Time: 3 Hours 15 Minutes   **Max. Marks:100**

SECTION-A

I.   **Answer any Ten of the following questions:**   **10 × 1 = 10**
1. Mention any one application of statistics in Commerce.
2. Give one example on Ordinal scale.
3. When would you prefer sample survey to census method?
4. Give a general Performa of a statistical table
5. What do you mean by open-end class interval when are they preferred?
6. Which diagram is mostly used by the government to present their annual budget?
7. If the product of two numbers is 36 then find G.M.
8. 3rd quartile is equivalent to which percentile in the same data.
9. Write one assumption in Binomial method of interpolation.
10. What is relation between correlation and the two standard deviations in regression in regression coefficient of Y on X?
11. Define equally likely events in probability.
12. If E(X)=3 and $E(X^2)$=25 then find SD(X).

SECTION-B

II.   **Answer any Ten of the following questions :**   **10 × 2 = 20**
13. Define variable and attribute with example.
14. Distinguish between census enumeration and sample survey.
15. For what purpose is correction factor used in frequency distribution?
16. What are the source and foot note are meant for in the table?
17. How diagrams and graphs are useful in representing statistical data?
18. With the help of histogram which different types curves we can draw?
19. Find the harmonic mean of 2 and 4.
20. What do you mean by measures of position or positional averages ? Mention different measures.
21. From the following data find the suitable regression equation X=21,Y=20 and b_{xy}=0.74.
22. In case of two attributes if N=250,(AB)=30,(A)=100 and (B)=50 then find the remaining classes and their frequencies.
23. Find the probability of getting a king or a queen from a pack of playing cards.
24. If a and b are two constants and X is a random variable show that E(aX+b)=aE(X)+b.

SECTION-C

III.   **Answer any Eight of the following questions:**   **8 × 5 = 40**
25. Write and explain the functions of statistics.
26. Explain any three methods of collection of primary data.What are their relative merits and demerits?
27. In Hubli there were 20 lakh people, out of this 7 lakh people lived in central Hubli and the rest in surrounding areas . In central Hubli there were 3 lakh male people out of which 2 lakh were literate In central Hubli ,1 lakh ladies were illiterates In surrounding areas there were 10 lakh male people ,out of which 7 lakh were literate.In surrounding areas literate ladies were 2 lakh tabulate the above information.
28. Represent the following data by a percentage bar diagram.

Items of Expenditure	Family A(Rs)	Family B(Rs)
Food	1500	1500
Clothing	1250	600
Education	250	500
Others	190	700

29. Calculate Median for the following data.

Height	Less than 145	145-150	150-155	155-160	160 & above
No of persons	5	10	15	10	5

30. The following are the weights of 10 mothers and their babies at the time of delivery. Calculate the coefficient of correlation.

Mother(kgs)	56	60	59	49	53	52	47	58	54	62
Baby(Kgs)	3.1	3.3	3.2	3	3.1	3	2.7	3.4	3.2	3.6

31. Calculate Spearman's rank correlation coefficient from the following data and comment.

X	18	16	20	22	12	24	15	20	17	20	23
Y	15	21	18	23	20	24	16	17	19	25	22

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

33. Using the Binomial Expansion method of interpolation find the probable production for the year 2002.

Year	2000	2001	2002	2003	2004	2005
Production(000'tones)	39	85	-	151	264	388

34. State and Prove addition theorem of probability for two mutually Exclusive events.

35. A box contains 4 red and 6 blue balls .Two balls are drawn from this box one after the other. What is the probability that they are red if first drawn ball is (i) not replaced (ii) replaced.

36. A fair die is thrown once .A person will get 5 Rs if the die results in multiplying 3 otherwise he loses 2 Rs Find his expectations.

SECTION-D

IV.   **Answer any Two of the following questions:**   **2 x 10 = 20**

37. For the following data regarding the marks obtained by Boys and girls.

Marks	10-20	20-30	30-40	40-50
Boys	6	16	26	18
Girls	5	12	22	13

(a)   Which among them have higher average marks?

(b)   Which among shows greater consistency regarding scoring marks?

38. Calculate Bowley's Coeffient of Skewness.

Height	<130	<140	<150	<160	<170	<180	<190
No of persons	2	7	15	25	32	37	40

39. For the following data

(a)   Calculate two regression equations.

(b)   Estimate the value of X when Y=30.

(c)   Determine the value of correlation coefficient using Regression Coefficient.

X	10	14	16	24	26
Y	5	6	7	9	13

40. For the following joint probability distribution find k and the coefficient of correlation .

y / X	-1	0	1
-2	0.2	0	0.4
4	0.1	0.1	K

SECTION-E

V.   **Answer any Two of the following questions:**   **2 x 5 = 10**

41. Following is the data regarding the marks obtained by a certain group of girls in a class in statistics test.

13	24	11	21	16	22	24	22	22	16
21	11	22	18	25	16	21	17	22	18
21	13	22	18	20	15	21	17	23	15

Prepare a frequency table.

42. Draw histogram and obtain the frequency polygon for the following distribution.

CI	10-12	12-14	14-16	16-18	18-20	20-22	22-24
Freq	2	5	10	14	2	8	4

Find the value of median and mode.

43. Calculate D7 and P20 for the following distribution.

CI	40-59	60-79	80-89	90-99	100-109	110-119	120-139	140-159
F	5	16	16	16	16	16	16	16

44. Two dice are thrown once .Find the probability of
    (i)   Sum of numbers obtained is divisible by 5.
    (ii) Sum of number obtained is 5.
    (iii) Product of numbers obtained is 5.
    (iv) Product of numbers obtained is divisible by 5.
    (v)   Sum of numbers obtained is 13.

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