Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(Computer Science & Engineering) (Sem.–3)

DISCRETE STRUCTURES

Subject Code : BTCS-302

M.Code : 56592

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION–A

Answer briefly :

1. Define Partial order relations.
2. Define Hashing Functions.
3. Define Sub-Ring.
4. Define Euclidean Domain.
5. In how many ways can an 8 people be seated in a round table?
6. Define Semi-Group.
7. Define Monoids.
8. Define Dihedral Groups.
9. Define un-directed graph.
10. Define Chromatic number.

SECTION-B

11. Let R be the relation on the set {0,1,2,3} containing the ordered pairs (0,1), (1,1), (1,2), (2,0), (2,2), and (3,0). What is the reflexive closure, symmetric closure and transitive closure of R?

12. Find the field of quotients of the integral domain $Z\left(\sqrt{2}\right)$.

13. Solve: $T(k) - 8T(K-1) + 16T(K-2) = 0$.

14. Let G be a finite group and let $a \in G$ be an element of order n. Then show that $a^m = e$ if n is a divisor of m.

15. State and prove Euler Formula.

SECTION-C

16. Prove that any finite semi-group is a group iff both the cancellation laws hold.

17. If I and J be any two ideals of a ring R, then prove that IJ is an ideal of R. Moreover $IJ \subseteq I \cap J$.

18. A finite connected graph is Eulerian iff each vertex has even degree.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.