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06BME/IME106

B.TECH (MECHANICAL ENGG)

VI-SEM, (Main/back) Examination, May/June-2016

SUB:NUMERICAL METHODS AND APPLIED STATISTICS

Time : 3 Hours] **[Total Marks 60**

Use of following supporting material is permitted during examination.

1._____Nil_____ 2. _____Nil_____

Note: 1. Attempt any five question selecting one question from each unit.

2. Each question carry equal marks.

UNIT-I

1. Use Newton's divided difference formula, to find the value of f(8) and f(15) from the following data:

x:	4	5	6	10	11	13
Y:	48	100	294	900	1210	2028

2. Find the first and second derivatives of the function tabulated below at the point X = 3.0

x:	3.0	3.2	3.4	3.6	3.8	4.0
y:	-14.000	-10.032	-5.396	0.256	6.672	14.000

UNIT-II

3. Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using.

i) Trapezoidal rule

ii) Simpson's $\frac{1}{3}$ rule

iii) Simpon' $\frac{3}{8}$ rule

4. use picard's method to obtain y for x = 0.2. Given $\frac{dx}{dx} = x - y$, where y = 1 when x = 0

UNIT-III

5. Calculate the first four moments about the mean for the following distribution.

x:	6	7	8	9	10	11	12
y:	3	6	9	13	8	5	4

6. A cubical die is thrown 9000 times and a through 4 or a 5 is observed 3240 times. Show that the die cannot be regarded as an unbiased die?

UNIT-IV

7. Fit a Poisson distribution to the following data and test the goodness of fit.

x:	0	1	2	3	4	5	6
y:	275	72	30	7	5	2	1

Contd...

8. Calculate the co-efficient of correlation between x and y using the following data:

x:	1	3	5	7	9	11
y:	8	12	15	17	18	20

UNIT-V

9. Solve : $e^x - x = 0$ by secant method.

10. Find a roof of a equation $x^3 - 4x - 9 = 0$ correct to four decimal places by using the bisection method.