

(UG763)

Roll No. ....

S.C.No.—2009105

**B. Sc. (Hons.) EXAMINATION, 2021**

(First Semester)

MATHEMATICS

BHM115 (Opt. i)

Descriptive Statistics

*Time : 2 Hours*

*Maximum Marks : 60*

**Note :** Attempt any *Four* questions. All questions carry equal marks. Use of Simple Calculator and Log Tables are allowed in exam.

1. (a) What do you understand by Statistics ? Discuss its scope.

- (b) Marks obtained by 50 students are as follows :

55, 39, 30, 37, 45, 53, 58, 36, 42, 43  
 36, 53, 44, 33, 41, 51, 56, 44, 45, 35  
 40, 45, 50, 55, 39, 49, 34, 44, 59, 39  
 42, 33, 47, 53, 49, 58, 36, 48, 41, 55  
 41, 37, 44, 42, 32, 50, 36, 45, 44, 48

Arrange the above data in classes with class-interval of 5 marks (exclusive method).

50

55, 39, 30, 37, 45, 53, 58, 36, 42, 43  
 36, 53, 44, 33, 41, 51, 56, 44, 45, 35  
 40, 45, 50, 55, 39, 49, 34, 44, 59, 39  
 42, 33, 47, 53, 49, 58, 36, 48, 41, 55  
 41, 37, 44, 42, 32, 50, 36, 45, 44, 48

- (c) Draft a form of tabulation to show :
  - (i) Sex
  - (ii) Two ranks-Readers and Lecturers
  - (iii) Year—2006, 2007, 2008
  - (iv) Age group-20 years and under, over 20 but less than 50 years, over then 50 years.

- (i)
- (ii)
- (iii) — 2006, 2007, 2008
- (iv) -20 20
- 50

	( '0000 )	( '0000 )
	2007-2008	2008-2009
B.Sc.	25	30
B.A.	40	42
B.Com.	35	28

- (b) Students grades on a Chemistry exam were— 77, 78, 76, 81, 86, 51, 79, 82, 84 and 99. Construct a stem-and-leaf plot of the data.

— 77, 78, 76, 81, 86, 51, 79, 82, 84  
99

- 2. (a) Represent the following data by percentage sub-divided bar diagram :

Subject	No. of Students (in '0000) 2007-2008	No. of Students (in '0000) 2008-2009
B.Sc.	25	30
B.A.	40	42
B.Com.	35	28

- 3. (a) The following information relates to the wages of working in a factory, their total working hours and the average working hours for workers. Calculate the mean wage per head :

Wages (in Rs.)	Total hours worked	Average no. of hours worked per worker
100-200	100	10
200-300	150	7.5
300-400	180	6
400-500	90	5
500-600	70	7
600-700	60	5

(b) Calculate  $Q_1$ ,  $Q_3$ ,  $D_2$ ,  $P_5$ ,  $P_{90}$  from the following data :

Marks	No. of Students
0-10	8
10-20	10
20-40	22
40-60	25
60-80	10
80-100	5

$Q_1$ ,  $Q_3$ ,  $D_2$ ,  $P_5$ ,  $P_{90}$

0-10	8
10-20	10
20-40	22
40-60	25
60-80	10
80-100	5

https://www.cbluonline.com

https://www.cbluonline.com

https://www.cbluonline.com

https://www.cbluonline.com



(b) Calculate Karl Pearson's coefficient of skewness from the following data :

Marks	No. of Students
30-40	5
40-50	10
50-60	10
60-70	3
70-80	2

120.0-124.9	20
125.0-129.9	35
130.0-134.9	10
135.0-139.9	10
140.0-144.9	5

Also apply Sheppard's corrections for moments.

30-40	5
40-50	10
50-60	10
60-70	3
70-80	2

110.0-114.9	5
115.0-119.9	15
120.0-124.9	20
125.0-129.9	35
130.0-134.9	10
135.0-139.9	10
140.0-144.9	5

6. (a) Find the second, third and fourth central moments of the frequency distribution given below. Hence find the measure of kurtosis :

Class Limits	Frequency
110.0-114.9	5
115.0-119.9	15

- (b) What do you understand by skewness ?  
Show that Karl Pearson's coefficient of skewness lies between -3 and 3.

-3      3

- 7. (a) Find the remaining class frequencies, given the following data :

$N = 23,713$ ,  $(A) = 1,618$ ,  $(B) = 2,015$ ,  
 $(C) = 770$ ,  $(AB) = 587$ ,  $(AC) = 428$ ,  
 $(BC) = 335$ ,  $(ABC) = 156$

$N = 23,713$ ,  $(A) = 1,618$ ,  $(B) = 2,015$ ,  
 $(C) = 770$ ,  $(AB) = 587$ ,  $(AC) = 428$ ,  
 $(BC) = 335$ ,  $(ABC) = 156$

- (b) The following summary appears in a report on a survey covering 1,000 fields. Scrutinize the numbers and point out if there is any mistake or misprint in them :

Manured fields	510
Irrigated fields	490
Fields growing improved varieties	427
Fields both irrigated and manured	189
Fields both manured and growing improved varieties	140
Fields both irrigated and growing improved varieties	85
1,000	

510  
490  
427  
189  
140  
85

https://www.cbluonline.com

https://www.cbluonline.com

https://www.cbluonline.com

https://www.cbluonline.com

8. (a) Write short notes on the following :

- (i) Scatter Diagram
- (ii) Types of Correlation
- (iii) Degree of Correlation.

- (i)
- (ii)
- (iii)

(b) Calculate Karl Pearson's coefficient between X and Y for the following data :

X	Y
18	17
19	17
20	18
21	18
22	18
23	19
24	19
25	20
26	21
27	21

X Y

X	Y
18	17
19	17
20	18
21	18
22	18
23	19
24	19
25	20
26	21
27	21

9. (a) Find the coefficient of correlation, when  $Con(x, y) = 16.5$ ,  $Var(x) = 2.89$ ,  $Var(y) = 100$ .

$$Con(x, y) = 16.5, Var(x) = 2.89, Var(y) = 100.$$

(b) Explain Order of a class.

(c) Explain fundamentals set of class frequencies.

(d) Explain the advantages of Tabulation.

(e) Calculate the geometric mean of the series 10, 110, 120, 50, 52, 80, 37, 60.

10, 110, 120, 50, 52, 80, 37, 60

(f) Find coefficient of variation for the data 4, 6, 10, 12, 18.

4, 6, 10, 12, 18