

**MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGG.**

**PhD ENTRANCE EXAMINATION**

**Max. Time: - 60 mins**

**Max. Marks: 60**

**Important instructions for candidates:**

- 1.
- 2.
- 3.

**SECTION II**

1. Assume we have run BFS on a connected undirected graph and have the classification of the graph's edges into tree edges, horizontal cross-edges and vertical cross-edges. An odd cycle may be formed by which of the following configurations?
  - A) Only tree edges
  - B) Only horizontal cross-edges
  - C) Only vertical cross-edges
  - D) A combination of vertical cross-edges and tree edges
  
2. An experiment has four steps with two outcomes possible for the first step, two outcomes possible for the second step, three outcomes possible for the third step, and four outcomes possible for the fourth step. How many experimental outcomes exist for the entire experiment?
  - A) 24
  - B) 48
  - C) 12
  - D) 36
  
3. Convert the arithmetic operation  $A + B*[C*D + E*(F+G)]$  to postfix
  - A)  $AB*CD*+EF*+$
  - B)  $AB*BD*CE*+A*+$
  - C)  $CD*FG+E*+B*A+$
  - D)  $DE+C*B+A*FGH+*/$

4. Consider  $S \rightarrow 00S11|11S00|1|0$  , Which type of language generated by this grammar?
- A) strings that begin and end with the same symbol
  - B) all palindromes
  - C) all odd length palindromes
  - D) None of the mentioned
5. Tracking and recording of page modification is usually performed in hardware by adding a written-into bit to each entry of the page map table. This bit is sometimes called
- A) Buddy bits
  - B) Protection bits
  - C) Priority bits
  - D) Dirty bits