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3(Sem-8/FYUGP)BNC(A)/DSCI

2025

Computer Science

(Discipline Specific Core)

Paper Name: Object Oriented Programming through C++

Paper Code: **BCA-DSC-249**

Full Marks: 45

Time: Two Hours

(The figures in the margin indicate full marks for the questions)

Answer in English

1. Answer the following: 1x4=4

a) All members of a class are inheritable.(State whether True/False)

b) What is a Constructor ?

c) What is the default access specifier for class members ?

d) Define Polymorphism.

2. Answer any three of the following questions: 2x3=6

a) What is scope resolution operator ? Explain with an example. 1+1=2

b) Explain function overloading with an example.

c) What are the basic features in OOP ?

d) What do you mean by virtual function ?

3. Answer any three of the following questions: 5x3=15

a) Describe the opening of a file in C++ with example.

b) Write the usage of the functions put() and get().

c) Differentiate between procedural programming and object-oriented programming.

d) What do you mean by virtual function ? How does it differ from pure virtual function. 2+3=5

e) What is friend function ? Explain with suitable example. 2+3=5

4. Answer any two of the following questions 10x2=20

a) What is inheritance? What are the types of inheritance? Explain with suitable example. 2+3+5

b) Write a C++ program using class to display the information of an employee having the following information:

Emp_no, Name, Address, Department and Salary.

c) Write a C++ program to create a file and write the following content into the file…. "We are all Assamese people live in Assam".

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d. Differentiate between absolute loader and relocating loader.
e. Explain the different types of system programs with examples.

4. Answer any two from the following questions **10x2=20**

a. Explain the phases of compilation and discuss the errors detected in each phase.
b. Explain in details about NASM assembler.
c. Explain in details the structure and components of a typical operating system.

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3(Sem-8/FYUGP)BNC(A)/DSCI

2025

Computer Science

(Discipline Specific Core)

Paper Name: System Software

Paper Code: **BCA-DSC-248**

Full Marks: 45

Time: Two Hours

(The figures in the margin indicate full marks for the questions)

Answer in English

1. Answer the following questions: **1x4=4**

a. Define system Software.

b. A program in execution is called-

i) Process ii) Task iii) Command iv) Instruction

c. What is a loader?

d. Define Compiler.

2. Answer any three from the following questions: **2x3=6**

a. What do you mean by addressing nodes?

b. Mention two differences between application software and system software.

c. What are literals in assembler design?

d. Explain the purpose of relocation in loaders.

3. Answer any three from the following questions: **5x3=15**

a. Explain the phases of a compiler with a diagram.

b. Explain briefly about one pass assembler.

c. Discuss the functions of a macro processor.

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3(Sem-8/FYUGP)BNC(A)/DSCI

2025

Computer Science

(Discipline Specific Core)

Paper Name: Computer Organization and Architecture

Paper Code: **BCA-DSC-247**

Full Marks: 60

Time: Two and Half Hours

(The figures in the margin indicate full marks for the questions)

Answer in English

1. Answer the following questions as directed **1x7=7**

a) Instruction cycle =_____+ Execute cycle.
(Fill in the blank)

b) Convert the Gray code 1101 to its equivalent binary.

c) What is the function of program counter ?

d) Define Computer Organization.

e) Mention any one difference between RISC and CISC architectures.

f) Define microprocessor.

g) What is semiconductor memory ?

2. Answer any four of the following: **2x4=8**

a) What do you mean by micro-operations ? Give examples.

b) Distinguish between SRAM and DRAM.

c) What do you mean by programmed I/O/ ?

d) Mention the basic functions of the Control Unit.

e) Calculate the hexadecimal equivalent of $(10)_{10}$.

3. Answer any three of the following questions: **5x3=15**

a) Explain the differences between programmed I/O and Interrupt driven I/O.

b) Execute Y=(A-B)/(C+D×E)

c) With truth table and logic diagram explain the working of full adder Circuit.

d) Explain the basic functional units of a computer system.

e) Explain the concept and working of virtual memory.

4. Answer any three of the following questions: **10x3=30**

a) Explain the DMA controller with a neat diagram.

b) What is addressing modes ? Discuss the various addressing modes of 8085. What is the effective address of an operand ?
2+7+1=10

c) Define data path. How many types of buses are there in a computer ? Explain each type. 2+8=10

d) Discuss in detailed the memory hierarchy in computer system with suitable diagrams.

e) Discuss the design and working of a microprogrammed control unit.

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3(Sem-8/FYUGP)BNC(A)/DSCI

2025

Computer Science

(Discipline Specific Core)

Paper Name: Computer Organization and Architecture

Paper Code: **BCA-DSC-247**

Full Marks: 60

Time: Two and Half Hours

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