

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/MHA/SEM-1/MHA-108/2011-12**

**2011**

**QUANTITATIVE METHODS**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for the following :

$$10 \times 1 = 10$$

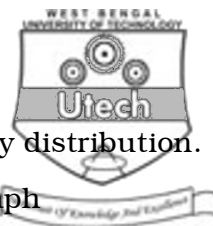
i) What is the mode of following set of scores ?

16, 26, 11, 10, 14, 21, 17, 19 ?

- a) 10                                      b) 14  
c) 16                                      d) None of these.

ii) The binomial distyribution is

- a) the square root of the variance  
b) a measure of variability  
c) discrete probability distribution  
d) all of these.



- iii) A ..... is a bar graph of a frequency distribution.
- a) Line graph                      b) Bar graph  
c) Scatterplot                      d) Histogram.
- iv) A flat frequency curve with the observations distributed relatively evenly across classes is
- a) Platykurtic                      b) Mesokurtic  
c) Leptokurtic                      d) None of these.
- v) In a set of values, which are normally distributed, it is always true that approximately ..... of the values are included within two standard deviation.
- a) 64%                                  b) 68%  
c) 95%                                  d) 99%.
- vi) Which of the following is a common measure of dispersion ?
- a) Mode                                  b) Range  
c) Median                                  d) Mean.
- vii) Which of the following is interpreted as the percentage of scores in a reference group that fall below a particular raw score ?
- a) Standard scores                      b) Percentile rank  
c) Reference group                      d) None of these.
- viii) A ..... is a subset of a ..... .
- a) Sample, population                      b) Population, sample  
c) Statistic, parameter                      d) Parameter, statistic.
- ix) The algebraic sum of deviations from the mean is
- a) maximum                                  b) standard deviation  
c) zero    d) none of these.
- x) Which of the following is example of discrete random variable ?
- a) Household size                      b) Height  
c) Attitude                                  d) Income.

**GROUP – B****( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

2. A car hire firm has two cars, which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson distribution with mean 1.5. Calculate the proportion of days of which (i) neither car is used, and (ii) the proportion of days of which some demand is refused. ( $e^{-1.5} = 0.2231$ ).
3. What do you understand by sample ?
4. What is percentile and what are the advantages of using it ?
5. The mean monthly salary paid to all employees in a certain company was Rs. 500. The mean salary paid to the male and female employees were 520 and 420 respectively. Obtain the percentage of male to female employees in the company.
6. Distinguish between type I and type II error.

**GROUP – C****( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. a) What should be considered as the limitations of statics in business decision making ? 6
- b) Find out the mean, median and standard deviation of the data given below :  $2 + 2 + 5$

An analyst studied few hospitals and obtained the following return on investment for a certain financial year :

<b>Return %</b>	0 – 10	10 – 20	20 – 30	30 – 40
<b>No. of Companies</b>	19	32	41	8



8. a) What are the main advantages of using sample instead of population ? 5
- b) Explain snowball sampling and systematic random sampling in detail.  $2 \times 5$
9. a) On an average 20% of the burn cases in Kolkata are referred to be burn unit in PG hospital. If in a day 6 patients were referred to specialized burn units, what is the probability that 4 will come to PG hospital ? 7
- b) Enumerate the role of statistics in health care management. 8
10. a) An healthcare analyst firm estimates that the probability is 0.30 that a new firm plans to offer competitive services within coming 3 years and 0.07 that the company does not. If a company has such plan a new building has to be built. If that company does not have such plans, still there is a 60% chance that a new manufacturing facility would be built for some other purpose.
- Suppose, it has been observed that a new building is under construction, what is the probability that the company has decided to enter into the healthcare industry ? 10
- b) A hospital has 4 boys and 5 girls as receptionist in their out patient department. If in a three had only come, what is the probability that all three are girls ? 5
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