NBG-003-10120018 Seat No. _____

B. Sc. (Sem. II) (CBCS) (W.I.F. - 2016) Examination

April / May - 2017

Statistics : S - 201

(New Course)

Faculty Code : 003

Subject Code : 10120018

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions carry equal marks.

(2) Right side figures indicates marks.

(4) Students can use their own scientific calculator.

1 (A) Give the answer of following questions : **4**

(1) If the grouped data has open end classes, one cannot calculate _____

(2) Sum of the absolute deviations about median is _____

(3) The correct relation between A.M., G.M. and H.M. is _____

(4) If for a discrete series, the assumed mean $A = 50$, $\sum fd = 45$ *for* $d = x - A, \sum f = 12$ then the mean series is _____

(B) Write any **one** : **2**

(1) The mean of 10 observations is 16.5. If the mean of 4 of these 10 observations is 15, find the mean of the remaining observation.

(2) Define Quartiles and Deciles

(C) Write any **one** : **3**

(1) For the two observations, arithmetic mean is 14 more than their geometric mean. If the ration of two observations is 1 : 9. Find the two observations.

(2) If the arithmetic mean of two numbers is 10 and their geometric mean is 8, find their Harmonic mean, also find the number.

(D) Write any **one** : **5**

(1) Prove that, the sum of the square of the deviations of a set of value is minimum when taken about mean.

(2) In class of 40 students Mr. X. has 3^{rd} rank and in other class of 60 students Mr. Y has 5^{th} rank.

(3) Compare the result of both the students and who is better student ?

2 (A) Give the answer of following questions : **4**

(1) If the mean and standard deviation of A and B are as $\bar{X}_A = 20.0, \bar{X}_B = 15.0, \sigma_A = 16 \text{ and } \sigma_B = 25$ which of the two series is more consistent _____

(2) _____ is unit less measure of dispersion.

(3) An empirical relation between standard deviation, mean deviation about mean and quartile deviation is _____

(4) If the quartile deviation of a series is 60, the mean deviation of the series is _____

(B) Write any **one** : **2**

(1) Define Mean deviation

(2) If quartile deviation of the data is 10 and coefficient of quartile deviation is 0.4. Find all the 3 quartiles.

(C) Write any **one** : **3**

(1) Write comparison the methods of Karl Pearsons and Bowley for determining the coefficient of skewness.

(2) The standard deviation of 20 observations is 3.2. If their coefficient of variations is 48%, find the sum of 20 observations.

(D) Write any **one** : **5**

(1) Explain the types of skewness.

(2) Find the value of variance and coefficient of variation from the following information $\sum(x-7)=8, \sum(x-7)^2=535, n=15$

3 (A) Give the answer of following questions : **4**

(1) For comparing year to year changes in price level, the suitable Index to be used is _____

(2) If $\sum p_0q_1 : \sum p_1q_1 = 3:4$ then the Paache's index will be _____

(3) Fisher's Ideal index formula satisfies _____.

(4) Symbolically $P_{01} \times P_{10} = 1$ stands for _____

(B) Write any **one** : **2**

(1) $\sum p_1q_0 : \sum p_0q_0 = 5:4$ and $\sum p_1q_1 : \sum p_0q_1 = 8:5,$ Find Fisher's index number.

(2) Why Fisher's Price Index Number is an ideal Index number?

(C) Write any **one** : **3**

(1) From the following chain base index numbers, find fixed base index number :

Year	2008	2009	2010	2011	2012	2013	2014
Index number	100	120	140	125	160	150	130

(2) Index number is the barometer of the economy of a country' Elucidate this statement giving the use of Index Number.

(D) Write any **one** : **5**

(1) Show that Fisher's Index Number satisfies both test, Time Reversal Test and Factor Reversal Test.

(2) *A* textile worker in the city of *X* earns Rs. 400 per month. The cost of living index for January, 1984 is given as 250. Using the following data find out the amount of he spend (i) Clothing and (ii) Rent.

Group	*Expenditure (Rs.)*	*Group Index*
Food	160	225
Clothing	?	256
Re*nt*	?	275
Fuel and Lighting	40	300

4 (A) Give the answer of following questions : **4**

(1) The general decline in scale of cotton clothes is attached to the component of the time series _____.

(2) Most frequently used mathematical model of a time series is _____.

(3) Moving average method of fitting trend in a time series data removes the effect of _____.

(4) Trend in a time series means _____.

(B) Write any **one** : **2**

(1) Write any two merits and demerits of method of moving average.

(2) Write any two merits and demerits of method of least square.

(C) Write any **one** : **3**

(1) What is time series analysis? Write its utilities.

(2) Find 3–Yearly moving average for the following data.

Year	2009	2010	2011	2012	2013
Production	12	15	18	15	16

(D) Write any **one** : **3**

(1) Given below are the figures of production (in lakh kg.) of a sugar factory.

Year	2001	2002	2003	2004	2005	2006	2007
Production	40	45	46	42	47	50	46

Fit a straight line trend by the least squares method and tabulate the trend.

(2) Explain components of time series in detail.

5 (A) Give the answer of following question : **4**

(1) In binomial expansion method how is the missing value obtained? $\Delta^n y_0 =$ _____

(2) _____ is the formula for $\Delta^2 y_1$ in the formula of values of y.

(3) If $y_1 = -5, y_2 = -1, y_3 = 6$ and $\Delta^2 y_2 = 4$, value of $y_4 =$ _____

(4) If $\Delta^2 y_1 = 3$ and $\Delta y_1 = 4$, the value of $\Delta y_2 =$ _____

(B) Write any **one** : **2**

(1) Define : Extrapolation

(2) Explain MS-Excel function MODE( ) with example.

(C) Write any one : **3**

(1) If $f(0) = 2, f(2) = 6, f(3) = 10,$ derive the form of $f(x)$ by Lagrange's method.

(2) Explain different method of Interpolation and Extrapolation in brief.

(D) Write any **one** : **5**

(1) Obtain the number of workers earning wages between Rs. 60 and 70, by using appropriate method of interpolation for the following data

Weekly wages (in Rs.)	20-40	40-60	60-80	80-100	100-120
Number of workers (in'000)	250	120	100	70	50

(2) Find the estimated value of y when $x = 12.5$ by appropriate method. From the data given in the following table.

x	11	12	13	14
y	20	23	27	32