



**SECTION A**

**I. Answer ALL the questions. Each carries one mark.**

1. State A.L.Bowley's definition of statistics
2. What is a questionnaire
3. Define ordinal scale
4. Give the formula of Sturges' to find the number of classes.
5. Which is the graph used to obtain median?
6. What is histogram?
7. Mention any one objective of average.
8. Marks of students is 25 32 35 45 35 49 35 find modal mark.
9. What is the nature of correlation when  $r=-1$
10. What is interpolation?
11. Define equally likely events
12. Define mathematical expectation

**SECTION B**

**II. Answer ALL the questions Each carries two mark.**

13. Define nominal scale and give example
14. Define biased and unbiased errors.
15. Give a general format of a table.
16. Define frequency density and relative frequency.
17. Write any two importance of diagrams and graphs.
18. Mention any two types of one dimensional diagram.
19. If sum of 15 observations is 480.find its mean.
20. Using the following data, show that  $AM=GM$  3,3
21. If  $b_{xy}=0.4$  and  $b_{yx}=1.6$  find  $r$ ?
22. Write the formula for Yule's coefficient of association.
23. Two cards are drawn from a pack of 52 playing cards .what is probability that they are of queens?
24. If  $x$  is a random variable and  $V(x)=3$  find  $V(8x)$ .

**SECTION C**

**III. Answer ALL the questions. Each carries five mark.**

25. What are the limitations of statistics?
26. Explain the methods of collection of primary data.
27. In a state there were 30 lakh people. Out of these, 10 lakh people live in urban areas and the rest in rural areas.in urban there were 7lakh male people, out of which 2.5 lakh are illiterate .in urban areas 2 lakh ladies were illiterates. In rural areas there were 15 lakh male people out of which 5 lakh were literate, in rural areas illiterate ladies were 3lakh.Tabulate the above information.
28. Following is the data regarding the strength of students of a university during 2008 - 10.construct a component bar diagram.

year	Faculty				
	arts	science	commerce	engineering	Medical
2008	200	150	50	30	20
2009	250	200	80	50	40
2010	300	250	100	80	50

Calculate standard deviation for the following  
29. distribution.

CI	30-39	40-49	50-59	60-69	70-79	80-89	90-99
f	1	4	14	20	22	12	2

30. Calculate Pearson's coefficient of correlation from the following data.

X	12	9	8	10	11	13	7
y	14	8	6	9	11	12	3

From the following data, find the two regression equations. also find the most probable value of y  
31. when x=2.5

X	1	2	3	4	5
y	2	3	5	4	6

In order to ascertain, if marriage has any effect on the examination result of students, 1000 students  
32. were selected at random. Of the 1000 students, 375 were married .Of the married students 167 passed and of the unmarried students 203 failed. Find Yule's coefficient of association between marriage and failure of students in the examination.

Extrapolate the population of a city for the year  
33. 2010.

Year	2005	2006	2007	2008	2009	2010
Population	4	4.2	4.3	4.5	4.8	-

34. State and prove multiplication theorem of probability for two independent events.

A card is drawn from a pack of 52 playing cards. What is the probability that it is a  
35. i. Red or club and  
ii. King  
or  
queen.

36. If X is a random variable and a is any constant then prove that  $E(aX)=aE(X)$  and  $V(aX)=a^2 V(X)$

#### SECTION D

IV. **Answer ALL the questions. Each carries ten mark.**

37. The number of runs scored by two batsmen A and B in different innings is as follows.  
Who is better run scorer? Who is more consistent?

A	1	2	115	6	73	7	19	119	36	84	29	
B	4	7	12	76	42	4	51	3	7	48	13	0

38. Compute Bowley's coefficient of skewness for the following distribution

X	58	59	60	61	62	63	64	65
f	10	18	30	42	35	28	16	8

Calculate Karl Pearson's coefficient of correlation between the marks obtained by the batch of  
39. 100students in accountancy and statistics as given in the following table.

Marks in statistics	Marks in accountancy				
	20-30	30-40	40-50	50-60	60-70
15-25	5	9	3	-	-
25-35	-	10	25	2	-
35-45	-	1	12	2	-

45-55	-	-	4	$\frac{1}{6}$	5
55-65	-	-	-	4	2

40. a) A box contains 5 white and 3 black balls. Two balls are drawn one after the other. Find the probability of getting a white ball in the first draw and a black ball in the second draw when (i) the first drawn ball is replaced (ii) the first drawn ball is not replaced.
- b) A person throws a fair die. If the throw results in an even number the person gets rs 100. Otherwise the person loses rs 200. Find the expectation of that person.

#### SECTION E

**V. Answer ALL the questions. Each carries five mark.**

41. The following are the marks secured by 48 students out of a maximum of 50, in an entrance examination. Form a frequency distribution.

15	27	21	18	21	10	7	0	8	2
10	29	1	4	11	20	12	16	18	28
24	23	32	20	24	16	15	14	25	34
15	5	30	22	17	13	3	17	19	14
11	16	19	15	8	15	19	6		

Draw a histogram for the following data and locate the value of  
42. mode.

Marks	0-5	5-10	10-20	20-30	30-40	40-50	50-70	70-80
No. of students	2	6	8	25	40	30	20	8

For the following distribution if mean =45 find the missing

43. frequency.

C.I	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
F	5	8	7	-	28	20	10	10

A random variable X has the following probability distribution. Find the value of k and calculate

44. mean and  
variance of  
X.

X	-2	-1	0	1	2	3
P(x)	0.1	0.1	0.2	2k	0.3	0.1