

2025

COMPUTER SCIENCE

Total marks : 70

Time : 3 hours

General instructions:

i) *Approximately 15 minutes is allotted to read the question paper and revise the answers.*

ii) *The question paper consists of 21 questions. All questions are compulsory.*

iii) *Marks are indicated against each question.*

N.B: *Check that all pages of the question paper are complete as indicated on the top left side.*

1. **Choose the correct answer from the given alternatives:** **10x1 = 10**

(a) How many levels of nesting are possible in for loop?

- i) 2
- ii) 3
- iii) both 2 and 3
- iv) any number of nesting

(b) Which of the following is not a sorting technique?

- i) Bubble sort
- ii) Selection sort
- iii) Binary
- iv) Insertion sort

(c) What will be the output of the following code?

```
def multiply (x, y = 3) :
```

```
    return x * y
```

```
print (multiply(2))
```

- i) 2
- ii) 6
- iii) 0
- iv) Error, missing one argument

(d) What mode should one use to open a file for reading and writing, but not overwriting its contents?

- i) r
- ii) w
- iii) r+
- iv) w+

(e) In which of the following algorithms, an output argument may not be required?

- i) Linear search
- ii) Pseudo-Random Number Generator
- iii) Binary search
- iv) None of these

(f) How can one save a Matplotlib plot as an image file?

- i) plt.save()
- ii) plt.write()
- iii) plt.savefig()
- iv) plt.export()

(g) Which of the following is based on the principle of First In First out?

- i) Stack
- ii) Queue
- iii) Push
- iv) Pop

(h) The description of a collection of data is called a _____.

- i) schema
- ii) table
- iii) view
- iv) none of these

17. **a.** Explain the SELECT statement. Explain the use of **in** operator in the select statement.

Or **3**

b. Write the steps to create a primary key in a table using SQL connector.

18. **a.** Write a program to find 5^n . Also, find its complexity.

Or **5**

b. Which function is used to plot a pie chart in Matplotlib? Explain its arguments.

19. **a.** Write a program to insert an element at a given position in a given list.

Or **5**

b. Convert $a+b*c - d/f$ to postfix and show each step of conversion.

20. **a.** Explain the seven layers of the OSI protocol suite.

Or **5**

b. Explain the importance of the following devices:

- (i) Repeater (ii) Routers (iii) Hub (iv) Gateway
- (v) Network Interface Controller

21. **a.** What is MySQL? State and explain the properties of MySQL.

Or **5**

b. Define cartesian product. Exemplify the concept by taking two tables having two fields respectively. Each table should have three records.
