

**Advance Programming for Electrical Engineering****(EE706/2)(Elective II)**

Branch: Electrical Engineering

Full Marks: 35

Time:2 hour

1. Answer any TWO questions from each half

2.  $\frac{1}{2}$  is reserved for neatness in each half**GROUP-A**

1. (a) What is meant by "dominant eigen value"? Describe how this value is calculated using Power Method?
- (b) Determine the dominant eigen value and the corresponding eigenvector of the following matrix using Power Method.

$$\begin{pmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix}$$

Use the following starting vector

$$\begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix}$$

(3.5+5)

2. (a) Four processors  $P_1, P_2, P_3$  and  $P_4$  hold the data (7,12,6), (5,8,10), (3,1,11) and (9,4,2). These processors are connected in a linear fashion. Explain how the odd-even transportation sort distributes the data among the processors so that the smallest 3 of those data is stored in  $P_1$ , the second 3 smallest in  $P_2$  and so on.
- (b) Briefly discuss the following two types of parallel system. (i) *Massively parallel processors* (ii) *Shared memory multi-processors*. (4.5+2 × 2)
3. (a) Two  $1000 \times 1000$  sparse matrix with a degree of sparsities 80% and 90% are to be added to get a new matrix. Assuming that both the matrices have positive non-zero elements, what would be the maximum and minimum degree of sparsity of the resultant matrix?
- (b) Explain the following:
- Link List method of storing a sparse matrix
  - Fill-in of a sparse matrix
  - (near)Optimal Ordering of a sparse matrix (2.5+3 × 2)

**GROUP-B**

5. (a) What is Relationship Diagram? Explain it with a suitable illustration.
- (b) Discuss the SQL JOINS and their applications with appropriate examples. (2.5+6)
6. (a) What is sub-query? Discuss it with an appropriate example.
- (b) Discuss on the following SQL commands/clause with appropriate examples.  
*UNION, CREATE VIEW AND FOREIGN KEY* (2.5+3 × 2)
7. Write brief notes on any two of the following topics. (4 $\frac{1}{4}$  × 2)

- Internet Protocol
- Standard functions of SQL
- Trigger