

Total No. of Questions : 4]

SEAT No. :

PE-285

[Total No. of Pages : 2

[6580]-653

B.E. (Robotics & Automation Engineering) (Insem.)
ADVANCED COMPUTATIONAL TECHNIQUES
(2019 Pattern) (Semester - VII) (411503A) (Elective - III)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) Answer Q.1 or Q.2, Q.3 or Q.4.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Assume suitable data, if necessary.
- 4) Use of non-programmable scientific calculators is allowed.
- 5) Figures to the right indicate full marks.

Q1) a) Discuss the general features of root finding for non linear equations. [7]

b) List the advantages and disadvantages of Newton's method. [8]

OR

Q2) a) Discuss the types of behaviour of non linear equations in the neighbourhood of a root. [7]

b) Explain how the fixed point iteration method works. [8]

Q3) a) Discuss curve fitting with sinusoidal function in detail. [7]

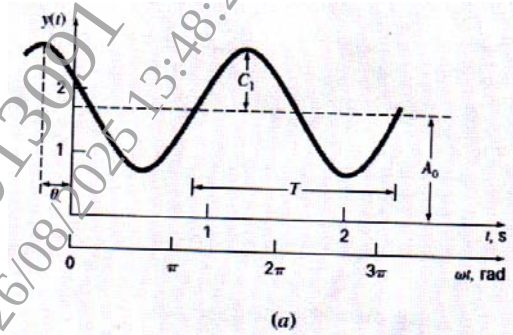
b) Explain Fast Fourier Transforms in detail. [8]

OR

P.T.O.

- Q4) a)** The curve in fig. is described by $y = 1.7 + \cos(4.189t + 1.0472)$. Generate 10 discrete values for this curve at intervals of $\Delta t = 0.15$ for the range $t = 0$ to 1.35. Use this information to evaluate the coefficient of equation.

$y = A_0 + A_1 \cos(\omega_0 t) + B_1 \sin(\omega_0 t) + e$ by a least square fit. [7]



- b)** Write a short note on Fourier integral and transforms. [8]

