



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

PAPER ID : 270129

Roll No. 1403270093

M. B. A.

(SEM. I) (ODD SEM.) THEORY  
EXAMINATION, 2014-15

BUSINESS STATISTICS

Time : 3 Hours]

[Total Marks : 100

PART - 1

1 Attempt any five questions in 100-150 Words.  $4 \times 5 = 20$ .

Each part carries 04 Marks.

- (i) Discuss the scope of statistics.
- (ii) What is data? Give two examples of primary and secondary data.
- (iii) A bag contains 8 red, 10 blue and 12 black balls. If one ball is drawn at random, find the probability that it is black.
- (iv) Differentiate between Correlation and Regression.
- (v) What is the probability that a leap year selected at random will contain 53 Sundays.
- (vi) For a given series the mean is found out to be 54.5. The median of the same series is 55. Find the mode.

**PART - 2**  
**Case Study**

2 Attempt all : 15×2=30

(i) A talent test was conducted on 5000 students in a school in which the mean score was found out to be 65 and the standard deviation was 15. If the population is assumed to be normal, How many students have scored:

- Less than 50 marks
- Between 60-70 marks
- More than 75 marks

**OR**

Fit the straight-line trend by least square method. Also predict the sales for year 2015

Yr	2008	2009	2010	2011	2012	2013	2014
Sales (0000)	80	90	92	83	94	99	92

(ii) In an anti malarial campaign, in a certain district. Quinine was administered to 812 persons out of a total population of 3248. The number of fever cases is shown below:

Treatment	Fever	No fever	Total
Quinine	20	792	812
No Quinine	220	2216	2436
Total	240	3008	3248

Discuss the usefulness of quinine in checking malaria. (Given the value of  $\chi^2$  at degree of freedom 1 is 3.841 at 5% level)

**OR**



You are given the following information about advertising expenditures and the sales:

	Advertisement (Rs. in lakhs)	Sales (Rs. in lakhs)
Arithmetic Mean	10	90
Standard Deviation	3	12

The coefficient of correlation is 0.8

- Obtain two regression equations.
- Find the likely sales when the advertisement budget is Rs. 15 lakhs.
- What should be the advertisement budget if the company wants to attain sales target of Rs. 120 lakhs.

### PART - 3

Attempt all Questions in 300-500 words. Each question carries 10 Marks. **10×5=50**

- 3 Discuss briefly the role of statistics in the successful management of business enterprise.

**OR**

The following data gives the marks obtained by 60 students in a class. Calculate the arithmetic mean, median and mode.

Marks	20	30	40	50	60	70
No. of Students	8	12	20	10	6	4

- 4 What is time series? Explain the various components of time series. Also discuss its importance.

**OR**

Compute the Fisher's index number for 2014 on the basis of 2009 with the following informations :

Commodity	2009		2014	
	Price	Quantity	Price	Quantity
A	5	10	4	12
B	8	6	7	7
C	6	4	5	3

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- 5 Define dispersion. Why standard deviation is most widely used measure of dispersion?

**OR**

From the prices of shares of X and Y below find out which is more stable in value.

X	53	54	52	53	56	58	52	50	51	49
Y	108	107	105	105	106	107	104	103	104	101

- 6 Define Probability? State Addition and Multiplication theorems of probability by giving suitable examples.

**OR**

Assume that factory has two machines Machine 1 and Machine 2. Past records show that machine 1 produce 30% of the items of output and machine 2 produces 70% of the items. Further 5% of the items produced by the machine 1 were defective and only 1% of the items produced by machine 2 were defective. If a defective item is drawn at random, what is the probability that the defective item was produced by machine 1?

- 7 What is the major purpose of hypothesis testing? Explain the various steps involved in hypothesis testing.

**OR**

Ten workers of a factory are selected at random. The number of units produced by them on a working day was as follows 71, 72, 73, 75, 76, 77, 78, 79, 79, 80.

On the basis of the given data is it reasonably correct to say that the mean number of units produced by them is 78 (For  $v = 9$ ,  $t_{0.05} = 2.262$ )