

**First Semester B.Sc., Degree Examinations**

**April / May 2022**

*(2019-20 Onwards)*

**COMPUTER SCIENCE - I**

**SSA740: Computer Fundamentals and C - Programming**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL the following questions :**

**5X1=5**

1. Define Computer.
2. What is a variable?
3. List Logical operators.
4. Give an example for unconditional control statement.
5. Define two-dimensional array.

**II. Answer all the following :**

**5X2=10**

6. Define the following:  
a) Assembler b) Compiler
7. List different data types in 'C'.
8. What is type conversion? Give an example.
9. Write the difference between while and do-while loop.
10. What is String? Write the String declaration syntax.

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain types of computer.
12. Explain the basic structure of C – program.
13. Explain printf and scanf statements with example.
14. Explain switch statement in C with example.
15. Explain function definition with syntax and example.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain block diagram of a computer with its functional units.  
b) List any four symbols used in flowchart. Write a flowchart to find area of circle. 5+5
17. a) What a constant? Explain various types of constants with example.  
b) Define operator. Explain arithmetic operators used in C. 5+5

*Contd...2*

18. a) What is an array? Explain one-dimensional array.  
b) Explain if-else statement with syntax and example.  
c) What is Recursion?

**5+5+1**

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**First Semester B.Sc., Degree Examinations**

April / May 2022

(Before 2012-13 Batch) (Old Scheme)

**COMPUTER SCIENCE - I**

SSA740: Digital Computer Fundamentals

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL the following questions :**

**5X1=5**

1. Expand ASCII.
2. Write the circuit diagram of Ex-WOR gate.
3. Write the truth table for half adder
4. Define Flip-Flop
5. Define Cache memory.

**II. Answer all the following :**

**5X2=10**

6. Explain 2's complement subtraction with an example.
7. List out the rules for K-map.
8. Define multiplexer. Write functional diagram of 4:1 multiplexer.
9. Define counter. List out its types.
10. Define : i) Seek ii) Latency

**III. Answer any THREE of the following questions: 3X5=15**

11. With a neat diagram, explain the block diagram of a digital computer.
12. Explain basic gates with its circuit and truth table.
13. Design and explain full subtractor.
14. Explain JK – FF with neat circuit diagram.
15. Explain the types of ROM.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain the generations of computer.  
b) State and prove Demorgan's theorem. 5+5
17. a) Convert  $A + BC$  into standard forms and show both standard forms are complement to each other.

Contd...8

**Q.P.Code No. 15125**

- b) Simplify the following expression using K-map and realize simplified expression using NAND gates only.  
 $F(ABCD) = \sum_m (0, 2, 4, 5, 8, 10, 12, 13)$  5+5
18. a) Explain 3-bit ripple up counter. 5+5  
b) Explain SISO and SIPO shift register.

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**First Semester B.Sc., Degree Examinations**

**May / June 2022**

(CBCS NEP Scheme)

**COMPUTER SCIENCE**

**Paper : NSA0320 Computer Fundamentals and Programming in C**

Time: 2 hrs.]

[Max.Marks:60

**SECTION - A**

1. *Select the most appropriate answer from options provided : 10X 1= 10 Marks*

i. Father of Computer \_\_\_\_\_

- A) Thon Van Neumann                      B) Charles Babbage  
C) Braille Pascal                              D) Garden Moore

ii. In how many generational computers are classified

- A) 3    B) 4  
C) 5    D) 6

iii. Which are of the following is not an application software package?

- A) Red Hat Linux                              B) Microsoft office  
C) Adobe PageMaker                              D) None of the above

iv. Which of the following is not a valid variable name

- A) int num;                                      B) float rate;  
C) int var ;                                      D) int \$main;

v. All keywords in C are in \_\_\_\_\_

- A) Lowercase Letters                              B) Uppercase Letters  
C) Comical Letters                              D) None of the above

vi. What is the output of the following statement ?

```
#include <stdio.h>
```

```
main ( )
```

```
{int a = 5, b = 2;
```

```
printf (" %d", (a > b)); }
```

- a) -2      b) -5      c) C : -1      d) NONE

- vii. & is a \_\_\_\_\_ type of operator
  - A) Relational
  - B) Arithmetic
  - C) Bitwise
  - D) None
- viii. Array contains \_\_\_\_\_ type of elements
  - A) Homogeneous
  - B) Heterogeneous
  - C) User defined
  - D) None
- ix. \_\_\_\_\_ stores address of another variable
  - A) Pointer
  - B) Variable
  - C) Operator
  - D) All
- x. Which of the following is not a member of structure
  - A) Data type
  - B) Function
  - C) Array
  - D) All

**SECTION - B**

Answer/Write notes on any FIVE of the following : **5X 3= 15 Marks**

- 2. What is computer ? List the characteristics of computer.
- 3. List and define the computer languages.
- 4. List any three feature of C - program.
- 5. Define variable explain declaration and initialization of variable.
- 6. Explain the arithmetic operators and conditional operators.
- 7. Explain goto, break, statements with example.
- 8. Define array and its types with examples.
- 9. What is pointer ? Explain declaration and initialization of pointer.

**SECTION - C**

Answer any THREE questions from the following. **3X 5= 15 Marks**

- 10. Write the algorithm and flow chart to find biggest of three numbers.
- 11. With example explain the formatted input and output statements.
- 12. Explain the Switch statement with example.
- 13. Explain any five string handling functions.

14. Write the difference between structure and union.

**SECTION - D**

*Answer the following:*

*2X 10= 20 Marks*

15. Explain the detailed structure of C program with example program.

**OR**

Explain the categories of function in detail.

16. Explain different types of loops with example.

**OR**

- a) Write the notations of flowchart.
- b) Write the rules of identifier.
- c) Explain symbolic constants
- d) Define constants and variables and C - token

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14. Write the difference between structure and union.

**SECTION - D**

*Answer the following:*

*2X 10= 20 Marks*

15. Explain the detailed structure of C program with example program.

**OR**

Explain the categories of function in detail.

16. Explain different types of loops with example.

**OR**

- a) Write the notations of flowchart.
- b) Write the rules of identifier.
- c) Explain symbolic constants
- d) Define constants and variables and C - token

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**First Semester B.Sc., Degree Examinations**

September / October 2022

(2019-20 Onwards)

**COMPUTER SCIENCE - I**

SSA740: Computer Fundamentals and C - Programming

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL the following questions :****5X1=5**

1. What is a compiler?
2. Who invented 'C' programming?
3. Write any two mathematical functions.
4. What is the use of break statement?
5. Define a string.

**II. Answer all the following questions:****5X2=10**

6. Write the symbols used in flowchart.
7. What are keywords and constants?
8. What is type conversion? Give an example.
9. Write the syntax for if-else statement.
10. How do you define a function? Give an example.

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain categories of computers based on size and working principle.
12. What are identifiers? List the rules of naming an identifier.
13. Explain formatted and unformatted functions.
14. Using switch-case, write a C program to evaluate arithmetic expressions.
15. Explain any five string handling functions.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain third and fourth generations of computers.

b) Convert the following :

$$E92F . AB_{(16)} = ?_{(10)} = ?_{(8)} = ?_{(2)}$$

c) Write an algorithm to find odd or even number

**(3+5+2)**

17. a) List the features of C.

b) Explain C operators.

**(4+6)****Contd...2**

18. a) Explain briefly while and do-while statements.  
b) Differentiate call – by – value and call – by – reference with example.  
c) Write the syntax for 2D array.

(4+5+1)

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**First Semester B.Sc., Degree Examinations****September / October 2022****(2016-17 Batch)****COMPUTER SCIENCE - I****SSA740: Computer Fundamentals and 'C' Programming**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL the following questions :****5X1=5**

1. Expand ASCII.
2. Define tokens.
3. List the special operators used in C.
4. What is the use of continue statement?
5. What are strings?

**II. Answer all the following :****5X2=10**

6. List the characteristics of an Algorithm.
7. Define constants. Mention its types.
8. With syntax, explain the purpose of assignment operator.
9. Explain switch statement with syntax.
10. Define Arrays. Mention its types.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Based on working principles, list and explain the types of computers.  
b) Explain information processing cycle with a neat diagram. (3+2 Marks)
12. a) What are symbolic constants?  
b) Explain the structure of a C program. (2+3 Marks)
13. a) Explain any two operators used in C with an example.  
b) Define a Macro. (4+1 Marks)
14. a) Explain FOR statements used in C with examples.  
b) State the application of BREAK statement. (4+1 Marks)
15. a) What is recursion? Explain with an example.  
b) Define nesting of functions. (4+1 Marks)

Contd...4

**I. Answer ALL the following questions :**

**5X1=5**

1. Expand ASCII.
2. Define tokens.
3. List the special operators used in C.
4. What is the use of continue statement ?
5. What are strings ?

**II. Answer all the following :**

**5X2=10**

6. List the characteristics of an Algorithm.
7. Define constants. Mention its types.
8. With syntax, explain the purpose of assignment operator.
9. Explain switch statement with syntax.
10. Define Arrays. Mention its types.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Based on working principles, list and explain the types of computers.  
b) Explain information processing cycle with a neat diagram. (3+2 Marks)
12. a) What are symbolic constants?  
b) Explain the structure of a C program. (2+3 Marks)
13. a) Explain any two operators used in C with an example.  
b) Define a Macro. (4+1 Marks)
14. a) Explain FOR statements used in C with examples.  
b) State the application of BREAK statement. (4+1 Marks)
15. a) What is recursion? Explain with an example.  
b) Define nesting of functions. (4+1 Marks)

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Briefly explain the block diagram of a computer.  
b) Write the algorithm and flowchart to find largest of two numbers. (5+5 Marks)
17. a) With syntax and example, explain the while and do-while statement.  
b) Write a note on break and continue statements. (5+5 Marks)
18. a) Explain any FIVE string handling functions.  
b) Explain parameter passing mechanism with an examples. (5+5 Marks)

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**Third Semester B.Sc., Degree Examinations**

**April / May 2022**

(New Scheme 2019-20 onwards)

**COMPUTER SCIENCE - III**

**SSC740 : Object Oriented Programming with C++**

Time: 3 hrs.

Max.Marks:50

**PART - I**

**I. Answer ALL of the following questions : 5X1=5**

1. Define Encapsulation.
2. Is Class a keyword ? True or False.
3. Define object.
4. Give an example for binary operator over loading.
5. List different visibility modes.

**PART - II**

**II. Answer all the following questions: 5X2=10**

6. What are the applications of OOPs?
7. Mention different types of tokens used in C++
8. What are the difference between structures and classes?
9. Write a note on destructors.
10. Define derived class? Write the syntax of derived class.

**PART - III**

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain basic concepts of OOPs. (5)
12. Explain different control structures. (5)
13. Explain defining member function outside the class with example. (5)
14. Write a program to add two complex numbers using operator overloading. (5)
15. Explain multiple inheritance with example. (5)

**PART - IV**

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain object-oriented programming paradigms. (5+5)
- b) What are the benefits OOPs? (5+5)

Contd...2

**Third Semester B.Sc., Degree Examinations**

**April / May 2022**

*(New Scheme 2019-20 onwards)*

**COMPUTER SCIENCE - III**

**SSC740 : Object Oriented Programming with C++**

Time: 3 hrs.

Max.Marks:50

**PART - I**

**I. Answer ALL of the following questions : 5X1=5**

1. Define Encapsulation.
2. Is Class a keyword ? True or False.
3. Define object.
4. Give an example for binary operator over loading.
5. List different visibility modes.

**PART - II**

**II. Answer all the following questions: 5X2=10**

6. What are the applications of OOPs?
7. Mention different types of tokens used in C++
8. What are the difference between structures and classes?
9. Write a note on destructors.
10. Define derived class? Write the syntax of derived class.

**PART - III**

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain basic concepts of OOPs. (5)
12. Explain different control structures. (5)
13. Explain defining member function outside the class with example. (5)
14. Write a program to add two complex numbers using operator overloading. (5)
15. Explain multiple inheritance with example. (5)

**PART - IV**

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain object-oriented programming paradigms.
- b) What are the benefits OOPs? (5+5)

Contd...2

17. a) What are the differences between C and C++ ?  
b) Write a program to demonstrate function overloading. (5+5)
18. a) Define constructor? Explain parameterized constructor with example.  
b) Explain multilevel inheritance with example. (5+5)

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17. a) What are the differences between C and C++ ?  
b) Write a program to demonstrate function overloading. (5+5)
18. a) Define constructor? Explain parameterized constructor with example.  
b) Explain multilevel inheritance with example. (5+5)

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**Third Semester B.Sc., Degree Examinations**

April / May 2022

(Before 2012-13 Batch)

**COMPUTER SCIENCE - III**

SSC740 (B) : Data Structure Using 'C'

Time: 3 hrs.

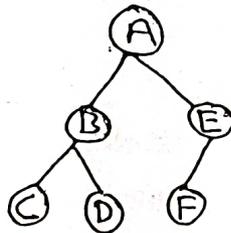
Max.Marks:50

**PART - I****I. Answer ALL of the following questions : 5X1=5**

1. What is a bit field ?
2. The keyword \_\_\_\_\_ is used for defining user defined data type.
3. Give the syntax of Malloc function.
4. Queue is \_\_\_\_\_ type of data structure.
5. Define the depth of a tree.

**PART - II****II. Answer all the following questions: 5X2=10**

6. Explain preprocessor statements ?
7. Write an algorithm to find factorial of a number using recursion.
8. Given the binary tree, write the nodes visited in inorder and preorder traversal



9. Convert the following infix expression into postfix expression.  $(A + (B - C) * D)$
10. Define doubly linked list with an example.

**PART - III****III. Answer any THREE of the following questions: 3X5=15**

11. What is Stack ? What are primitive operations on stack ? Explain with algorithm.
12. a) What are the differences between recursion and iteration  
b) Write any 2 applications of stacks.

3+2

Contd...8

13. Sort the given list of numbers using radix sort method  
21, 17, 88, 75, 64, 57
14. Write a program to implement ordinary queue.
15. Write a note on importance of Linked list over circular queue.

**PART - IV**

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Write an algorithm to convert given infix expression into postfix expression.  
b) Write C program to perform operation on circular queue. (5+5)
17. a) Write an algorithm to insert node at first and last of linked list.  
b) Explain tree traversal with an algorithm. (5+5)
18. a) Explain Shell sort with an example.  
b) Write an algorithm for binary search tree insertion. (5+5)

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G.P.Code No. 15325

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**Third Semester B.Sc., Degree Examinations**

**September / October 2022**

(New Scheme 2019-20 onwards)

**COMPUTER SCIENCE - III**

**SSC740 : Object Oriented Programming with C++**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. Define Encapsulation.
2. Define class.
3. What is the use of this Keyword ?
4. What is operator overloading?
5. Define inheritance

**II. Answer all the following questions: 5X2=10**

6. List Keyword used in C++ which are not available in 'C'.
7. Explain call by reference.
8. Write any four special operators used in C++
9. Explain function overloading.
10. What is class template? Give an example.

**III. Answer any THREE of the following questions: 3X5=15**

11. Describe the structure of C++ program.
12. Write the input and output statement used in C++
13. What are member functions ? How member functions are declared ? Explain.
14. What is friend function? Write the characteristics of friend function.
15. Write a program to display student information using single inheritance.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain basic concepts of OOPs.  
b) What are the benefits of OOPs? Explain. 5+5
17. a) Write any five differences between C and C++  
b) Write a C++ program to find biggest of two numbers and three numbers using function overloading. 5+5

Contd...2

Q.P.Code No. 15325

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**Third Semester B.Sc., Degree Examinations**

**September / October 2022**

(New Scheme 2019-20 onwards)

**COMPUTER SCIENCE - III**

**SSC740 : Object Oriented Programming with C++**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. Define Encapsulation.
2. Define class.
3. What is the use of this Keyword ?
4. What is operator overloading?
5. Define inheritance

**II. Answer all the following questions: 5X2=10**

6. List Keyword used in C++ which are not available in 'C'.
7. Explain call by reference.
8. Write any four special operators used in C++
9. Explain function overloading.
10. What is class template? Give an example.

**III. Answer any THREE of the following questions: 3X5=15**

11. Describe the structure of C++ program.
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13. What are member functions ? How member functions are declared ? Explain.
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15. Write a program to display student information using single inheritance.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain basic concepts of OOPs.  
b) What are the benefits of OOPs? Explain. 5+5
17. a) Write any five differences between C and C++  
b) Write a C++ program to find biggest of two numbers and three numbers using function overloading. 5+5

Contd...2

**Third Semester B.Sc., Degree Examinations**

September / October 2022

(New Scheme 2019-20 onwards)

**COMPUTER SCIENCE - III**

SSC740 : Object Oriented Programming with C++

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. Define Encapsulation.
2. Define class.
3. What is the use of this Keyword ?
4. What is operator overloading?
5. Define inheritance

**II. Answer all the following questions: 5X2=10**

6. List Keyword used in C++ which are not available in 'C'.
7. Explain call by reference.
8. Write any four special operators used in C++
9. Explain function overloading.
10. What is class template? Give an example.

**III. Answer any THREE of the following questions: 3X5=15**

11. Describe the structure of C++ program.
12. Write the input and output statement used in C++
13. What are member functions ? How member functions are declared ? Explain.
14. What is friend function? Write the characteristics of friend function.
15. Write a program to display student information using single inheritance.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain basic concepts of OOPs.  
b) What are the benefits of OOPs? Explain. 5+5
17. a) Write any five differences between C and C++  
b) Write a C++ program to find biggest of two numbers and three numbers using function overloading. 5+5

Contd...2

18. a) Explain the different forms of inheritances.  
b) Explain class template and function template with suitable example. 5+5

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18. a) Explain the different forms of inheritances.  
b) Explain class template and function template with suitable example. **5+5**

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**Third Semester B.Sc., Degree Examinations**

**September / October 2022**

*(2016-17 Batch)*

**COMPUTER SCIENCE - III**

**SSC740 : Object Oriented Programming with C++**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. What is an object ?
2. What is meant by nesting of member functions?
3. What is the use of constructor ?
4. \_\_\_\_\_ operator is called as extraction operator.
5. Define inheritance.

**II. Answer all the following questions. 5X2=10**

6. Write a note on Polymorphism.
7. Can we access private member function outside the class ? Justify your answer.
8. Explain the concept of destructors.
9. Mention any two rules for operator overloading.
10. Write a note on derived classes.

**III. Answer any THREE of the following questions: 3X5=15**

11. List and explain the basic concepts of OOP. 5
12. Explain friend function with example. 5
13. Explain the different types of constructor with an example program. 5
14. What is an operator overloading? Write the rules for operator overloading. 5
15. Define inheritance. Explain different forms of inheritance with diagram and example. 5

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain conditional controls with syntax and example.
- b) Compare C and C++
- c) What are the applications of object oriented program? 5+2+3

Contd...4

**Third Semester B.Sc., Degree Examinations**

September / October 2022

(2016-17 Batch)

**COMPUTER SCIENCE - III**

SSC740 : Object Oriented Programming with C++

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. What is an object ?
2. What is meant by nesting of member functions?
3. What is the use of constructor ?
4. \_\_\_\_\_ operator is called as extraction operator.
5. Define inheritance.

**II. Answer all the following questions. 5X2=10**

6. Write a note on Polymorphism.
7. Can we access private member function outside the class ? Justify your answer.
8. Explain the concept of destructors.
9. Mention any two rules for operator overloading.
10. Write a note on derived classes.

**III. Answer any THREE of the following questions: 3X5=15**

11. List and explain the basic concepts of OOP. 5
12. Explain friend function with example. 5
13. Explain the different types of constructor with an example program. 5
14. What is an operator overloading? Write the rules for operator overloading. 5
15. Define inheritance. Explain different forms of inheritance with diagram and example. 5

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain conditional controls with syntax and example.
- b) Compare C and C++
- c) What are the applications of object oriented program?

5+2+3

Contd...4

17. a) Explain different types of constructor with example program.  
b) List the characteristics of friend function.  
c) Write the rules of virtual function. 5+2+3
18. a) Write a note on class template  
b) Write a C++ program to sort an array using function template.  
c) Write a note on making private member inheritable. 2+5+3

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**Fourth Semester B.Sc., Degree Examinations**

**September /October 2022**

*(Semester Scheme 2019-20 Batch)*

**COMPUTER SCIENCE - IV**

**SSD740 : Database Management System**

Time: 3 hrs.

Max.Marks:50

Instructions to candidates :

1. Answer all questions.
2. Answer all questions.
3. Answer any **THREE** questions.
4. Answer any **TWO** questions.

**I. Answer ALL the following questions :**

**5X1=5**

1. Define database.
2. What is an entity ?
3. List any two aggregate functions in relational algebra.
4. Define union.
5. What is necessity condition for a relation is in first normal form.

**II. Answer all the following questions.**

**5X2=10**

6. What is DBMS? Mention any two DBMS applications.
7. Define following term :
  - i. Primary key
  - ii. Super key
8. Mention any two relational algebra functions.
9. List the different data types available in SQL.
10. What is normalization ? Why do we need normalization in DBMS.

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain the advantages of DBMS.
12. Explain E-R diagram with banking enterprises example.
13. With the syntax explain the basic structure of SELECT command in SQL.

*Contd...2*

- 14. Write a note on select and project used in relational algebra.
- 15. Write a note on BCNF with example.

**IV. Answer any TWO full questions: 2X10=20**

- 16. a) With a neat diagram explain various levels of abstraction in DBMS. (5+5)  
b) Write a note on database users. (5+5)
- 17. a) What is an attribute? Explain various types of attributes. (5+5)  
b) Explain the divide operators in relational algebra with an example. (5+5)
- 18. a) Briefly explain the set operation in SQL with an example. (5+5)  
b) Explain 3NF with an example. (5+5)

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# Fourth Semester B.Sc., Degree Examinations

September / October 2022

(2018-17 Scheme)

COMPUTER SCIENCE - IV

NSD740 : Database Management System

Max. Marks: 60

Time: 3 Hours

I. Answer ALL of the following questions :

5K1=6

1. List types of data independence.
2. Write the symbol used in E-R diagram for strong and weak entities.
3. What is the name given to row and column in a table?
4. What are joins?
5. First normal form is based on \_\_\_\_\_

## PART - II

II. Answer all the following questions.

5K2=10

6. Mention database languages.
7. Define super key with example.
8. Write the symbols used for select, project, rename and set difference operations.
9. What are the data types available in SQL?
10. Define normalization with example.

## PART - III

III. Answer any THREE of the following questions:

5K3=15

11. Differentiate DBMS and file management system.
12. Explain different types of attributes.
13. Explain extended relational algebra operations.
14. Explain aggregate functions.
15. Differentiate 3NF and BCNF.

Continued

**Fourth Semester B.Sc., Degree Examinations****September /October 2022****(2016-17 Scheme)****COMPUTER SCIENCE - IV****SSD740 : Database Management System**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions :****5X1=5**

1. List types of data independence.
2. Write the symbol used in E-R diagram for strong and weak entities.
3. What is the name given to row and column in a table ?
4. What are joins?
5. First normal form is based on \_\_\_\_\_

**PART - II****II. Answer all the following questions.****5X2=10**

6. Mention database languages.
7. Define super key with example.
8. Write the symbols used for select, project, rename and set difference operations.
9. What are the data types available in SQL.
10. Define normalization with example.

**PART - III****III. Answer any THREE of the following questions: 3X5=15**

11. Differentiate DBMS and file management system.
12. Explain different types of attributes.
13. Explain extended relational algebra operations.
14. Explain aggregate functions.
15. Differentiate 3NF and BCNF.

Contd...4

**IV. Answer any TWO questions:**

**2X10=20**

16. a) What are data models ?  
b) Explain data models types with advantages and disadvantages (1+9Marks)

17. Write a note on :  
a) Specialization  
b) Generalization  
c) Structure of RDBMS. (3+3+4 Marks)

18. a) Consider tables student with attributes regno, pk name, dob, doj, course FK and Markscard with attributes regno FK, sem, sub1, sub2, sub3, total, result. Write SQL statements for the following queries.

i) Find the name of the student who has scored highest marks in every sem of each course.

ii) Find names of all students whose name starts with 'm'.

iii) Find the student details in descending order of their total.

b) Explain the pitfalls in relational database design. (6+4 Marks)

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**IV. Answer any TWO questions:**

**2X10=20**

16. a) What are data models ?  
b) Explain data models types with advantages and disadvantages (1+9Marks)
17. Write a note on :  
a) Specialization  
b) Generalization  
c) Structure of RDBMS. (3+3+4 Marks)
18. a) Consider tables student with attributes regno, pk name, dob, doj, course FK and Markscard with attributes regno FK, sem, sub1, sub2, sub3, total, result. Write SQL statements for the following queries.  
i) Find the name of the student who has scored highest marks in every sem of each course.  
ii) Find names of all students whose name starts with 'm'.  
iii) Find the student details in descending order of their total.  
b) Explain the pitfalls in relational database design. (6+4 Marks)

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**Fourth Semester B.Sc., (Hon) Degree Examinations**

September /October 2022

**COMPUTER SCIENCE**

SSD240 : Fundamentals of Programming

Time: 3 hrs.

Max.Marks:60

**I. Answer the following.****1X5=5**

1. Define Algorithm
2. What is a variable ?
3. List any two logical operators.
4. 'If' is \_\_\_\_\_ Statement in C programming.
5. Write the syntax of For loop.

**II. Answer the following.****2X5=10**

6. What is Coding ?
7. What is Flow chart ? Write any two symbols used in it.
8. Write the basic programming structure of C.
9. Write the Syntax of Scanf statement.
10. Name any two software's used in Chemistry.

**III. Answer any FIVE of the following.****5X5=25**

11. Write a note on Flow chart.
12. Write a note on C tokens.
13. With example explain different Operators used in C.
14. Write a C program to find smallest among 3 numbers.
15. With Syntax write a note on Switch statement.
16. Demonstrate Break and Continue statements.
17. Write a note on chemsketch and chemdraw.

**IV. Answer any TWO of the following.****2X10=20**

18. a) Explain steps involved in Problem Solving Techniques with example.  
b) What is the importance of Testing and Debugging? (7 + 3)
19. a) With looping example explain steps involved in algorithm and flow chart.  
b) Give example for formatted input and output statements. (8 + 2)
20. a) Write a program to find whether given number is palindrome or not.  
b) Write a program to find sum and average of n numbers using for loop.

**(5 + 5)**

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**Fourth Semester B.Sc., (Hon) Degree Examinations**

**September /October 2022**

**COMPUTER SCIENCE**

**SSD240 : Fundamentals of Programming**

Time: 3 hrs.

Max.Marks:60

**I. Answer the following.**

**1X5=5**

1. Define Algorithm
2. What is a variable ?
3. List any two logical operators.
4. 'If' is \_\_\_\_\_ Statement in C programming.
5. Write the syntax of For loop.

**II. Answer the following.**

**2X5=10**

6. What is Coding ?
7. What is Flow chart ? Write any two symbols used in it.
8. Write the basic programming structure of C.
9. Write the Syntax of Scanf statement.
10. Name any two software's used in Chemistry.

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**5X5=25**

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**IV. Answer any TWO of the following.**

**2X10=20**

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19. a) With looping example explain steps involved in algorithm and flow chart.  
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20. a) Write a program to find whether given number is palindrome or not.  
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**(5 + 5)**

## Fifth Semester B.Sc., Degree Examinations

April / May 2022

(Semester Scheme) (2016-17)

**COMPUTER SCIENCE - VI**

**SSE741 Operating System and Unix**

Time: 3 hrs.

Max.Marks:50

### PART - I

**I. Answer ALL of the following questions : 5X1=5**

1. Define operating system.
2. Define Deadlock.
3. \_\_\_\_\_ unix command print name of the current system.
4. Which command is used to close the Vi editor.
5. What is the meaning of escaping in shell script.

### PART - II

**II. Answer all the following questions. 5X2=10**

6. What are time sharing systems and give their advantages.
7. List the various file attributes.
8. Differentiate cmp command from diff command.
9. Give the different operational modes of Vi editor.
10. What are the different types of shells commonly used.

### PART - III

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain FCFS scheduling algorithm with example.
12. Explain about necessary conditions for deadlock.
13. a) Briefly explain parent child relationship. In unix file system.  
b) With any two options explain wc command 3+2
14. a) How to change file permissions using chmod.  
b) Explain how to search for a pattern in Vi editor. 3+2
15. a) Explain any three grep options.  
b) Write a shell script to count the number of character in a string. 3+2

Contd...4

IV. Answer any TWO of the following:

2X10=20

- 16. a) List any three functions of operating system.
- b) Explain different types of directory structures.
- c) Explain the concept of paging.
- d) What do you mean by pre-emptive scheduling. 2+3+4+1
  
- 17. a) Explain Unix Architecture
- b) Explain : i) Cal ii) cmp iii) mv iv) cd.
- c) How do you substitute a text in Vi editor? Explain. 5+3+2
  
- 18. a) Explain while statement with suitable example.
- b) Explain relational operator with example.
- c) Explain file test operator with example.
- d) What is command line arguments? 3+3+3+1

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G.P.Code No. 15538

## PART - IV

IV. Answer any TWO of the following:

2X10=20

16. a) List any three functions of operating system.  
 b) Explain different types of directory structures.  
 c) Explain the concept of paging.  
 d) What do you mean by pre-emptive scheduling. 2+3+4+1
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 c) Explain file test operator with example.  
 d) What is command line arguments ? 3+3+3+1

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Contd...5

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2X10=20

- 16. a) List any three functions of operating system.
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2+3+4+1

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5+3+2

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- b) Explain relational operator with example.
- c) Explain file test operator with example.
- d) What is command line arguments ?

3+3+3+1

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**Fifth Semester B.Sc., Degree Examinations**

April / May 2022

(Semester Scheme (2012-13))

**COMPUTER SCIENCE - VI**

SSE741 Java Programming

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. Expand JVM.
2. Define Wrapper classes.
3. Write the syntax for defining a class.
4. Define Thread.
5. Write the syntax for finally clause.

**II. Answer all the following questions. 5X2=10**

6. Mention the types of Java statements.
7. Differentiate between while and do-while.
8. Mention the characteristics of constructor.
9. Define Synchronization. Explain with an example.
10. Write a note on graphics class.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Differentiate between C and JAVA.
- b) Define array. Write the syntax for declaration of 2-D array. 3+2
12. a) Define vector.
- b) Explain any four features of Java. 1+4
13. a) Define method overloading.
- b) Write a note on static members. 1+4
14. a) Explain API packages.
- b) Define Assertion. Explain with syntax. 3+2
15. a) Differentiate between Applet and application.
- b) Write a program to implement control loops. 3+2

**IV. Answer any TWO of the following: 2X10=20**

16. a) Define interface.
- b) Differentiate between interface and class.

- c) Explain single inheritance with syntax and example. 1+4+5
- 17. a) With a neat diagram, Explain the life cycle of thread.
- b) Define exception.
- c) With an example, explain exception handling techniques. 5+1+4
- 18. a) Define Applet & tag.
- b) With a diagram explain life cycle of Applet. 5+5

**Fifth Semester B.Sc., Degree Examinations**

April / May 2022

(Semester Scheme) (Before 2012-13)

**COMPUTER SCIENCE - VI****SSE741 : System Programming and Operating System.**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. BALR stands for \_\_\_\_\_
2. What is turn around time ?
3. \_\_\_\_\_ is the fixed table in compiler.
4. What is a macro ?
5. Define an operating system.

**II. Answer all the following questions. 5X2=10**

6. Explain spooling.
7. Differentiate between CPU scheduler and Job Scheduler.
8. Distinguish between preemptive scheduling and non-preemptive scheduling.
9. Name the four functions of loader and explain.
10. Explain nested macro calls with example.

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain various types of operating system.
12. Explain FCFS CPU scheduling algorithm with example. Mention its advantages and disadvantages.
13. Write the overview flow chart of pass – I assembler.
14. Explain compile and go loader scheme with example.
15. Explain any two file allocation methods with neat diagrams.

**IV. Answer any TWO of the following: 2X10=20**

16. What is a compiler ? Mention the phases of a compiler in Chronological order.  
Explain phases of a compiler with a neat diagram. 10
17. a) What is dead lock ? Explain the necessary conditions of a deadlock.  
b) What is directory structure ? Explain two level directory structure in file system. 5+5

Contd...8

- 18. a) Explain any two disk scheduling algorithms.
- b) Explain single contiguous memory allocation scheme.
- c) Explain databases used in assembler – pass 1.

4+3+3

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**Fifth Semester B.Sc., Degree Examinations**

**September / October 2022**

*(Semester Scheme) (2019-20 Batch onwards)*

**COMPUTER SCIENCE - V**

**SSE740 : Java Programming**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions :**

**5X1=5**

1. Expand JVM.
2. Define abstract methods
3. What is a thread?
4. What is an exception?
5. What is an applet?

**II. Answer all the following questions.**

**5X2=10**

6. What are command line arguments? How they are useful?
7. What is a Vector? How is it different form an array?
8. What is package? How to define a class in package?
9. List any four common java exceptions.
10. How applets differ from applications.

**III. Answer any THREE of the Following.**

**3X5=15**

11. a) Describe the structure of a Java program.  
b) Explain any three features of java. **2+3 Marks**
12. a) Explain static variables.  
b) Explain Access specifiers available in java. **2+3 Marks**
13. a) What is an Interface?  
b) Explain implementation of Interface with example. **1+4 Marks**
14. a) Explain Life cycle of a thread with neat diagram.  
b) Write the difference between Local applet and Remote applet. **3+2 Marks**

*Contd...2*

**Fifth Semester B.Sc., Degree Examinations**

**September / October 2022**

*(Semester Scheme) (2019-20 Batch onwards)*

**COMPUTER SCIENCE - V**

**SSE740 : Java Programming**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions :**

**5X1=5**

1. Expand JVM.
2. Define abstract methods
3. What is a thread?
4. What is an exception?
5. What is an applet?

**II. Answer all the following questions.**

**5X2=10**

6. What are command line arguments? How they are useful?
7. What is a Vector? How is it different from an array?
8. What is package? How to define a class in package?
9. List any four common java exceptions.
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b) Explain Access specifiers available in java. **2+3 Marks**
13. a) What is an Interface?  
b) Explain implementation of Interface with example. **1+4 Marks**
14. a) Explain Life cycle of a thread with neat diagram.  
b) Write the difference between Local applet and Remote applet. **3+2 Marks**

Contd...2

15. What is an exception handling? Explain exception handling mechanism with a neat diagram.

**IV. Answer any TWO of the Following.**

**2X10=20**

16. a) Explain Method overloading with suitable example program.  
b) What is inheritance? Explain single inheritance with suitable example program.

**5+5 Marks**

17. a) What is a package? How to create a package in java? Explain with example.

- b) Write a java program to illustrate the use of Multithreading.

**5+5 Marks**

18. a) Describe the life cycle of an applet with neat diagram.

- b) Explain multiple catch statements used in exception handling.

Give an example.

**5+5 Marks**

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**Fifth Semester B.Sc., Degree Examinations**

**September / October 2022**

*(2016-17 onwards)*

**COMPUTER SCIENCE - V**

**SSE740 : Java Programming.**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions :**

**5X1=5**

1. Define type conversion.
2. What is the use of super keyword ?
3. Packages act as \_\_\_\_\_ for classes.
4. Expand JDB.
5. Can we pass parameters to Applet ? Justify.

**II. Answer all the following questions.**

**5X2=10**

6. Differentiate vector and arrays.
7. How interface is different from class ? Mention any two.
8. Mention the benefits of packages.
9. Define Assertions. Write its syntax.
10. With an syntax. Explain the working of drawing an arc with its co-ordinates.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Differentiate C++ and Java.  
b) Explain Java statements. **3+2 Marks**
12. a) Mention the use of static members.  
b) Define Inheritance. Explain single inheritance with an example. **1+4 Marks**
13. a) Explain API packages.  
b) Mention the methods for blocking a threads. **4+1 Marks**
14. a) Define Exception.  
b) With an syntax and example. Explain exception handling in detail. **1+4 Marks**
15. a) Differentiate Applets and Application Program. **3+2 Marks**  
b) Write a note on Graphics class.

*Contd...4*

**IV. Answer any TWO of the following:**

**2X10=20**

16. a) With an example, explain Java program structure.

b) Explain visibility modes in detail.

**5+5 Marks**

17. a) Briefly explain the life cycle of thread.

b) With syntax and example, explain multiple catch statement.

**5+5 Marks**

18. a) With an diagram, explain the life cycle of an applet.

b) Explain applet tag and distributed in HTML.

**5+5 Marks**

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**Fifth Semester B.Sc., Degree Examinations**

**September / October 2022**

(Semester Scheme) (2019-20 onwards)

**COMPUTER SCIENCE - VI**

**SSE741 : Unix Programming**

Time: 3 hrs.

Max.Marks:50

**I. Answer the following questions :**

**5X1=5**

1. Define Operating System.
2. What is man command in unix ?
3. What are the file attributes ?
4. Define Navigations in Vi-editor.
5. What is / dev / tty Stands ?

**II. Answer all the following questions.**

**5X2=10**

6. List the functions of operating system.
7. List the features of Unix.
8. Explain the function of the following commands.  
i) od ii) cmp iii) cat iv) more
9. Explain text editing and searching pattern in Vi – editor.
10. Explain how the pattern matching is done in unix shell programming.

**III. Answer any THREE of the following questions: 3X5=15**

11. Explain
  - i) Priority scheduling with example.
  - ii) Round robin scheduling with example.
12. Explain the unix Architecture.
13. Explain
  - i) Output of ls -l with example
  - ii) gzip and gunzip with example.
14. What is vi – editor? explain the modes of vi – editor.
15. Write a note on essential shell programming.

Contd...2

**IV. Answer any TWO of the following:**

**2X10=20**

16. a) Define deadlock. Mention the deadlock characteristics.  
b) What is a file ? Explain file allocation and file access methods.  
c) Explain batch operating system and distributed operating systems. **3+4+3**
17. a) Explain the function of the following with suitable example  
i. date command  
ii. echo command  
iii. printf command  
iv. script command  
b) Explain unix file system.  
c) Explain the file permission in unix and explain how file permission can be change and how to change file ownership. **4+3+3**
18. a) How to save text and Quit from Vi – editor?  
b) Explain shell interpretive cycle.  
c) Explain  
i) How argument validation is done?  
ii) How debugging script is done? **2+3+5**

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**Fifth Semester B.Sc., Degree Examinations**

**September / October 2022**

*(Semester Scheme) (2016-17)*

**COMPUTER SCIENCE - VI**

**SSE741 Operating System and Unix**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. What is an operating system ?
2. What is a deadlock ?
3. Name any one internal command in unix.
4. How to change a file ownership?
5. What is a shell ?

**II. Answer all the following questions. 5X2=10**

6. Differentiate preemptive and non preemptive scheduling algorithms.
7. List the different file access methods.
8. Explain the parent – child relationship with suitable example.
9. List the different unix file attributes.
10. What is a shell variable ? Give an example.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) What is a scheduling ?  
b) For the following set of processes write Gantt chart and calculate average waiting time using FCFS and SJF scheduling algorithms.

| Processes | Burst time |
|-----------|------------|
| P1        | 24         |
| P2        | 03         |
| P3        | 07         |

1+4

12. a) Explain different characteristics of deadlock.

1+4

- b) What is the need of protection for files ?

Contd...4

## Fifth Semester B.Sc., Degree Examinations

September / October 2022

(Semester Scheme) (2016-17)

**COMPUTER SCIENCE - VI**

SSE741 Operating System and Unix

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. What is an operating system ?
2. What is a deadlock ?
3. Name any one internal command in unix.
4. How to change a file ownership?
5. What is a shell ?

**II. Answer all the following questions. 5X2=10**

6. Differentiate preemptive and non preemptive scheduling algorithms.
7. List the different file access methods.
8. Explain the parent – child relationship with suitable example.
9. List the different unix file attributes.
10. What is a shell variable ? Give an example.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) What is a scheduling ?  
b) For the following set of processes write Gantt chart and calculate average waiting time using FCFS and SJF scheduling algorithms.

| Processes | Burst time |
|-----------|------------|
| P1        | 24         |
| P2        | 03         |
| P3        | 07         |

1+4

12. a) Explain different characteristics of deadlock.  
b) What is the need of protection for files ?

1+4

Contd...4

13. a) Explain different features of UNIX operating system.  
b) What is the use of pwd command in unix ? Explain. 4+1
14. a) What is a Vi editor ?  
b) Explain different modes of Vi editor. 1+4
15. a) What is a shell script ?  
b) Explain the Shell's Interpretive cycle. 1+4

**IV. Answer any TWO of the following: 2X10=20**

16. a) With an example, explain round robin scheduling algorithm.  
b) What is paging ? Explain paged memory management.  
c) Write a note on deadlock prevention and avoidance. 3+3+4
17. a) With neat diagram, explain unix architecture.  
b) Explain the following UNIX commands with Synopsys and example.  
i) cat ii) ls iii) cmp iv) tar  
c) Write a note on searching for a pattern. 4+4+2
18. a) Write a shell script to add, subtract and multiply the two given numbers passed as command line arguments.  
b) Explain test and [ ] to evaluate expressions with an example.  
c) What is the use of grep command ? Explain. 4+3+3

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**Sixth Semester B.Sc., Degree Examinations**

**September / October 2022**

*(Semester Scheme) (2019-20 Batch)*

**COMPUTER SCIENCE - VII**

**SSF 740 : Advanced JAVA Programming**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions : 5X1=5**

1. Name AWT classes used to handle list events.
2. What are swings ?
3. Why JAVA bean is needed ?
4. Name the operations performed to store the data in a file.
5. What are collections ?

**II. Answer all the following questions. 5X2=10**

6. Write the methods to draw a line and a polygon along with their syntax.
7. Define event source and event listener.
8. Write any two advantages of java beans.
9. Why Resultset class is required ?
10. What are the benefits of generics ?

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Explain border and grid layout managers with appropriate example code.  
b) What is a frame ? (4+1)
12. a) Explain MVC.  
b) Mention adapter classes. (3+2)
13. Write the steps to create jar files.
14. a) Explain the structure of JDBC.  
b) Write a note on JDBC exceptions. (3+2)
15. a) Write a note on wildcards.  
b) Write the syntax of defining a generic constructor. (4+1)

Contd...2

**IV. Answer any TWO of the following questions: 2X10=20**

- 16. a) Explain the concept of colors and fonts.  
b) Explain the methods of a frame window. (6+4)
- 17. a) Write block diagram of AWT event hierarchy. Explain any two events in detail.  
b) List options used to create jar file. (8+2)
- 18. a) Explain JDBC driver types.  
b) Write a note on concrete collections. (7+3)

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**Sixth Semester B.Sc., Degree Examinations**

September / October 2022

(Semester Scheme) (2016-17 Batch)

**COMPUTER SCIENCE - VII**

SSF740 : Advanced Programming in JAVA

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions :****5X1=5**

1. Expand AWT.
2. Write package name to access swing classes.
3. List File operations.
4. Write the syntax of database url connection.
5. Define client.

**II. Answer all the following questions.****5X2=10**

6. Write an applet code to draw diagonal line.
7. Explain JButton.
8. Explain the need of JAR file.
9. Write method to check existence of file.
10. Define i) Socket ii) Port.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Briefly explain setcolor ( )  
b) List and explain any three font methods. (2+3)
12. a) Differentiate AWT and swings.  
b) List event listener types. (3+2)
13. a) Briefly explain advantage of JavaBean.  
b) How to create JAR files. Explain (3+2)
14. a) With neat diagram explain structure of JDBC.  
b) Write a note on callable statement. (4+1)
15. a) Define Collection. Explain set interface and sorted set interface.  
b) Discuss about generic methods. Explain any one (3+2)

Contd...4

**IV. Answer any TWO full questions:**

**2X10=20**

- 16. a) Explain MVC with a neat sketch.  
b) Define layout manager. List its types. Explain any two. (3+7)
- 17. a) Explain Java Bean properties.  
b) Write a note on JDBC driver types (6+4)
- 18. a) Explain Array – List and Map.  
b) Write a note on type wild cards. (6+4)

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**Sixth Semester B.Sc., Degree Examinations**

**September / October 2022**

*(New Semester Scheme 2019-2020 Onwards)*

**COMPUTER SCIENCE - VIII**

**SSF741: Software Engineering and Computer Networks**

Time: 3 hrs.

Max.Marks:50

**I. Answer ALL of the following questions :**

**5X1=5**

1. Define software engineering.
2. Mention any two design objectives
3. Define testing.
4. What is a point to point network in computer network ?
5. Expand ARPANET.

**II. Answer all the following questions:**

**5X2=10**

6. Mention any four duties of project manager.
7. Differentiate Top-down and bottom – up approach.
8. What are the principles of a project design ?
9. Define Network topology. List its types.
10. Mention the layers of TCP/IP model.

**III. Answer any THREE of the following questions: 3X5=15**

11. a) Explain the metrics of a good software.  
b) What is Reliability ? (3+2)
12. Explain the functional requirements of the software product. 5
13. Define coding. Write a note on programming principles. 5
14. Explain the applications of Internet. 5
15. Write a note on connection oriented and connection less services. 5

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Define software process and explain components of software process.  
b) Explain spiral process model with neat diagram. (5+5)
17. a) Differentiate cohesion and coupling.  
b) Define : Testing, verification, validation.  
c) Differentiate block box and white box testing. (4+3+3)

Contd...2

18. a) Explain Data link, Transport and Network layers of OSI reference model.

b) Explain Co-axial cable with a neat diagram.

**6+4**

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**I. Answer ALL of the following questions : 5X1=5**

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2. What is structural testing ?
3. What is point- to -point network ?
4. \_\_\_\_\_ layer is the lowest layer in OSI / ISO model.
5. Expand ARPANET.

**II. Answer all the following questions: 5X2=10**

6. Explain how iterative waterfall model is better than classical waterfall model.
7. Why SRS is used ?
8. Differentiate top down and bottom – up approach in coding.
9. Write any two applications of internet.
10. What are connection oriented services ?

**III. Answer any THREE of the following questions: 3X5=15**

11. Write a note on software metrics.
12. Explain design principles of SRS.
13. Explain functional testing and structural testing.
14. Write a note on wireless network.
15. Which model is better : OSI / ISO model OR TCP / IP model ? Give reasons.

**IV. Answer any TWO of the following questions: 2X10=20**

16. a) Explain prototyping model.  
b) Explain software design objectives. 5+5
17. a) Explain black box testing.  
b) Explain star and mesh topologies 4+6
18. a) Write the design issues of network.  
b) Explain co-axial cable and fibre optics cable media. 4+6

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