



Printed Pages : 8

MBA015

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

PAPER ID : 7105

Roll No.

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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 weekly 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 succeeding 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 $\frac{1}{2}$ × 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.

