Printed pages: 4	BT401
(Following paper code and roll No. to be filled in your answer book)	
Paper code: 154401	Roll No.

B TECH
(SEM IV) CARRY OVER EXAMINATION 2014-15
STATISTICAL TECCHINQUES (MATHEMATICS III)

Time allowed: 3 Hrs. **Max Marks: 100**

SEC- A

Q1. Attempt any four parts. **4X5=20**

(a) Define bar graph and pie graph for the data.
(b) Define non parametric tests. Write the advantages of non parametric tests.
(c) A coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is unbiased.
(d) The two lines of regression for a bivariate distribution are $3x+2y=7$ and $x+4y=9$. Find the regression coefficients b_{yx} and b_{xy}, and find the value of r.
(e) If the first four moments of a distribution about the value 5 are equal to -4, 22, -117 and 560. Determine the corresponding moments about the mean.

(f) Calculate Karl Pearson's coefficient of correlation for the data given below:

X	70	65	71	62	58	69	78	64
Y	91	76	65	83	90	64	55	48

SEC-B

Q2. Attempt any 3 parts. **3x10=30**

(a) State distinctive features of Binomial and Poisson distribution. When does a binomial distribution tend to become a (i) normal distribution and (ii) Poisson distribution.
(b) What is meant by measure of central tendency? Discuss the merits and demerits of median as a measure of central tendency.
(c) The runs scored by two batsman A and B in 9 consecutive matches are given below

A	85	20	62	28	74	5	69	4	13
B	72	4	15	30	59	15	49	27	26

Which of the batsman is more consistent?
(d) Calculate median from the following distribution:

Class	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	6	10	16	14	10	5	2

(e) A die is thrown 90 times and the number of faces shown are as indicated below:

Faces	1	2	3	4	5	6
Frequency	18	14	13	15	14	16

Use chi-square test whether the die is fair.Tabulated value at 5% is 11.07.

SEC –C

Q3. Attempt any two parts. **2x5=10**

(a) Define techniques of statistical quality control and what are objectives of control charts?
(b) What is Randomized block design? Discuss its analysis of variance.

(c) Determine the control limits for X and R charts if ∑X=37.5, ∑R=9.9 number of subgroups =20. It is given that A_2=0.18.D_3= 0.41, D_4 = 1.59 and d_2 =3.736.Also find the process of compatibility.

Q4. Attempt any two parts. 2x5=10

(a) The following figures relate to the weekly sale records (in rupees) of three salesmen A, B and C of a company during 13 sale calls.

Salesman	Weekly sale record
A	300 400 300 500
B	600 300 300 400
C	700 300 400 600 500

Test whether there is any significant difference in the sales of 3 salesman using ANOVA. (Given $F_{2,10}$(5%)= 4.10)

(b) What is the major purpose of hypothesis testing? Explain the various steps involved in hypothesis testing.

(c) As a result of tests on 20,000 bulbs manufactured by company it was found that life time of the bulbs was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Estimate the number of bulbs that is expected to burn for:

(i) More than 2150 hours

(ii) less than 1960 hours.

Q5. Attempt any two parts. 2x5=10

(a) Describe the various methods of measuring variation along with their respective merits and demerits.

(b) Find the measures of skewness and kurtosis for the following distribution:

X	2	3	4	5	6
F	1	3	7	3	1

(c) Define Karl Pearson's coefficient of correlation. How would you interpret yhe sign and magnitude of a correlation coefficient?