



DT-003-001212

Seat No. _____

B. Sc. (Sem. II) (CBCS) Examination

April / May – 2015

Statistics

(Elective - 1)

Faculty Code : 003

Subject Code : 001212

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :**
- (i) Q. No. 1 carry 20 marks.
 - (ii) Q. No. 2 and 3 each carry 25 marks.
 - (iii) Write the answer of MCQ in answer sheet.
 - (iv) Right side figures indicate marks of that question.

1 Multiple choice question : 20

- (1) Which of the following represents median ?
 - (A) first quartile
 - (B) fifth percentile
 - (C) sixth decile
 - (D) none of these
- (2) If the grouped data has open end classes, one can calculate
 - (A) median
 - (B) mode
 - (C) quartile
 - (D) all of these
- (3) Sum of the deviation about mean is :
 - (A) zero
 - (B) minimum
 - (C) maximum
 - (D) one
- (4) Which of the following is unit less measure of dispersion ?
 - (A) standard deviation
 - (B) mean deviation
 - (C) coefficient of variation
 - (D) range

- (5) Mean deviation is minimum when deviation are taken from:
- (A) mean (B) median
(C) mode (D) zero
- (6) An empirical relation between standard deviation, mean deviation about mean and quartile deviation is :
- (A) $4SD=6MD=5QD$
(B) $4SD=5MD=6QD$
(C) $6DS=5MD=4QD$
(D) $5SD=4MD=6QD$
- (7) If the mean and standard deviation of A and B are as $\bar{X}_A = 20.99$, $\bar{X}_B = 21.81$, $\sigma_A = 4.88$ and $\sigma_B = 7.07$ which of the two series is more consistent
- (A) series A
(B) series B
(C) series A and series B are equally consistent
(D) none of these
- (8) If a constant value 7 is subtracted from each observation of a set, the variance is
- (A) reduced by 7
(B) reduced by 49
(C) unaltered
(D) increased by 49
- (9) For a positively skewed distribution, the correct relation between mean, median and mode is :
- (A) mean=median=mode
(B) median>mean>mode
(C) mean>median>mode
(D) mode>mean>median

- (10) If mean, standard deviation and coefficient of skewness of a frequency distribution are 24.78, 6.3 and -0.03 respectively, approximate value of the mode of frequency distribution is:
- (A) 80 (B) 25
(C) 78 (D) 52
- (11) A time series is a set of data recorded
- (A) periodically
(B) at time or space intervals
(C) at successive points of time
(D) all of these
- (12) The component of a time series which is attached to short-term fluctuation is :
- (A) seasonal variation
(B) cyclic variation
(C) irregular variation
(D) all of these
- (13) Seasonal variation means the variations occurring within :
- (A) a number of years
(B) parts of the year
(C) parts of the months
(D) none of these
- (14) The weights used in Laspeyre's price index are denoted as:
- (A) q_0 (B) q_1
(C) p_0 (D) p_1
- (15) If $\sum p_0q_1 : \sum p_1q_0 = 3 : 4$ then what will be the Paache's index
- (A) 0.75 (B) 75
(C) 130.3 (D) 133.33

- (16) _____ is the formula for $\Delta^2 y_1$ in the formula of values of y .
- (A) $y_3 - 2y_2 + y_1$
- (B) $y_3 + 2y_2 - y_1$
- (C) $y_3 - 2y_1 + y_0$
- (D) none of these
- (17) If $y_1 = -5$, $y_2 = -1$, $y_3 = 6$ and $\Delta^2 y_2 = 4$, value of $y_4 =$ _____
- (A) 17 (B) 13
- (C) 12 (D) none of these
- (18) If $\Delta^2 y_1 = 3$ and $\Delta y_1 = 4$, the value of $\Delta y_2 =$ _____
- (A) 3 (B) -5
- (C) 7 (D) none of these
- (19) Which of the following formula is used to add first 10 rows of 5th column ?
- (A) $= \text{sum}(E1:E10)$
- (B) $= \text{autosum}(E1:E10)$
- (C) $= \text{sum}(J1:J10)$
- (D) $= \text{sum}(F1:F10)$
- (20) Content of the cell A4 is 30. Excel will display _____ in cell B4 if we write $= \text{if}(A \geq 30, \text{"Pass"}, \text{"Fail"})$
- (A) Fail (B) Pass
- (C) Error (D) none of these

2 (a) Answer the following question : (any three) 6

- (i) Explain : measure of central tendency.
- (ii) What is time series ?
- (iii) Explain MS Excel function MODE() with example.
- (iv) If the mean of 20 observations is 25 and coefficient of variation is 15%, find variance of the observations.
- (v) If $I_L = 100$ and $I_F = 1.5I_L$ then find I_P .
- (vi) Find the estimate of y_6 for $x = 6$ from the following data:

x	5	6	7	8
y_x	20	?	44	59

(b) Answer the following question : (any three) 9

- (i) Why measures of dispersion ?
- (ii) Define Time Reversal test and show that Fisher's Index Number satisfy it.
- (iii) Explain MS Excel function with example : AVERAGE(), AVEDEV().
- (iv) If the arithmetic mean of two numbers is 10 and their geometric mean is 8, find their Harmonic mean and also find the number.
- (v) In a frequency distribution, if $3Q_3 = 5Q_2 = 8Q_1 = 240$, find its coefficient of skewness.
- (vi) If $u_x = x^2 + 1$ find $\Delta^2 u_x$.

- (c) Answer the following question : (any two) 10
- (i) Among the measures of central tendency, which measure do you consider to be ideal ? Why ?
 - (ii) Explain components of time series in detail.
 - (iii) State the uses and limitation of cost of living Index Number.
 - (iv) For a sequence of 100 observations the mean and the standard deviation are 40 and 10 respectively. In calculating these measures two observations were taken as 30 and 70 instead of 3 and 27 by mistake. Find the corrected mean and corrected standard deviation.
 - (v) If $y_0 = 5$, $y_2 = 8$, $y_4 = 10$, $y_6 = 20$ find the estimate of y_5 by Lagrange's formula.

- 3 (a) Answer the following question : (any three) 6
- (i) Explain MS Excel function MEDIAN () with example.
 - (ii) What is time series analysis ? Write its utilities.
 - (iii) The rank of a student in a class of 35 students is 4. Find the percentile rank of the student.
 - (iv) For 20 observations of a data, If $2\bar{x} = 16S = 120$ and $\sum |x_i - \bar{x}| = 8S$, find coefficient of Mean deviation and coefficient of variation.
 - (v) If $y_1 = -5$, $y_2 = -1$, $y_3 = 6$ and $\Delta^2 y_2 = 4$, find y_4 .

- (vi) If the index number of Laspeyre is 133.2 then find the value of x from the following data :

Commodity	Base year		Current year
	Price	Quantity	Price
P	5	12	8
Q	18	10	x
R	13	20	15

- (b) Answer the following questions : (any three) 9

- (i) Explain MS Excel function with example : STDEVP(), IF()
- (ii) Define Factor Reversal test and show that Fisher's Index Number satisfies it.
- (iii) For the two observations, arithmetic mean is 14 more than their geometric mean. If the ratio of two observations is 1:9. Find the two observations.
- (iv) If 5th decile of observations $x, \frac{x}{5}, \frac{x}{2}, \frac{x}{4}, \frac{x}{3}$ is 30, where $x > 0$. Find the value of x .
- (v) If Quartile deviation of a data is 10 and coefficient of Quartile deviation is 0.4, find its quartiles.
- (vi) If $u_{41} = 13, u_{42} = 17, u_{43} = 20, u_{44} = 26, u_{45} = 33$, find the value of u_{46} .

- (c) Answer the following question : (any two) 10

- (i) Which is the best measure among all measures of dispersion ? Why ?

- (ii) 'Index number is the barometer of the economy of a country'. Elucidate this statement giving the use of Index Number.
- (iii) In a B.Sc. Semester-II class of 40 students, X gets the third rank and in another class of 60 students of the same standard Y gets the 5th rank. Compare the results of X and Y.
- (iv) If for n observations $\sum x_i^2 = 800$, $\sum x_i = 80$, and the coefficient of variation 50%, find the value of n.
- (v) From the data given in the following table estimate the values of unknown quantity y_2 and y_5 corresponding to $x=3$ and $x=5$ by the method of the Binomial Expansion :

x	2	3	4	5	6
y_x	7	?	10	?	20
