Printed Pages : 8 MBA015

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 7105 Roll No.

M.B.A

(SEM I) ODD SEMESTER THEORY EXAMINATION 2009-10

BUSINESS STATISTICS

Time : 3 Hours] *[Total Marks : 100*

Note : *(1) The question paper contains* ***three*** *parts.*

(2) All questions are ***compulsory.***

(3) Figures given at the right margin indicate marks.

PART - I 1×20=20

1 Choose the correct answer and write its serial order :

(a) The sum of deviations taken from arithmetic mean is :

(i) Minimum (ii) Zero

(iii) Maximum (iv) None of the above

(b) While calculating median of a data set, the first step is :

(i) Calculate mean of the two middle items

(ii) Arrange the data in ascending or descending order

(iii) Calculate mean of the first and the last items

(iv) None of the above

(c) A series has its mean as 15 and its coefficient of variation as 20, its standard deviation is :

(i) 5 (ii) 10
(iii) 3 (iv) 7

(d) Which one of the curves is more peaked than the normal curve :

(i) Mesokurtic (ii) Platykurtic
(iii) Laptokurtic (iv) None of the above

(e) In time series analysis both trends and seasonal variations are studied because :

(i) They allow the elimination of the components from the series
(ii) They describe past trends
(iii) Both the above
(iv) None of the above

(f) Which of the following index satisfies the circular test ?

(i) Laspeyer's index
(ii) Paasche's index
(iii) Bowley's index
(iv) Fisher's index

(g) When the regression line of Y on X and the regression line of X on Y form a 90° angle, then :

(i) $r = 1$
(ii) $r = 0$
(iii) $r = 0.5$
(iv) None of the above

(h) When the two regression lines coincide, then r is :

(i) 0 (ii) $r = -1$
(iii) 1 (iv) None of these.

(i) If $a = 6$ and $b = 3$. If the independent variable has a value of 5, what would be the value of dependent variable ?

(i) 15 (ii) 18
(iii) 10 (iv) 21

(j) Which of the following correlation coefficients shows the highest degree of association ?

(i) 0.95 (ii) 1
(iii) –1 (iv) Both (ii) and (iii) above

(k) If the outcome of one event does not influence another event, then the two events are :

(i) dependent
(ii) independent
(iii) mutually exclusive
(iv) None of these.

(l) What is the probability of getting a total of 5 when a pair of die is thrown simultaneously ?

(i) $\frac{1}{36}$ (ii) $\frac{1}{12}$

(iii) $\frac{1}{9}$ (iv) $\frac{1}{12}$

(m) What is the probability of getting three heads or three tails on three successive tosses ?

(i) 0.25 (ii) 0.125
(iii) 0.025 (iv) 0.50

(n) A Binomial distribution is approximate to a Poisson distribution when :

(i) both n and p are large

(ii) both n and p are small

(iii) n is small and p is large

(iv) n is large and p is small

(o) If a normal distribution has a mean = 20, then its mode is :

(i) 10 (ii) 20

(iii) 25 (iv) 30

(p) If the critical value of Z is 1.96, then the significance level of two-tail test is :

(i) 0.025 (ii) 0.50

(iii) 0.05 (iv) None of these

(q) Assuming that we want to test whether a population mean is significantly different from 75, what should be the alternate hypothesis ?

(i) $\mu < 75$ (ii) $\mu > 75$

(iii) $\mu \neq 0$ (iv) $\mu = 0$

(r) A chi-square value can never be negative :

(i) True (ii) False

(s) A contingency table for a chi-square test has 8 rows and 6 columns. How many degrees of freedom should be used ?

(i) 14 (ii) 48

(iii) 13 (iv) 35

(t) A contingency table :

(i) always has two variables

(ii) always has two degrees of freedom

(iii) always has two dependent variables

(iv) None of these

PART - II

2 Attempt any **two** : 15×2

(a) The mean annual salary of employees of a company is Rs. 30,000/-. The mean annual salaries of male and female employees are Rs. 35,000/- and Rs. 23,000/- respectively. Find out the percentage of male and female employees working in the company.

(b) The mean weekly sales of soap bars in departmental stores was 146.3 bars per store. After an advertising campaign the mean weakly sales in 22 stores for a typical week increased to 153.7 and showed a standard deviation of 17.2. Was the advertising campaign successful ? (given tabulated value of t for 21 d.f. at 5% level of significance = 1.72)

(c) Two computers A and B are to be marketed. A salesman who is assigned a job of finding customers for them has 60% and 40% chances of succeding in case of computers A and B. The computers can be sold independently. Given that he was able to sale at least one computer, what is the probability that the computer A has been sold ?

PART - III

$12\frac{1}{2} \times 4$

3 "Statistics are like a clay of which you can make a God or a Devil as you please." In the light of the statement discuss the uses and limitations of statistics.

OR

3 An incomplete frequency distribution is given as follows :

Variable	Frequency
10 – 20	12
20 – 30	30
30 – 40	?
40 – 50	65
50 – 60	?
60 – 70	25
70 – 80	18
Total	**229**

Given that the median value is 46, determine the missing frequencies using the median formula.

4 Briefly explain the components of a time series. What are the limitations of time series analysis in forecasting ?

OR

4 Calculate price index numbers for the year 2001 with 1991 as the base year from the following data using :

(a) Laspeyer's index
(b) Paasche's index and
(c) Fisher's index

Commodity	Unit	1991		2001	
		Price (Rs.)	Value	Qty consumed	Value
A	kg	10	1500	160	1760
B	kg	12	1080	100	1300
C	Metre	15	900	60	960
D	Packets	9	450	40	480

5 Define independent and mutually exclusive events. Can two events be mutually exclusive and independent simultaneously, explain with an example.

OR

5 The average monthly sales of 5000 firms are normally distributed. Its mean and standard deviation are Rs. 36,000 and Rs. 10,000 respectively. Find :

(i) The number of firms having sales over Rs. 40,000
(ii) The number of firms having sales between Rs. 30,000 and Rs. 40,000

(Given area under normal curve from o to z for Z 0.4 = 0.1554 and Z 0.6 = 0.2257)

6 Write notes on any **two** of the following :

(a) Standard Deviation

(b) Rank correlation

(c) Chi-square test

(d) Normal Distribution.