

Reg. No. : **E N G G T R E E . C O M****Question Paper Code : 30040**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2026.

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Second Semester

Computer Science and Engineering

CS25C07 — OBJECT ORIENTED PROGRAMMING

(Common to: Computer Science and Design/Computer Science and Engineering (Artificial Intelligence and Machine Learning)/Computer Science and Engineering (Cyber Security)/Computer Science and Engineering (Data Science)/Computer Science and Engineering (IoT)/Computer and Communication Engineering/Robotics and Artificial Intelligence/Computer Science and Business Systems)

(Regulations 2025)

Time : Three hours

Maximum : 100 marks

**CO – Course Outcomes**

|     |                                                                                   |
|-----|-----------------------------------------------------------------------------------|
| CO1 | Understand the core OOP concepts and applications.                                |
| CO2 | Apply Object Oriented Paradigms to solve problems using C++                       |
| CO3 | Design and Analyze solutions involving code reusability and complexity management |
| CO4 | Demonstrate life-long learning skills through application development             |

**BL – Bloom's Taxonomy Levels**

(L1-Remember, L2-Understand, L3-Apply, L4-Analyze, L5-Evaluate, L6-Create)

Answer ALL questions.

**PART – A (Total Marks = 40)****[Q. No. 1 to Q. No. 10 ;  $10 \times 1 = 10$  Marks (Multiple Choice Questions)****Q. No. 11 to Q. No. 20;  $10 \times 3 = 30$  Marks]**

| Q.No. | Questions                                                                     | Marks | CO | BL |
|-------|-------------------------------------------------------------------------------|-------|----|----|
| 1.    | Which operator is used for increment?<br>(A) ++<br>(B) --<br>(C) **<br>(D) %% | 1     | 1  | L1 |

|    |                                                                                                                                                                        |   |   |    |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|----|
| 2. | Which keyword is used to exit from a loop?<br>(A) continue<br>(B) stop<br>(C) break<br>(D) pass                                                                        | 1 | 1 | L1 |
| 3. | A constructor has the same name as:<br>(A) object<br>(B) datatype<br>(C) class<br>(D) function                                                                         | 1 | 2 | L2 |
| 4. | Friend functions can access:<br>(A) public members only<br>(B) protected members only<br>(C) private members<br>(D) local variables only                               | 1 | 2 | L2 |
| 5. | Operator overloading is an example of:<br>(A) runtime polymorphism<br>(B) compile time polymorphism<br>(C) abstraction<br>(D) encapsulation                            | 1 | 3 | L2 |
| 6. | Multiple inheritance means:<br>(A) one class inherits one class<br>(B) one class inherits multiple classes<br>(C) many classes inherit one class<br>(D) no inheritance | 1 | 3 | L2 |
| 7. | Late binding occurs during:<br>(A) compilation<br>(B) execution<br>(C) preprocessing<br>(D) linking                                                                    | 1 | 4 | L2 |
| 8. | A pure virtual function is declared using:<br>(A) =1<br>(B) =0<br>(C) ==0<br>(D) !=0                                                                                   | 1 | 4 | L2 |
| 9. | Which stream class is used for file input?<br>(A) ofstream<br>(B) ifstream<br>(C) fstream<br>(D) ostream                                                               | 1 | 4 | L1 |

|     |                                                                                                                                   |   |   |    |
|-----|-----------------------------------------------------------------------------------------------------------------------------------|---|---|----|
| 10. | Function templates are used to<br>(A) overload classes<br>(B) create generic functions<br>(C) allocate memory<br>(D) handle files | 1 | 4 | L2 |
| 11. | Write a note on namespaces in C++.                                                                                                | 3 | 1 | L2 |
| 12. | Write a short note on looping statements.                                                                                         | 3 | 1 | L2 |
| 13. | Write a note on destructors.                                                                                                      | 3 | 2 | L2 |
| 14. | Write a note on array of objects.                                                                                                 | 3 | 2 | L2 |
| 15. | What are single and multilevel inheritance?                                                                                       | 3 | 3 | L2 |
| 16. | Write a note on function overloading.                                                                                             | 3 | 3 | L2 |
| 17. | What is late binding in C++?                                                                                                      | 3 | 4 | L2 |
| 18. | Write a note on this pointer.                                                                                                     | 3 | 4 | L2 |
| 19. | Differentiate formatted and unformatted I/O.                                                                                      | 3 | 4 | L2 |
| 20. | Write short notes on class templates in C++.                                                                                      | 3 | 4 | L2 |

**PART B — (5 × 12 = 60 marks)**

| Q.No. |     | Questions                                                                          | Marks | CO | BL |
|-------|-----|------------------------------------------------------------------------------------|-------|----|----|
| 21.   | (a) | Compare Procedure Oriented Programming and Object-Oriented Programming in detail.  | 12    | 1  | L3 |
|       |     | <b>OR</b>                                                                          |       |    |    |
|       | (b) | Discuss flow control and decision-making statements in C++ with suitable programs. | 12    | 1  | L3 |
| 22.   | (a) | Explain inline functions and friend functions with suitable examples.              | 12    | 2  | L3 |
|       |     | <b>OR</b>                                                                          |       |    |    |
|       | (b) | Discuss constructors, destructors, and their types with example programs.          | 12    | 2  | L3 |

|     |           |                                                                                                                                                                                                                                                                                                                                                                                                                        |    |   |    |
|-----|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|----|
| 23. | (a)       | Explain unary and binary operator overloading with example.                                                                                                                                                                                                                                                                                                                                                            | 12 | 3 | L3 |
|     | <b>OR</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |    |   |    |
|     | (b)       | Discuss compile time polymorphism using function overloading and operator overloading.                                                                                                                                                                                                                                                                                                                                 | 12 | 3 | L3 |
| 24. | (a)       | Explain virtual functions, pure virtual functions, and abstract classes with examples.                                                                                                                                                                                                                                                                                                                                 | 12 | 4 | L3 |
|     | <b>OR</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |    |   |    |
|     | (b)       | Create a base class employee with a virtual function calculate_salary(). Derive two classes FulltimeEmp and ParttimeEmp from the base class and override the calculate_salary() in both derived classes. Use a base class pointer to call the overridden functions and display the salary details.                                                                                                                     | 12 | 4 | L3 |
| 25. | (a)       | Write a C++ program using class template to perform operations on two values of different data types.<br><br>Create a template class calculates with member functions to :<br>* add two values<br>* find the larger value<br>* swap the values<br>Demonstrate the template class using integer and floating-point data types.                                                                                          | 12 | 4 | L5 |
|     | <b>OR</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |    |   |    |
|     | (b)       | Write a C++ program to maintain student records using file handling and exception handling create a class student with data members such as rollno, name and marks. Perform the following operations.<br>* Write student details into a file<br>* Read and display the student details from the file.<br>* Use exception handling to handle errors such as file opening failure and invalid marks entered by the user. | 12 | 4 | L5 |