

**Half-Yearly Examination—2013****Class XI****(English Version)****Subject : Statistics****Time : 3 Hours****Full Marks – 75**

1. a. Define statistics, Discuss the limitations of statistics. 2+5=7  
 b. What is secondary data? Describe various sources of collecting secondary data. 1+4=5  
 c. Write down the differences between Primary data and secondary data. 3  
**Or,**  
 a. What do you mean by frequency distribution? Discuss the different steps of constructing a continuous frequency distribution. 2+6=8  
 b. What is primary data? Discuss various methods of collecting primary data with merits and demerits. 1+6=7
2. a. What do you mean by central tendency ? Describe arithmetic mean and Harmonic mean. 2+4=6  
 b. Write down the properties of arithmetic mean. Prove that, the arithmetic mean is dependent on both origin and scale. 3+3=6  
 c. Arithmetic mean and geometric mean of two non-zero positive numbers are 10 and 8 respectively. Find the harmonic mean and the numbers. 3  
**Or,**  
 a. What is tabulation? Discuss the different steps of an ideal tabulation. 1+7=8  
 b. What do you mean by graphical representation of data? Describe Histogram and frequency polygon. 1+6=7
3. a. What is ment by measures of central tendency? Which average of central tendency is ideal and why? 1+5=6  
 b. Prove that (i)  $\sum f_i (x_i - \bar{x})^2 < \sum f_i (x_i - a)^2$  where  $\bar{x} \neq a$  4+2=6  
 (ii)  $\sum f_i (x_i - \bar{x}) = 0$  [where the symbols are as usual]  
 c. Find the arithmetic mean of the series 20, 25, 30-----255. 3  
**Or,**  
 a. What is median? Describe the procedure to calculate the median graphically. 2+4=6  
 b. What is ment by classification? Describe different types of classification. 1+5=6  
 c. Distinguish between attribute and quantitative variable. 3
4. Describe the characteristics of statistics. 5  
**Or,**  
 For two positive numbers show that,  $AM \geq GM \geq HM$ .
5. What is mode? Describe the procedure to calculate mode graphically. 5

**Or,**

For usual notations, prove that  $G = \sqrt{G_1 \times G_2}$  where  $n_1 = n_2$ .

6. What are origin and scale? Distinguish between inclusive and exclusive methods of class interval. 5

**Or,**

For usual notations Prove that,  $\bar{x}_c = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$

7. Discuss the importance of a frequency distribution. 5

**Or,**

Show that the mean and median are equal of the first natural n numbers.

8. What is data ? Discuss the necessity of collecting data. 5

**Or,**

What is weighted arithmetic mean? Write down the uses of it.

9. (i) When geometric mean is more effective than arithmetic mean. 5  
(ii) When GM and HM can not be determined.

**Or,**

For usual notations prove that,

(i)  $\sqrt{AM \times HM} = GM$

(ii) when  $AM = GM = HM$ ?