



Name :

Roll No. :

Invigilator's Signature :

CS/BBA (H), BIRM, BSCM/SEM-1/BBA-103/2009-10

2009

STATISTICS – 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) In the regression equation $y = a + bx$, b is

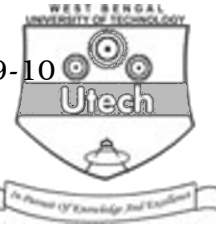
- | | |
|--------------|-------------------|
| a) intercept | b) slope |
| c) variable | d) random number. |

ii) Standard Deviation is dependent on

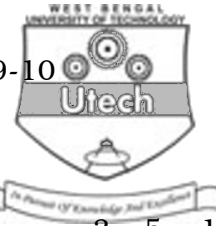
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|-------------------|-------------------|
| a) origin only | b) scale only |
| c) both (a) & (b) | d) none of these. |

iii) The G.M. of 3, 12 and 48 is

- | | |
|-------|-------------------|
| a) 12 | b) 9 |
| c) 6 | d) none of these. |



- iv) Correlation coefficient lies between
- a) -1 to $+1$ b) 0 to 1
- c) 1 to 2 d) none of these.
- v) The value of first central moment is
- a) 0 b) 1
- c) 2 d) none of these.
- vi) If $r = 0.6$, $cov(x, y) = 12$ and S.D. of $y = 5$, then S.D. of x is
- a) 3 b) 4
- c) 5 d) none of these.
- vii) Two lines of regression are given by $x + 2y = 5$ and $2x + 3y = 8$. The values of the means of x and y are
- a) $1, 2$ b) $2, 1$
- c) $2, 3$ d) $3, 2$.
- viii) The H.M. of $6, 12, 24$ is
- a) $\frac{72}{7}$ b) 12
- c) 14 d) none of these.
- ix) For a distribution A.M. = 105 , S.D. = 21 . The coefficient of variation is
- a) 30% b) 20%
- c) 19.5% d) none of these.



GROUP – B
(Short Answer Type Questions)

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

2. For a group of 50 girls the mean and standard deviation of scores on test are 59.5 and 8.38, while for a group of 40 boys the same measures are 54.0 and 8.23. Find the mean and standard deviation of the combined group.

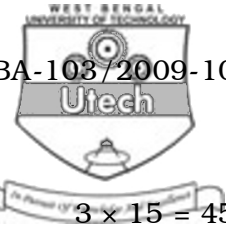
3. The weights (in kg) of 6 persons are 64, 60, 60, 64, 60 and 64. Calculate the mean deviation about mean.

4. Calculate the mean and median of the following frequency distribution.

Class interval	31 — 40	41 — 50	51 — 60	61 — 70	71 — 80
Frequency	6	14	20	7	3

5. Suppose a man walks along the 4 sides of a square ground with speeds 10, 12, 15, 20 km/hr respectively. Then calculate his average speed.

6. Calculate S.D. of variable x which takes the values 1, 2, 3, 16, 17.



GROUP – C
(Long Answer Type Questions)

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

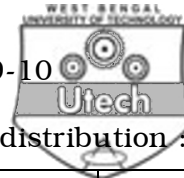
7. a) The data below given is the marks secured by 70 candidates in a certain examination :

21	31	35	52	64	74	89	53	42	7
22	35	43	67	76	35	46	26	32	40
72	43	38	41	63	71	28	32	45	54
15	18	52	73	86	50	39	55	47	12
44	58	67	85	39	40	50	65	72	69
57	63	5	56	79	37	24	54	82	49
51	54	68	29	34	44	58	62	59	65

Construct a frequency distribution of the marks, taking classes of uniform width of 10 marks and 0 as the lower limit of the lower-most class.

- b) Suppose $5x + 12y = 85$ is the relation between two variables x and y and y has S.D. 2. Find the S.D. of x .

$$10 + 5$$



8. a) Draw ogive from the following frequency distribution :

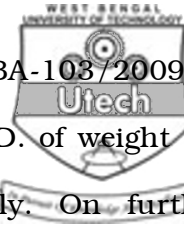
Wages (Rs.)	31 — 40	41 — 50	51 — 60	61 — 70	71 — 80
No. of workers :	6	14	20	7	3

b) The mean & S.D. of height readings of a group of employees of a firm are found to be 172 cm & 18 cm, while the same measures for their weight readings are 65 kg & 9 kg. Compare the variability of the height readings with that of the weight readings. 10 + 5

9. a) The following table gives the prices and quantities of a number of commodities in Calcutta. Compute index numbers of prices for 1984 with 1979 as base year using Laspeyres' and Paasche's formulae.

Commodity	Unit	1979		1984	
		Price (Rs.)	Quantity	Price (Rs.)	Quantity
Rice	kg	8	4	10	8
Ghee	kg	25	2	29.50	3
Egg	dozen	5	5	6.50	6
Milk	litre	2	3	4	7

b) Find the harmonic mean of the reciprocals of first n natural numbers. 10 + 5



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10. a) For a batch of 10 boys, the mean & S.D. of weight are found to 50 kg & 5 kg respectively. On further verification it is detected that the weights of 2 boys have been wrongly included as 45 kg & 55 kg instead of the actual values 42 kg & 48 kg. Calculate the correct mean and correct S.D.
- b) What do you mean by time series ? Explain the different components of such a series. 10 + 5

11. a) Heights (X in inches) and weights (Y in kg) of 5 persons are given below :

$X :$	64	60	67	59	69
$Y :$	57	60	73	62	68

Determine the correlation coefficient between X and Y .

- b) Prove that $n^n > 1.3.5 \dots (2n - 1)$. 9 + 6