Name :	
Roll No. :	A Description of Conductor
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

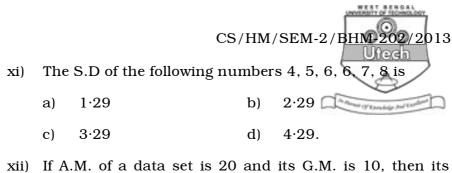
(Multiple Choice Type Questions)

- 1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$
 - 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.

2058

[Turn over

CS/HM/S	SEM	-2/BHM-202/2013		
iv)	Star	ndard deviation is indep	bende	ent of change of
	a)	origin	b)	scale
	c)	both (a) & (b)	d)	none of these.
v)		the mean of 7, $x - 3$, 10, the of <i>x</i> is	<i>x</i> + 3	and $x - 5$ is 15 then the
	a)	20	b)	21
	c)	22	d)	None of these.
vi)	The A.M	•	tion (of observation from their
	a)	minimum	b)	maximum
	c)	zero	d)	none of these.
vii)		a under standard norm – 1 is	al cu	rve between $Z = +1$ and
	a)	95.45%	b)	68·27%
	c)	99.75%	d)	None of these.
viii)	The	shape of the normal di	stribı	ation curve is
	a)	Bell shaped	b)	U-shaped
	c)	Downward sloping	d)	None of these.
ix)		range of the following 91, 54, 44, 56, 71, 25, 0		ks of 10 students given 7, 72, 62 is
	a)	82	b)	72
	c)	92	d)	none of these.
X)	The 7 st	median of the foll udents 4, 12, 7, 9, 14,		g marks obtained by 6 is
	a)	12	b)	13
	c)	14	d)	none of these.



xii) If A.M. of a data set is 20 and its G.M. is 10, then its H.M. is

a) 5	b)	40	
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c) 10 d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Construct a pie diagram for the data on blood group of 250 newly employed personnel in a company.

Blood Group	No. of persons
Α	50
В	90
0	70
AB	40
Total	250

3. An incomplete frequency distribution is given below :

Height (inches)	0 — 10	10 — 20	20 - 30	30 — 40	40 — 50	50 - 60
No. of plants :	4	6	20	?	7	3

It is known that the median height of the plant is 28.8 inches. Calculate the missing frequency.

2058

[Turn over

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 ?

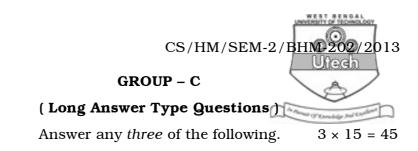
(t = 2.2 for 11 d.f. at 5% level)

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.

2058



37 32 40 39 41 47 45 39 43 38 39 37 40 32 52 56 31 54		
38 39 37 40 32 52 56 31 54	44	43
	43	47
E2 40 42 E7 C1 22 44 EE 24	54	36
53 48 43 57 61 33 44 55 34	34	46
54 37 61 60 42 54 59 37 39	39	61

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

- a) Arrange the data in frequency distribution in 10 classintervals.
- b) Obtain the percentage frequency in each class-interval; and
- c) 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

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

Cricketer A										
Cricketer B	47	38	52	42	36	54	48	34	50	54

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

2058

[Turn over

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

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

b) Consider the following data of the two variates :

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

2058



11. a) Define vital statistics.

Calculate

- i) crude death rate
- ii) specific death rate

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

iii) standardized death rate from the following data :

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

7

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

[Turn over

2058