

07/03/2025  
done

F.Y.B.Sc.(I.T.) – Semester II Rev-16  
**OBJECT ORIENTED PROGRAMMING WITH C++**  
(Time: 2½ hours)

Total Marks: 75

- N. B.: (1) All questions are compulsory.  
(2) Make suitable assumptions wherever necessary and state the assumptions made.  
(3) Answers to the same question must be written together.  
(4) Numbers to the right indicate marks.  
(5) Draw neat labeled diagrams wherever necessary.  
(6) Use of Non-programmable calculators is allowed.

1. Attempt any three of the following: 15

- a. Explain the difference between Object-Oriented Analysis and Object-Oriented Design.
- b. Write a simple C++ program to calculate the sum of two numbers entered by the user.
- c. What are C++ tokens? List and explain different types of tokens in C++.
- d. How does the goto statement work in C++? Explain with an example.
- e. Write a C++ program to find whether a given number is even or odd using decision-making statements.
- f. What are pointer member operators? Give examples.

2. Attempt any three of the following: 15

- a. Define object, class, and instance with examples.
- b. Differentiate between call by reference and call by ~~address~~ <sup>value</sup> with examples.
- c. What is a friend function? Write a simple example.
- d. What is a constructor? How is it different from a normal function?
- e. Explain the concept of a function in C++ with its declaration and definition.
- f. What is function overloading? Give an example.

3. Attempt any three of the following: 15

- a. Explain multiple inheritance with an example.
- b. Explain static data members and static member function in C++ with example.
- c. Write a C++ program to demonstrate endl, setw, and setprecision manipulators.
- d. Write a C++ program to create a pure virtual function and make a derived class implement it.
- e. What is a pure virtual function? How does it lead to an abstract class?
- f. Explain this pointer in C++ with an example.

4. Attempt any three of the following: 15

- a. What are file streams in C++? Explain their types.
- b. Write a C++ program to create a function template that finds the maximum of two values.
- c. Explain the concept of throw and catch with suitable example
- d. What is the use of the eof() function in file handling? Demonstrate with an example.
- e. Write a C++ program to write "hello world" in the file .
- f. Write a C++ program to demonstrate Exception Handling.

5. Attempt any three of the following: 15

- a. Write a C++ program to swap two strings using the swap() function.
- b. Write a C++ program to illustrate the use of namespaces and avoid name conflicts.
- c. Explain inbuilt function of list with example
- d. Explain various string manipulation functions in C++.
- e. Write a C++ program to implement a memory allocation using the new and delete operators.

12103125

F.Y.B.Sc.(I.T.) – Semester II (NEP)  
WEB PROGRAMMING

(Time: 1 hour)

Total Marks: 30

- N. B.: (1) All questions are compulsory.  
(2) Make suitable assumptions wherever necessary and state the assumptions made.  
(3) Answers to the same question must be written together.  
(4) Numbers to the right indicate marks.  
(5) Draw neat labeled diagrams wherever necessary.  
(6) Use of Non-programmable calculators is allowed.

1. Attempt any three of the following: 15

- a. What is the use of arithmetic operators in JavaScript? List and explain the arithmetic operators in JavaScript.
- b. Explain the JavaScript methods to add and remove elements from an array.
- c. Explain the String HTML Wrappers in JavaScript.
- d. What will be the output of the following JavaScript program? Explain each regular expression used in the program:

```
<!DOCTYPE html>
<html>
<head>
  <title>RegExp</title>
</head>
<body>
  <script>
    var s = "This is \"Web\" Programming Examination!";
    with(document)
    {
      write("<p>s.match(/^[^d-n]/) : " + s.match(/^[^d-n]/));
      write("<p>s.match(^W/g) : " + s.match(^W/g));
      write("<p>s.match(/e./gi) : " + s.match(/e./gi));
      write("<p>s.match(/m+/g) : " + s.match(/m+/g));
      var p = /^[^0-9]/;
      var result = p.exec(s);
      write("<p>Result = " + result);
    }
  </script>
</body>
</html>
```

- e. Explain JavaScript mouse events with attributes.

F.Y.B.Sc.(I.T.) – Semester II (NEP)  
WEB PROGRAMMING

15

2. Attempt any three of the following:

- a. Write a short note on functions and variable scope in PHP.
- b. What will be the output of the following program in PHP? Explain all the functions used in the program. Add statements to perform following tasks:  
i) Extract the word Web from string s1      ii) Convert the string s2 to lowercase

```
<!DOCTYPE html>
<html>
<head>
  <title></title>
</head>
<body>
  <?php
    $s1 = "This is Web Application Development Exam!";
    $s2 = "We are in Unit II";
    echo chr(82);
    echo "<br>" . strtolower("abc", "ABC");
    echo "<br>" . strpos($s1, "m");
  ?>
</body>
</html>
```

- c. Explain the following array functions in PHP with suitable examples:  
i) array\_change\_key\_case()      ii) array\_search()      iii) sort()
- d. Explain the PHP Math functions.
- e. Explain queries to create tables and insert data into tables.

1  
500  
6/03/25

F.Y.B.Sc.(I.T.) – Semester II NEP  
FINITE MATHEMATICS

(Time: 1 hour)

Total Marks: 30

- N. B.: (1) **All** questions are **compulsory**.  
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.  
(3) Answers to the **same question** must be **written together**.  
(4) Numbers to the **right** indicate **marks**.  
(5) Draw **neat labeled diagrams** wherever **necessary**.  
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt **any three** of the following: 15

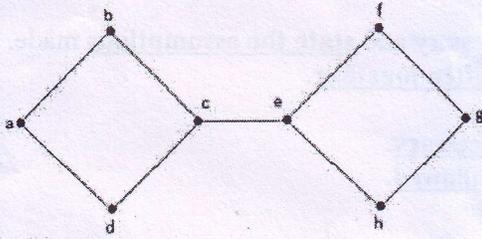
- a. In a survey of 100 students, it is observed that 45 study sociology, 38 study geography, 21 study history, 18 study sociology & geography, 9 study sociology & history, 4 study history & geography, 4 study all three subjects. Determine the number of students who study
- At least one of the subjects
  - None of the subject.
- b. Draw the Hasse diagram of POSET  $(A, R)$  where  $A = \{1, 2, 5, 10, 20\}$  &  $aRb$  if  $a$  divides  $b$ .
- c. Let  $R$  be the relation defined on set  $A = \{1, 2, 4, 9\}$  &  $aRb$  if  $|a - b| \leq 3$ .
- Find elements of  $R$
  - Find matrix form of  $R$
  - Draw diagram of  $R$
  - Determine whether  $R$  is reflexive, symmetric & transitive. Justify your answers
- d.  $f = \{(1,3), (2,1), (3,4), (4,2)\}$  &  $g = \{(1,2), (2,3), (3,1), (4,1)\}$  are given functions defined on  $A = \{1, 2, 3, 4\}$ . Determine whether they are injective, surjective & hence bijective. If it is bijective, find its inverse.
- e. If  $U = \{1, 2, 3, 4, 5, 6, 7\}$ ,  $A = \{1, 5, 6\}$ ,  $B = \{4, 6\}$ ,  $C = \{1, 4\}$  then prove or disprove
- $A - B = A \cap B'$
  - $A - (B \cup C) = (A - B) \cap (A - C)$

2. Attempt **any three** of the following: 15

- a. Among the integers 1, 2, 3, 4, 5, 6, 7, 8 four-digit number is to be formed without repetition of any digit. In how many ways these numbers can be formed if
- There is no restriction
  - Number is greater than 4000
  - Number is even
  - Number is divisible by 5

**F.Y.B.Sc.(I.T.) – Semester II NEP  
FINITE MATHEMATICS**

- b. Define: Cut vertex & Bridge  
Find cut vertex & bridge of the following graph. Justify your answer.



- c. Solve the following expression
- i)  $\times - \times + \div 635421$  given in prefix form
  - ii)  $723 \times -2^6 2 \div +$  given in postfix form
- d. Solve the recurrence relation:  $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$  with initial condition  $a_1 = 2, a_3 = 5$
- e. Probability of defective bulb is 0.02. If 200 bulbs are selected randomly from a box, what is the probability that
- i) There is no defective bulb
  - ii) There is at most one defective bulb
  - iii) There are at least 3 defective bulbs

F.Y.B.Sc.(I.T.) – Semester II NEP  
Microprocessor Architecture

18/03/25

(Time: 1 hour)

Total Marks: 30

- N. B.: (1) All questions are compulsory.  
(2) Make suitable assumptions wherever necessary and state the assumptions made.  
(3) Answers to the same question must be written together.  
(4) Numbers to the right indicate marks.  
(5) Draw neat labeled diagrams wherever necessary.  
(6) Use of Non-programmable calculators is allowed.

1. Attempt any three of the following:

15

- a. What is a microprocessor? State different features of microprocessor 8085.
- b. Explain Data, Address and Control bus in 8085.
- c. Write a short note on a Logical Group of instructions.
- d. What are addressing modes? Discuss various addressing modes of 8085 with suitable examples.
- e. Explain in detail special-purpose and general-purpose registers of 8085 microprocessor.

2. Attempt any three of the following:

15

- a. What are RST (Restart) instructions in 8085? Discuss in detail.
- b. What do you mean by an Interrupt? Explain the Hardware interrupts of 8085.
- c. Explain the following instructions with suitable examples:  
i) CMA                      ii) XCHG
- d. What do you mean by a stack memory? Explain instructions PUSH and POP with a suitable example.
- e. Specify the content of the Accumulator and the flag status as the following instructions are executed.

MVI A, 26H  
MVI D, A9H  
MVI E, 53H  
XRA D  
ADD E  
HLT

19/10/25

**F.Y.B.Sc.(I.T.) – Semester II NEP  
Microprocessor Architecture Lab  
(Time: 30 min)**

**Total Marks: 15**

- N. B.:
- (1) Make suitable assumptions wherever necessary and state the assumptions made.
  - (2) Answers to the same question must be written together.
  - (3) Numbers to the right indicate marks.
  - (4) Draw neat labeled diagrams wherever necessary.
  - (5) Use of Non-programmable calculators is allowed.

**1. Attempt any three of the following:**

**15**

- a. Explain in detail Memory Read Machine Cycle in 8085 microprocessor.
- b. Differentiate between RAM and ROM.
- c. What is a Tri-state device? Explain the concept of Buffer.
- d. What is a debugging of a program? Discuss static and dynamic debugging.
- e. Compare Memory mapped I/O and Peripheral mapped I/O.

20103125

**F.Y.B.Sc.(I.T.) – Semester II (NEP)**  
**ECO FRIENDLY COMPUTING**  
(Time: 1 hour)

**Total Marks: 30**

- N. B.: (1) **All** questions are **compulsory**.  
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.  
(3) Answers to the **same question** must be **written together**.  
(4) Numbers to the **right** indicate **marks**.  
(5) Draw **neat labeled diagrams** wherever **necessary**.

**1. Attempt any three of the following:**

**15**

- a. Explain the efforts towards greening the data centres.
- b. What are the three approaches that enterprise can adopt to green their IT? Explain.
- c. Write a note on PDA and TabletPC.
- d. What is intranet? What are different components that are required for building intranet?
- e. Justify the statement- "Green IT is a burden or an opportunity"?

**2. Attempt any three of the following:**

**15**

- a. Write a short note on the hazardous materials present in a computer.
- b. Write a short note on the life of a computer system.
- c. Give advantages and disadvantages of leasing equipment.
- d. Write a note on SMART goals.
- e. List and explain key strategies to review action plan.

F.Y.B.Sc.(I.T.) – Semester II  
Effective Communication Skills II  
(Time: 1 hour)

21/03/25

Total Marks: 30

- N. B.: (1) All questions are **compulsory**.  
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.  
(3) Answers to the **same question** must be **written together**.  
(4) Numbers to the **right** indicate **marks**.  
(5) Draw **neat labeled diagrams** wherever **necessary**.  
(6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt **any three** of the following:

15

- a. Explain the Email etiquette.
- b. What are the key factors for writing Twitter post?
- c. Write letter to Manager asking permission for the leave from job for personal reason.
- d. Write an application letter to Mantra Infotech, Andheri East for the post of web developer in reference to their advertisement in newspaper.
- e. Write Thank you letter to Chief guest for attending college annual program.

2. Attempt **any three** of the following:

15

- a. What are the important factors associated with blog writing?
- b. Write the major factors which helps to increase the reach of Instagram post.
- c. A committee has been appointed to investigate the possibility of starting a book stall in your college. Draft a report of the committee making suitable recommendations.
- d. Write article on subject - AI – merits and demerits.
- e. Complete the following story – On Monday morning Suhas was walking for the school. It was an exam day. He was rehearsing all the answers for Civics paper in his mind. Suddenly he heard a loud noise.....:

- N. B.: (1) Make suitable assumptions wherever necessary and state the assumptions made.  
(2) Answers to the same question must be written together.  
(3) Numbers to the right indicate marks.  
(4) Draw neat labeled diagrams wherever necessary.

1. Attempt any three of the following:

15

- a. Write a short note on ordered lists.
- b. Write HTML code to demonstrate CSS Font property.
- c. Explain the following:
  - i) Position property of <div> element
  - ii) Responsive web pages
- d. Explain the password field with its attributes.
- e. Explain jQuery visibility effects.