



Name :

Roll No. :

Invigilator's Signature :

CS/HM/SEM-2/BHM-202/2013
2013
BIostatistics – I

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

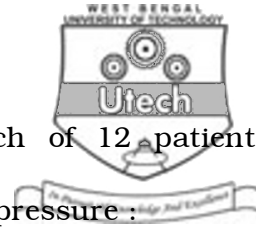
*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

- i) Bio-statistics is concerned with
 - a) living organism
 - b) non-living organism
 - c) both (a) & (b)
 - d) none of these.
- ii) Bio-statistics is also known as
 - a) Biology
 - b) Biometry
 - c) Biotic
 - d) None of these.
- iii) The chart in which different categories of data are represented as percentage of 360 degree is called
 - a) Pie diagram
 - b) Line diagram
 - c) Ogive
 - d) None of these.

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4. A certain stimulus administered to each of 12 patients resulted in the following changes in blood pressure :

5, 2, 8, - 1, 3, 0, - 2, 1, 5, 0, 4, 6

Can it be concluded that the stimulus will in general be accompanied by an increase in blood pressure ?

($t = 2.2$ for 11 d.f. at 5% level)

5. The mode of the following distribution is Rs. 66. Find the missing frequency.

Daily wages (Rs.)	30 — 40	40 — 50	50 — 60	60 — 70	70 — 80	80 — 90
No. of workers	8	16	22	28	?	12

6. Mrs. Basu wants to invest Rs. 10,000 in one of the two companies A or B. Average return in a year from company A is Rs. 16,000 with a standard deviation of Rs. 125, while in company B the average return in a year is Rs. 20,000 with a standard deviation of Rs. 200. Which company will you recommend to Mrs. Basu for investment ? Justify your answer.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Ages of death of 50 persons of a town are given below :

34	46	48	47	29	47	45	42	44	43
37	32	40	39	41	47	45	39	43	47
38	39	37	40	32	52	56	31	54	36
53	48	43	57	61	33	44	55	34	46
54	37	61	60	42	54	59	37	39	61

- Arrange the data in frequency distribution in 10 class-intervals.
- Obtain the percentage frequency in each class-interval; and
- Also find the class boundaries and cumulative frequencies from below and from above. $5 + 5 + 5$

8. a) Calculate the quartile deviation from the following data :

Class-interval	10- 15	15-20	20-25	25-30	30-40	40-50	50-60	60- 70	Total
Frequency	4	12	16	22	10	8	6	4	82

- The number of runs scored by cricketers A and B during the test for each of 10 innings is shown below :

Cricketer A	34	36	45	75	12	61	40	58	82	11
Cricketer B	47	38	52	42	36	54	48	34	50	54

Make a comparative study of their batting performance. $7 + 8$



9. a) What do you mean by Scatter diagram ? Illustrate the Scatter diagram with the help of a graph.

b) Consider the following data of the two variates :

X	1	2	3	4	5	6
Y	6	4	3	5	4	2

Draw a scatter diagram of the above data and comment.

7 + 8

10. a) In a sample of 120 workers in a factory, the mean and S.D. of wages were Rs. 11.35 and Rs. 3.30 respectively. Find the percentage of workers getting wages between Rs. 9 and Rs. 17 in the whole factory, assuming that the wages are normally distributed. (Given, area under standard normal curve from $z = 0$ to $z = 0.78$ is 0.2823 and to $z = 1.86$ is 0.4686).

b) It is claimed that the students entering in Hospital Management Dept. have an average I.Q. higher than 100. A random sample of 16 is taken and the sample mean is found to be 106. The sample S.D. is 10. Is the claim supportable ? (It is given $t_{0.01} = 2.82$ for 9 d.f.)

7 + 8



11. a) Define vital statistics.

Calculate

- i) crude death rate
- ii) specific death rate
- iii) standardized death rate from the following data :

Age group	Population	No. of deaths in a year	Standard population (thousand)
0 — 4	5000	150	110
5 — 14	7000	21	210
15 — 34	14000	63	360
35 — 59	16000	176	240
60 and over	8000	320	80

b) The following table gives the frequency distribution on rainfall in a certain locality in 106 consecutive days :

Rainfall (inches)	0-5	5-10	10-15	15-20	20-30	30-50	50-70	Total
No. of days	5	10	25	20	18	20	8	106

Find the number of days having rainfall more than 35 inches. 3 + 9 + 3

