Seat No._____

GANPAT UNIVERSITY

B. Tech. Sem. III (CE/IT) CBCS Regular Exam. Nov./Dec. – 2012

Sub : (2IT305/2CE305)(IT305/CE305) – Probability & Statistics

Time : 3 hrs   Total marks : 70

Instruction: (1) All questions are compulsory.
             (2) Write answer of each section in separate answer books
             (3) Figures to the right indicate marks of questions

Section – I

Que1   (12)

(A) Calculate the correlation co – efficient from the following data betⁿ Diastolic BP (x) and Cholesterol level (y) of 10 randomly selected persons.

X	80	75	90	74	110	70	85	88	78
Y	307	259	341	274	416	267	320	274	336

(B) Calculate the Spearman's Rank Correlation co – efficient from the following data between Intelligence ratio and Engineering ratio from the following data.

Intelligence ratio	105	104	102	101	100	99	98	96	93	92
Engineering ratio	101	103	100	98	95	96	104	92	97	94

OR

Que1   (12)

(A) Derive the formula for a line of regression of Y on X.

(B) Prove that : $\rho = 1 - \dfrac{6 \cdot \sum d^2}{n(n^2 - 1)}$

Que2

(A) From the following data between sales and purchase ; Find two Regression equations between them.   (05)

Sales	91	97	108	121	67	124	51	73	111	57
Purchase	71	75	69	97	70	91	39	61	80	47

(B) (1) A man can kill a bird once in 3 shots. On this assumption he fires 3 shots. What is the probability that a bird is killed ?   (06)

     (2) The probability of a man hitting a target is $\dfrac{1}{4}$. If he fires 7 times ; what is the probability of his hitting the targe t at least twice.

OR

Que2

(A) Calculate Probable error between x and y from following data. (05)

x	78	89	96	69	59	79	68	61
y	125	137	156	112	107	136	123	108

(B) Assuming that the probability of a child being a boy or a girl is equal. Find the number (06) of families out of 400 consisting 3 children each having ;

    (1) All boys   (2) 2 boys and 1 girl   (3) At most 1 boy

Que3 (12)

(A) The no. of accidents in a year attributed to taxi drivers in a city follows poisson distribution with mean 3. Out of 1000 taxi drivers ; find the no. of drivers with

    (1) No accidents in a year

    (2) More than 3 accidents in a year

    (3) More than 6 accidents in a year

(B) Suppose the waist measurement W of 800 boys are normally distributed with mean 66 cm. and standard deviation 5 cm. Find the number N of boys with waits

    (1) Between 65 and 70 cm.   (2) Greater than or equal to 72 cm.

Section – II

Que: 4

(A) Write a note on various types of classification of data. (4)

(B) Find the average marks of students from given data. (4)

Marks	No. of Students	Marks	No. of Students
Above 0	80	Above 60	28
Above 10	77	Above 70	16
Above 20	72	Above 80	10
Above 30	65	Above 90	8
Above 40	55	Above 100	0
Above 50	43		

(c) The mean of 200 items was 50. Later on it was discovered that two items were misread as 92 and 8 instead of 192 and 88. Find the correct mean. (4)

OR

Que: 4

(A) Prove that the sum of squares of the deviation of a set of values is minimum when it is taken about mean. (4)

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(B) Explain Geometric mean for ungrouped and discrete frequency distribution. Find it for following data. (4)

x_i	11	12	13	14	15
f_i	3	7	8	5	2

(c) From the given data calculate the missing frequency. The average is 30. (4)

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	10	?	20	25

Que: 5

(A) Define Harmonic mean and find it for following data. (3)

Class	Frequency	Class	Frequency
0-10	4	30-40	7
10-20	6	40-50	3
20-30	10	50-60	4

(B) Define median for all types of data and compute it for given data. (4)

Marks	No. of Students	Marks	No. of Students
0 – 4	10	16 – 20	5
4 – 8	12	20 – 24	8
8 – 12	18	24 – 26	4
12 – 16	7	26 – 28	6

(c) Write all steps of method of grouping & using it find mode for (4)

x_i	2	3	4	5	6	7	8	9	10	11	12	13
f_i	3	8	10	12	16	14	10	8	17	5	4	1

Que: 5

(A) A distribution consists of three components with frequecies 300 , 200 and 600. repectively. Thier means are 16 , 8 and 4 respectively. Find the mean of combine distribution. (3)

(B) Compute Q_1 , Q_3 , D_4 and P_{80} for given data. (4)

Class	2 – 2.4	2.5 – 2.9	3 – 3.4	3.5 – 3.9	4 – 4	4.5 – 4.9
Frequency	15	98	189	133	20	5