

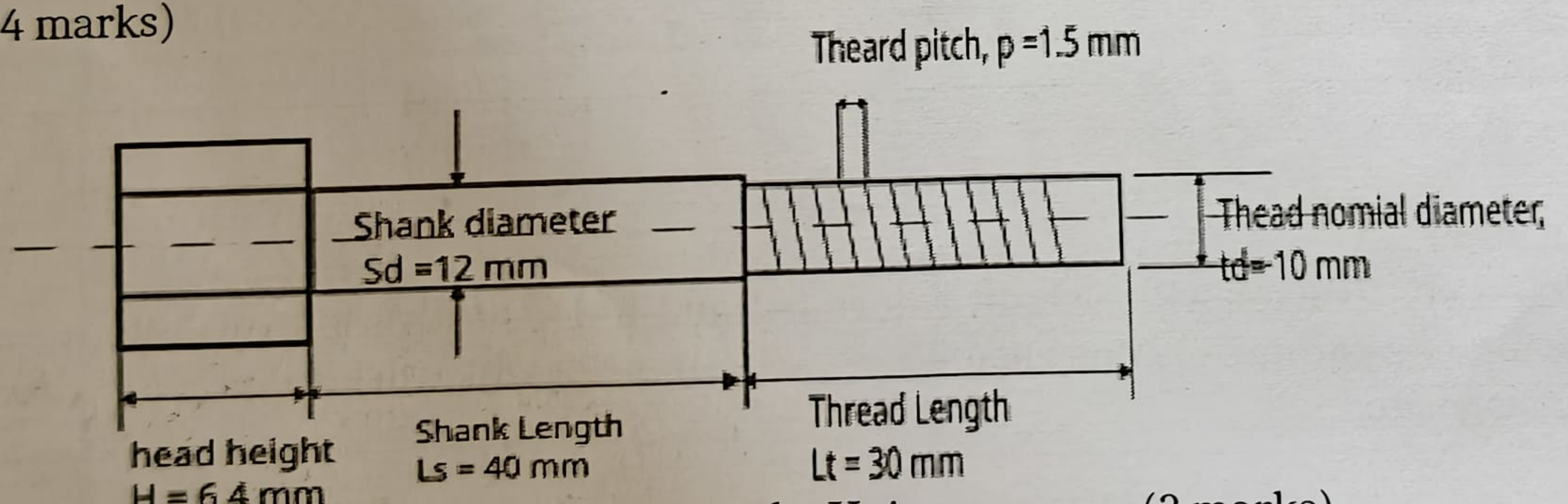


**SCHOOL OF COMPUTER SCIENCE AND ENGINEERING**  
**CONTINUOUS ASSESSMENT TEST - II**  
**WINTER SEMESTER 2025-2026**

Programme Name & Branch : M.Tech Integrated (MIC/MID)  
Course Code and Course Name : IACSE201 - Structured and Object-Oriented Programming  
Faculty Name(s) : Dr. Keyur Bhanuprasad Joshi, Rohith R, Rohini S  
Class Number(s) : VL2025260501916, 2077, 2407  
Date of Examination : 18/03/2026  
Exam Duration : 90 minutes  
Maximum Marks: 50

**General instruction(s):**

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes: (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)

| Q. No   | Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | M  | CO | BL | Module |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|--------|
| 1.<br>✓ | <p>a)</p> <p>i) Define a structure <b>bolt</b> having the member components: shank length, shank diameter, thread nominal diameter, thread length, thread pitch, head height. (3 marks)</p> <p>ii) In the main function, define two structure <b>bolt</b> objects b1, b2 and a structure <b>bolt</b> pointer p. Point p to b1. Read and write elements of b1 using pointer p. Also, read and write elements of b2 without using pointer. (4 marks)</p>  <p>b) Differentiate between a Structure and a Union. (3 marks)</p> | 10 | 3  | 2  | 3      |
| 2.      | <p>Given the following.</p> <pre>struct _datapoint{<br/>double input, output};<br/><br/>typedef struct _datapoint datapoint;</pre> <p>a) Develop a function <b>interpolate</b> that takes three arguments: two datapoints d1(x1,y1) and d2(x2,y2) and input x (double) and returns interpolated output y as follows. (assuming x1 &lt; x2). (4 marks)</p>                                                                                                                                                                                                                                                      | 10 | 3  | 3  | 3      |



# VIT

Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

SLOT: D2

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|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |   |   |   |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|---|---|
|    | $y = y_1 + \frac{(y_2 - y_1)}{(x_2 - x_1)}(x - x_1)$ <p>b) Develop a function <b>sortDatapoints</b> that takes an <b>int n</b> (size of array), and address of an array <b>datapoint* dp</b> and returns another datapoint array sorted by input values. (6 marks)</p>                                                                                                                                                                                                                                                                                          |    |   |   |   |
| 3. | <p>Consider the following program.</p> <pre>#include &lt;stdio.h&gt; int main(){ double a=5, b=7; printf("Values of a and b respectively before swapping: %d %d\n",a,b); swap(a,b); printf("Values of a and b respectively after swapping: %d %d\n",a,b); return 0; }  void swap(int a, int b){     int t =a;     a=b;     b=t; }</pre> <p>Identify the issues with the program and write the corrected code.</p> <p>b) Describe file access modes. Write steps involved in copying a file "original.txt" into a new file "backup.txt". (No program needed)</p> | 10 | 1 | 4 | 3 |
| 4. | <p>Create a class <b>cylinder</b> that has the following:</p> <p>data members:<br/>double r, h;</p> <p>constructors:<br/>- Develop a constructor with default values r=1 and h=1 that serves as default constructor, one parameter constructor and two parameter constructor.<br/>- Copy constructor</p> <p>other function:<br/>- double volume()<br/>Volume of a cylinder is:<br/><math>V = \pi \cdot r^2 \cdot h</math></p>                                                                                                                                   | 10 | 4 | 6 | 4 |
| 5. | <p>Create a class <b>window</b> that has data members int height, int width and a static int count (to keep count of number of instances of open windows). Create appropriate constructors, destructors and functions to modify count variable correctly.</p>                                                                                                                                                                                                                                                                                                   | 10 | 4 | 6 | 4 |