Group A

Attempt all questions:

MCQ [1×30=30]

1. **With help of histogram we can prepare:**
2. Frequency curve
3. Ogive curve
4. Pie chart
5. Line
6. **Parameter of poison probability distribution is:**
7. Mode
8. Standard deviation
9. Mean per unit time
10. variance
11. **Binomial probability distribution refers to:**
12. Continuous probability distribution
13. Discrete probability distribution
14. Mixed probability distribution
15. All of above.
16. **Independent events are those events which are:**
17. Related with each-other.
18. Not occur simultaneously.
19. Complimentary to each-other.
20. Not related with each-other.
21. **Variance of binomial distribution is equal to:**
22. np
23. npq
24. nq
25. p+q
26. **Hypothesis of no significance difference between true parameter and hypothesized parameter refers to:**
27. Alternative hypothesis
28. Estimation
29. Null hypothesis
30. Probability distribution
31. **The probability of the intersection of two mutually exclusive events is always:**
32. Infinity
33. Zero
34. One
35. None of above
36. **If A and B are two events, the probability of at least one of them can occur is given as:**
37. P (A∩B)
38. P(AB)
39. P(A) P(B)
40. P(A ∩ )
41. **Which of the following relations among the location parameters does not hold?**
42. Q2=median
43. P50=median
44. D5=median
45. D6=median
46. **Student’s t-test is applicable when:**
47. The sample size is less than 30 and population sd is unknown.
48. The sample size is more than 30 and population sd is unknown.
49. The sample size is less than 30 and population sd is known.
50. The sample size is more than 30 and population sd is known.
51. **Formula for determine sample size(n) is given by**:
52. **Coefficient of determination in regression analysis measures:**
53. Variation in independent variable due to dependent variables.
54. Variation in dependent variable due to independent variables.
55. Association between two variables.
56. Independency of two variables.
57. **Whether a test is one-tailed or two-tailed depends on:**
58. Null hypothesis
59. Alternative hypothesis
60. Simple hypothesis
61. Composite hypothesis
62. **Parameters are those measure which describes the characteristics of:**

a) Population

b) Sample

c) A formula

d) None of above

1. **In regression line of Y on X, the variable X is known as:**
2. Dependent variable
3. Independent variable
4. Explained variable.
5. None of above.
6. **Bayes’ theorem is applied to calculate:**
7. Unconditional probability
8. Revised probability
9. Joint probability
10. Marginal probability.
11. **Correlation coefficient search for:**
12. Relationship between two variables.
13. Effectiveness of two variables.
14. Sufficiency between two variables.
15. None of above.
16. **If mean and standard deviation of a set of data are 25 and 10 respectively, then coefficient of variation of given data set is:**
17. 35%
18. 40%
19. 15%
20. 50%
21. **Given that P(B)= 0.4 and P(A∩B)=0.2, probability P( ) is equal to**
22. 0.4
23. 0.7
24. 0.5
25. 0.15
26. **Coefficient of quartile deviation is given by the formula:**
27. **Value of correlation coefficient lies between:**
28. - ∞ to ∞
29. - ∞ to 1
30. -1 to 1
31. 0 to 1
32. **In regression line Y= a + b X, b is called the:**
33. Slope of the line
34. Intercept of the line
35. Regression coefficient of Y on X.
36. All of above.
37. **Test of hypothesis H0: µ=70 vs H1: µ≠70 leads to:**
38. Left-tailed test
39. Right-tailed test
40. Two-tailed test
41. None of above
42. **It is necessary to find cumulative frequencies in order to draw a/an**
43. Histogram
44. Frequency polygon
45. Ogive curve
46. Frequency curve
47. **Median is a measure of**
48. Positional average.
49. Dispersion.
50. Correlation.
51. Deviation from central value.
52. **Confidence interval of sample mean is given by:**
53. Z× SE(
54. SE(
55. Z
56. Z× SE(
57. **A random variable which takes integer values is called:**
58. Discrete random variable.
59. Continuous random variable.
60. Mixed random variable.
61. Qualitative random variable.
62. **Which one of the given measure of dispersion is considered best?**
63. Range.
64. Quartile deviation.
65. Standard deviation.
66. Mean deviation.
67. **Standard error of sample mean measures**
68. Deviation of observations.
69. Deviation of sample means.
70. Average of observations.
71. Average of sample means
72. **In regression line Y= a + b X, Y is called the:**
73. Independent variable.
74. Constant term.
75. Dependent variable.
76. Slope of line.

Group B

Short answer questions:

Attempt any six questions [5×6=30]

1. The probability that a new airport will get an award for its design is 0.20, the probability that will get an award for the efficient use of material is 0.18 and the probability that it will get both awards is 0.08. What is the probability that
   1. It will get at least one of the two awards.
   2. It will get only one of two awards.
2. An analysis of monthly wages paid to the workers in two company X and Y gives the following results:

Firm X Firm Y

Number of worker: 65 75

Average monthly wages in $: 150 200

Variance of distribution of wage: 121 100

1. Which company, X or Y, has a large wage bill?
2. In which company, X or Y is there grater variability in wage?
3. Calculate combined mean wage of company X and Y.
4. There are three machines A, B, and C producing 1000, 2000 and 3000 articles per hour respectively. These machines are known to be producing 3%, 4% and 5% defectives respectively. One article is selected at random from an hour production of the three machines and found to be defective. What is the probability that the article is produced from
   1. Machine A
   2. Machine B
   3. Machine C?
5. If the probability of recovery from a certain disease is 0.25and 5 people came down with the disease, what is the probability that i) Two of them will recover? ii) At least one will recover?
6. At a checkout counter customers arrive at an average number of 2.5 per minute. Find the probability that:
7. at most four will arrive in any given minute
8. at least 6 will arrive during an interval 2 minutes.
9. In a test administered to2000 students, the average score was 65 and standard deviation 25. Find
   1. The number of students exceeding a score 75.
   2. The number of students lying between 46 and 86.
   3. The probability that student get mark less than 48.
10. A random sample of 100 students is drawn from a certain campus and their weight showed a mean of 55 kg and a standard deviation of 10 kg.
11. Find standard error of sample means.
12. Construct a 95% confidence interval of mean weight of all students of the campus.
13. The breaking strengths of cable produced by a manufacturer have mean 120 N and standard deviation 25 N. by a new technique in the manufacturing process, it is claimed that the breaking strength can be increased. To test this, claim a sample of 40 cables is tested and it is found that mean breaking strength is 130 N. Can we support the claim at α=0.05?

Group C

Long answer questions:

Attempt any two questions [20×2=20]

1. Below is given five-year data on money supply and domestic credit for Nepal. Both variables are in thousands of rupees.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | 1971 | 1992 | 1993 | 1994 | 1995 |
| Domestic credit(’00) | 8 | 1 | 5 | 6 | 7 |
| Money supply | 10 | 12 | 15 | 16 | 20 |

1. Develop the estimation linear equation to predict Domestic credit from money supply.
2. How do you interpret a slope of the regression line?
3. Compute and interpret the standard error of estimate.
4. Compute correlation coefficient between domestic credit and money supply.
5. Predict domestic credit when money supply is 14.
6. What percent of the total variation in domestic credit is explained by money supply?
7. From the following distribution of wage of 250 workers in a factory, find
8. Mean wage of the distribution
9. Median wage of the distribution
10. The percentage of workers getting wage more than 75.
11. Construct histogram and locate mode.
12. Coefficient of quartile deviation.
13. the minimum wage of 25% of richest workers.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Wage | 10-20 | 20-30 | 30-50 | 50-60 | 60-80 | 80-100 |
| No. of workers | 50 | 100 | 150 | 90 | 60 | 50 |

1. Price of shares of a company on a different day in a year were found to be in Rs 68,65,73,70,69,71,72,63,64 and 67.
2. Compute sample mean share and sample standard deviation.
3. Compute standard error of estimate.
4. Construct 95% confidence limits for mean share.
5. In the light above that, test the hypothesis that the mean share of a company is 68 at α=5%.