1811E1354

Candidate's Seat No :_____

Int. M.Sc. (DS) (NEP) Sem.-3 Examination

IKS-237

IKS - II

November-2025

Time : 1-00 Hour] **[Max. Marks : 25**

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

Q.1 **(a)**

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

II. Which search strategy is also called as blind search? **(03)**

(b) **(02)**

I. What will be the output of the following code? **(05)**

```
def recursive(n):
    if n == 0:
      return 0
    else:
      return n + recursive(n-1);
print (recursive (4))
```

(03)

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

OR

(a)

I. What will be the result of this code? **(05)**

```
def multiply (a, b):
  return a*b;
x = [2,3,4];
result =list (map (lambda x: multiply(x,2), x));
print(result)
```

(03)

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

(b)

I. Which data structure is mainly used for implementing the recursive algorithm? **(05)**

II. What is the term used for describing the judgmental or commonsense part of problem solving? **(03)**

(02)

Q.2 **(a)**

I. Which data type is used to store a sequence of characters in Python? **(05)**

II. Which of the following algorithm design techniques is used in the quick sort algorithm? **(03)**

(b) **(02)**

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 _____. **(05)**

II. The technique for computing the value of the function inside the given argument is called_____. **(03)**

(02)

OR

P.T.O

E1354-2

(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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