KATHMANDU UNIVERSITY
Department of Computer Science and Engineering
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INTERNAL - I, December 2025

Course: Data Structures and Algorithms (COMP 202) **F.M: 20**
Group: CS - B (II-I) / CE (II-I) **P.M: 8**
Time: 1 hour

Attempt all Questions.

Q1. Explain asymptotic notations. Calculate Big O of the following code. **[3+2 Marks]**

```
int example4(int n) {
  if (n <= 1) {
    return n;
  }
  return example4(n - 1) + example4(n - 1) + example4(n - 1);
}
```

Q2. Implement push and pop operations for a stack. You may provide either an algorithm or C code implementation. **[2+2 Marks]**

Q3. a. Evaluate the given prefix expression using stack. **[2 Marks]**

^2^32

b. Convert the given infix expression to a postfix expression. **[3 Marks]**

a+b*(c^d-e)^(f+g*h)-i

Q4. Explain the problem of queue overflow in a linear queue even when free space is available and how does a circular queue solve this problem. Mention the advantages of using priority queue over regular queue. **[4+2 Marks]**