

Code No. 3314/E

**FACULTY OF SCIENCE**  
B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – VII (SEC – 4) : (H : Graph Theory)

Time : 1½ Hours

Max. Marks: 40

Note : Answer ALL the questions.

**PART – A (2 x 5 = 10 Marks)**  
(Short Answer Type)

1 (a) Define bipartite graph and give an example.

OR

(b) Define sub-graph of a graph and give an example.

2 (a) Draw the graph with adjacency matrix

Handwritten labels: A, B, C, D, E

$$A = \begin{matrix} & \begin{matrix} A & B & C & D & E \end{matrix} \\ \begin{matrix} A \\ B \\ C \\ D \\ E \end{matrix} & \begin{bmatrix} 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 \end{bmatrix} \end{matrix}$$

OR

(b) Give an example to show that an Eulerian graph need not be Hamiltonian.

**PART – B (2 x 15 = 30 Marks)**  
(Essay Answer Type)

3 (a) (i) Does there exists a graph with the degree sequence

7, 6, 5, 4, 3, 3, 3, 1, 1, . Justify your answer.

(ii) Define complete graph. Draw the complete graph with 5 vertices.

OR