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

Paper ID : 270105   Roll No.

B.Tech

(SEM. I) THEORY EXAMINATION, 2015-16

BUSINESS STATISTICS

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

SECTION-A

Note : Attempt **all** Questions of the following: $10 \times 2 = 20$

1.   (a) Discuss the application of Statistics in managerial
            decision.

      (b) Distinguish between skewness & Kurtosis.

      (c) Briefly explain the components of Time series?

      (d) Define index number with suitable example.

      (e) What is Coefficient of rank correlation? How it is
            interpreted ?

      (f) What are two regression lines?

(g) Define Normal Distribution? And list its property?

(h) Explain multiplication rule of probability with suitable example.

(i) What are different types of errors in hypothesis testing.

(j) Define Chi square test.

SECTION-B

Note: Attempt **any five** questions from this section.

$(10 \times 5 = 50)$

2. "Statistics is not a science; It is a scientific method". Examine this statement.

3. Following is the distribution of marks of 50 students in a class

Marks(more than)	0	10	20	30	40	50
No. of Students	50	46	40	20	10	3

Calculate the median.

4. Fit a Straight line trend by least squares method to the data given below and estimate trend for 2008:

Year	2002	2003	2004	2005	2006	2007
(Sales '000 Rs)	10	12	15	16	18	19

5. A Problem in Business Statistics is given to four Students A,B,C and D their respective chances of solving it are $1/2$, $1/3$, $1/5$ and $1/6$. What is the probability that problem will be solved.

6. Distinguish between the following pairs:

a) Laspeyre's and Paasche's index number formula

b) Fixed base index and Chain base index numbers

7. In a sample of 240 workers in a factory the mean and Standard deviation of wages were Rs.113.50 and Rs. 30.30 respectively. Find the percentage of workers getting wages between Rs.90 and Rs. 170 in the whole factory assuming that the wages are normally distributed.

Given area under standard normal curve (between $z=0$ and z) :

z	0	0.5	1.0	1.5	2.0
Area	0.0000	0.1915	0.3413	0.4332	0.4772

8. Four person in a group are graduates if 4 persons are selected at random from 20. Find the probability that

a. All are graduates.

b. At least one is graduate.

9. The following figures relate to the no. of units of an item produced per shift by two workers A and B respectively.

| A | 19 | 22 | 24 | 27 | 24 | 18 | 20 | 19 | 25 | | |
| B | 26 | 37 | 40 | 35 | 30 | 30 | 40 | 26 | 30 | 35 | 45 |

Can be inferred that worker A is more stable compared to worker B using F-test 5% level of significance? (Critical Value at 5% significance is $F(10,8)=3.35$)

SECTION-C

Note: Attempt **any two** questions from this section.

$(15 \times 2 = 30)$

10. (a) In a statistical investigation in two villages A and B, the following data was obtained.

A factory produces two types of electric lamps A and B. In an experiment relating to their life, the following results were obtained:

Particulars	Village A	Village B
No. of Respondents	600	500
Average Income (Rs)	175	186
Standard Deviation(Rs)	10	9

(i) What is the average income of the respondents in the village A and B put together?

(ii) In which village is the variation in income greater?

b) In a bolt factory machines A, B and C manufacture 25%, 35% and 40% of the total output. Of the total of their output 5, 4 and 2 percent are defective bolts. A bolt is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machines A, B and C?

c) A Certain drug is claimed to be effective in curing colds. In an experiment on 500 persons with cold, half of them were given the drug and half of them were given sugar pills. The patients reactions to the drugs are recorded in the following table:

Treatment	Helpful	Reaction	No effect
Drug	150	30	70
Sugar Pills	130	40	80

On the basis of the data, can it be concluded that there is a significant difference in the effect of drug and sugar pills. ($\chi 2$ *at df* 2,5% = 5.99)

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