability density function.
   (iv) Given $E(X) = 1.1$ and $E(X^2) = 2.1$, find Var(X).
   (v) Define variance of the discrete random variable.
   (vi) State the formula used to calculate binomial probabilities.
   (vii) Write properties of hypergeometric experiment.
   (viii) In binomial distribution mean = 6 and variance = 2.4. Find its parameters.
   (ix) What are the parameters of hypergeometric distrubiton?

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

5. (a) Find A.M. Given that (i) $D = X - 20$, $\sum f D = 150$, $n = 25$ (ii) $u = \frac{x - 124.5}{3}$, $\sum f u = 50$, $n = 150$ 0(
   (b) Find lower quartile and 44th percentile from the following data given below: 0(

Marks	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89
f	3	11	21	30	24

6. (a) Calculate the first four moments about the mean for the following set of marks obtained in the examinations: 45 , 32 , 37 , 46 , 39 , 36 , 48 , 37 0(
   (b) By multiplying each number 3, 6, 1, 7, 2 and 5 by 2 and then adding 5, we obtained 11, 17, 7, 19, 9 and 15. By computing variances of both sets, establish relationship between variances so obtained. 0(

(Continued P/2)

7. (a) Find cost of living index number for 2012. Use 2011 as base year: 04

Expenses on	Food 35 %	Rent 15 %	Clothing 20 %	Fuel 10 %	Misc. 20 %
Price (2011)	150	30	75	25	10
Price (2012)	145	30	65	23	15

Also interpret.

(b) If two fair dice are thrown, what is the probability of getting:
(i) a double six (ii) a sum of 8 or more dots? 04

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

X	1	2	3	4	5
f(x)	0.1	0.2	0.3	0.3	0.1

Show that $E(2X + 8) = 2\,E(X) + 8$

(b) A continuous random variable X that can assume values between X = 2 and X = 5 has a density function given by $f(x) = \frac{2}{27}(X+1)$ find (i) $P(X < 4)$ (ii) $P(3 < X < 4)$ 04

9. (a) A fair coin is tossed 5 times. What is the probability of getting:
(i) exactly 3 heads (ii) at least 3 heads? 04

(b) Given that X is a hypergeometric random variable with N = 8 , n = 3 and K = 5. Compute $P(X \leq 3)$. 04