

**B. Tech. (CSE) 4th Semester (G. Scheme)**

**Examination, July-2022**

**DISCRETE MATHEMATICS**

**Paper-PCC-CSE-202G**

*Time allowed : 3 hours]*

*[Maximum marks : 75*

*Note : Question No. 1 is mandatory. Attempt one question from each unit.*

1. (a) Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  be defined by

$$f(x) = 2x + 1 \text{ and } g(x) \text{ be}$$

defined as  $g(x) = x^2 - 2$ . Find the formula for  
composite function  $g \circ f$   $6 \times 2\frac{1}{2} = 15$

(b) Define Equivalence Relation with Example

(c) State Pigeon Hole Principle.

(d) Define Algebraic Structure "Monoid" with Example.

(e) Consider the Set 'Q' of Rational Numbers and let '\*' be the operation on Q defined by  $a * b = a + b - ab$

(i) Find  $3 * 4$

(ii) Find identity Element

**Unit-IV**

8. (a) State the Differences between Eulerian Graph and Hamiltonian Graph with Example.  $7\frac{1}{2}$
- (b) Define the following terms :  $7\frac{1}{2}$
- (i) Planar Graph and Bipartite Graph
- (ii) Regular Graph and Complete Graph
9. (a) State and Prove Euler's Formula for Graph  $7\frac{1}{2}$
- (b) What do you mean by Spanning Tree ? Explain an algorithm to find Minimal Spanning Tree.  $7\frac{1}{2}$