Bansilal Ramnath Agarwal Charitable Trust’s VISHWAKARMA INSTITUTE OF TECHNOLOGY, PUNE –37

(An Autonomous Institute Affiliated to SPPU)

**Discrete Mathematics (ES1030)**

**HA 5**

This Assignment is a group activity in which a presentation on a selected topic will be conducted.

**The following components will be considered for assessment.**

1. Collection of required information.

2. Presentation of data.

3. Explanation of concepts with suitable examples wherever necessary.

4. Question & Answer

**Topics of Presentation:**

1. Different types of Prime Numbers

2. Pascal Triangle

3. Binomial Coefficients

4. Applications of Hashing function

5. Representations of Integers

6. Encrypt the message ‘I am a first Year Engineering Student’ by translating letters to numbers by applying Caesar cipher.

7. Encrypt your full name (Each group member) by translating letters to numbers by applying f p p ( ) (3 7)(mod 26) ≡ + .

8. Konigsberg Bridge Problem

9. Traveling Salesman Problem

10. Dijkstra’s Algorithm

11. Prime Algorithm

12. Kruskal Algorithm

13. RSA Algorithm

14. Arrange all permutations on four symbols {1,2,3,4} in lexicographic order.

15. Applications of graph coloring

16. Mathematical model of Tower of Hanoi and its solution

17. Pigeonhole principle

18. Counting in Elementary applications to discrete probability

19. Euler’s Phi function, Euler’s theorem, Fermat’s Little theorem, and applications

20. Construct tailings using right triominoes of various 16 16,32 32 × × and 64 64 × checkerboards with one square missing.

21. The collaboration graph, the Web graph, the Precedence graph

22. The chromatic Number

23. Use of Euler path in determination of DNA sequence.

24. The history of the Four Color Theorem.

Every group will give a presentation on any one of the assigned topic.

Time for presentation: 10 minutes (Including questions and answers)

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| **EDI GR.NO** | **PRESENTATION TOPIC** |
| **1** | **1,19** |
| **2** | **7,18** |
| **3** | **2,13** |
| **4** | **8,17** |
| **5** | **3,16** |
| **6** | **9,24** |
| **7** | **4,23** |
| **8** | **10,22** |
| **9** | **5,21** |
| **10** | **11,20** |
| **11** | **6,15** |
| **12** | **12,14** |