AV–2558-Add

Faculty of Cosmetic Tech.
M.Tech. (Cosmetic Technology) Semester-I Examination
BIOSTATISTICS
(Common for All Branches)
Paper—1T4

Time : Three Hours]   [Maximum Marks : 40

Note :— (1)   ALL questions carry equal marks.

         (2)   Answer **FOUR** questions.

         (3)   Non-scientific calculator is allowed.

         (4)   Use pen of Blue/Black ink/refill only for writing the answer book.

1.   (a)   Find out the 'P' value of the following groups :

            Group A   :   2   4   6   8

            Group B   :   12   14   16   18

            Group C   :   25   28   30   35

         Given [(2, 9), df at 0.05 level is 4.26].   5

   (b)   An I-Q Test was administered to 5 persons before and after they are trained, the results are given below :

Persons	:	I	II	III	IV	V
I-Q before training	:	110	120	123	132	125
I-Q after training	:	120	118	125	136	121

         Test whether there is any change in I-Q after training programme. It is given that $t_{0.01}$ = 4.6 for df. 4   5

2.   (a)   The following results were obtained from two independent samples :

Sample	Sample Size	Sample Average	Standard Deviation
A	6	29	4.0
B	5	25	2.1

         Test whether the two samples may be regarded as a drawn from the same pond of natural population. (Given $F_{0.05}$ at 5, 4 df is 6.26)   4

   (b)   A random sample of Bombay university was selected and asked, their opinion about "Autonomous college". The result are given below. The same no. of each sex was included within each class group. Test the hypothesis at 5% level of that opinions are independent of the class grouping ? [χ^2_{tab} = $\chi^2_{3, 0.05 \text{ l.o.s}}$ = 7.8147]

Class	Number		Total
	Favoring "Autonomous College"	Opposite to "Autonomous College"	
B.Tech. I	120	80	200
B. Tech. II	130	70	200
B. Tech. III	70	30	100
M. Tech.	80	20	100
Total	400	200	600

                                                                 6

3. (a) Find the two regression equations from the following pairs of observations on X and Y : (1, 2), (2, 3), (3, 5), (4, 6), (5, 4). Hence find the predicted value of Y when X = 2.5 and predicted value of X when Y = 4.5. 6

(b) Explain the difference between Correlation and Regression. 4

4. (a) The following table gives the marks obtained by students in Biostatistics. Find the Mean, Median and Mode :

Marks	No. of Students
11—20	42
21–30	38
31–40	125
41–50	84
51—60	45
61–70	36
71–80	30

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(b) Write a short note on "Frequency Polygon". 3

5. (a) In order to find the correlation coefficient between two variables X and Y from 12 pairs of observations, the following calculations were made :

$\Sigma x = 30, \Sigma y = 5, \Sigma x^2 = 670, \Sigma y^2 = 285, \Sigma xy = 334.$

On subsequent verification, it was found that the pair (11, 4) was copied wrongly, the correct value being (10, 14). Find the correct value of correlation coefficient. 6

(b) The data on the number of fringe spot on wing of Anopheles mosquitoes 2, 4, 5, 2, 7. Find Skewness and Kurtosis. 4

6. (a) Compute Mean, Standard deviation and Coefficient of variation from the following frequency distribution :

Scores	Frequency
10—19	2
20–29	5
30—39	3
40—49	5
50—59	8
60–69	12
70—79	25
80—89	30
90—99	10

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(b) What are the disadvantages of Non-parametric test ? 3