

## Int. M.Sc. (AIML) (NEP) Sem.-3 Examination

IKS-237

IKS - II

Time : 1-00 Hour]

November-2025

[Max. Marks : 25

**Instructions:** All questions are compulsory. Use of non-programmable scientific calculator is allowed.

**Q.1 (a)** (05)  
**I.** What is the best-case time complexity of the Linear Search? (03)

**II.** Which search strategy is also called as blind search? (02)

**(b)** (05)

**I.** What will be the output of the following code? (03)

```
def recursive(n):
```

```
    if n == 0:
```

```
        return 0
```

```
    else:
```

```
        return n + recursive(n-1);
```

```
print (recursive (4))
```

**II.** What kind of distance metric(s) are suitable for categorical variables to find the closest neighbors? (02)

**OR**

**(a)** (05)

**I.** What will be the result of this code? (03)

```
def multiply (a, b):
```

```
    return a*b;
```

```
x = [2,3,4];
```

```
result =list (map (lambda x: multiply(x,2), x));
```

```
print(result)
```

**II.** If  $r = 0.55$ , then find  $r(x + 2, y + 3)$ . Here,  $r$  represents the rank of correlation. (02)

**(b)** (05)

**I.** Which data structure is mainly used for implementing the recursive algorithm? (03)

**II.** What is the term used for describing the judgmental or commonsense part of problem solving? (02)

**Q.2 (a)** (05)

**I.** Which data type is used to store a sequence of characters in Python? (03)

**II.** Which of the following algorithm design techniques is used in the quick sort algorithm? (02)

**(b)** (05)

**I.** Consider the array  $A = (4, 1, 3, 2, 16, 9, 10, 14, 8, 7)$ . After building heap from  $A$ , the depth of the heap and the right child of max-heap are \_\_\_\_\_ and \_\_\_\_\_. (03)

**II.** The technique for computing the value of the function inside the given argument is called \_\_\_\_\_. (02)

**OR**

E-1353-2

- (a) (05)
- I. The travelling salesman problem involves  $n$  cities with paths connecting the cities. What will be the time taken (worst time complexity) for traversing through all the cities, without knowing in advance the length of a minimum tour. (03)
- II. Which principle does Queue use under Depth First Search (DFS)? (02)
- (b) (05)
- I. Which sorting (Quick sort / Bubble sort) procedure is the slowest? (03)
- II. Which principle does Queue use under Breadth First Search (BFS)? (02)

**Q.3** Attempt any **FIVE** out of **SIX**: (Each carries **ONE** mark) (05)

- (1) Supervised machine learning model based on \_\_\_\_\_.
- A. Data Mining
  - B. Artificial Intelligence
  - C. Big Data Computing
  - D. Internet of Things
- (2) \_\_\_\_\_ is very important in creating animated images on the screen.
- A. Clipping
  - B. Morphing
  - C. Image transformation
  - D. Image notation
- (3) Which of the following algorithm are not an example of ensemble learning algorithm?
- A. Random Forest
  - B. Adaboost
  - C. Decision Trees
  - D. Gradient Boosting
- (4) Which command is used to remove a stored function from the database?
- A. DROP
  - B. DELETE
  - C. REMOVE
  - D. ERASE
- (5) Who developed the Python language?
- A. Guido Van Rossum
  - B. Zim Den
  - C. Niene Stom
  - D. Wick Van Rossum
- (6) The field that investigates the mechanics of human intelligence is:
- A. Computer Science
  - B. Cognitive Science
  - C. Psychology
  - D. Sociology

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