

Time : 2-30 Hours]

Q.1

Find the moment coefficient of Kurtosis, for the distribution given below.

[14]

Maximum Load (Short tons)	Number of Cables
9.3 - 9.7	2
9.8 - 10.2	5
10.3 - 10.7	12
10.8 - 11.2	17
11.3 - 11.7	14
11.8 - 12.2	6
12.3 - 12.7	3
12.8 - 13.2	1

OR

Q.1

Below table shows a frequency distribution of grades on a final examination in college. Find the coefficient of variation for this data.

[14]

Grade	Number of Students
90 - 100	9
80 - 89	32
70 - 79	43
60 - 69	21
50 - 59	11
40 - 49	3
30 - 39	1

E1122-2

Q.2 Determine the Pearson Correlation Coefficient for

X	Y
1	1
2	2
3	4
4	4
5	5
6	7
7	7
8	7.5
9	9
10	10

[14]

OR

Q.2 Find the probability that in 120 tosses of a fair coin, less than 40 % or more than 60 % will be heads [14]

Q.3 Find the root of the equation $f(x) = x^2 - 3x + 2$ [14]
In the vicinity of $x=0$ using Newton Raphson method.

OR

Q.3 Solve the following equation by Picard's method upto third approximation [14]
 $y'(x) = x^2 + y^2; \quad y(0) = 0$

Q.4 Write a C++ program to evaluate $\int_{-2}^2 \frac{x}{5+2x} dx$ correct to three decimal places using [14]
Trapezoidal rule.

OR

Q.4 Write an algorithm for the Newton-Raphson method to solve the equation $x^2 - 5x + 6 = 0$, $x_0 = 5$ correct to three decimal places. [14]

Q.5 Attempt any **seven** out of twelve. (Each question is of **two** mark). [14]

- (i) Find the standard deviation of the set 9, 3, 8, 8, 9, 8, 9, 18.
- (ii) Find the arithmetic mean of 4, 8, 6 and 3 with frequencies 3, 2, 4 and 1 respectively.
- (iii) Find the harmonic mean of 2, 4 and 8.
- (iv) Find the Root Mean Square (RMS) of the set 3, 4 and 7.
- (v) Find the geometric mean of 1, 3 and 4.

E 1122-3

- (vi) Find the mode of the set 2, 3, 5, 8, 10, 12, 15 and 16.
- (vii) Write the formula for Chi-Square Test. What is its value if observed and expected frequencies are identical.
- (viii) Write the Taylor's theorem of expansion for a function $y(x)$ about a point $x = x_0$.
- (ix) Write Trapezoidal Rule Formula.
- (x) Name the Integer and Floating point number in C++ language.
- (xi) What is Function Overriding?
- (xii) What is the difference between a while loop and a do-while loop?

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