VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

(Autonomous & Residential)

[Affiliated to Madurai Kamaraj University]

B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Allied Subject : First Semester : Paper – I

DISCRETE MATHEMATICS

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. An empty set is denoted by _____.
   a) ϕ b) {}
   c) Both (a) and (b) d) None of these
2. A set of mn arranged in the form of a rectangle array, its being enclosed by the [ ] or ( ) or || || is called an _____.
   a) Function b) Element c) Matrix d) All of these
3. Two propositions are logically equivalent is known as _____.
   a) Implication b) Tautology c) Equivalence d) Contradictions
4. A simple graph in which each pair of distinct vertices is joined by an edge is called a _____ graph.
   a) K regular b) Digraph c) Complete d) All of these
5. A k th order linear relation is a _____ recurrence relation if f(n)=0 for all n
   a) Linear b) Homogeneous
   c) Non-Homogeneous d) All of these
6. The _____ function A(x,y) defined by A(0,y)=y+1
7. A+B=?
8. p=>p∨q logical implication is also called _____.
9. The maximum number of vertex at level k of a binary tree is _____.
10. A sequence of integer is often called a_____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) List out the different categories of operations on sets with neat Venn diagram. **(OR)**
    b) Briefly explain the following relation between sets
    i) Cartesian Product ii) Binary Relation
12. a) How to verify cayley-Hamilton theorem for the matrix $\begin{pmatrix} 11 & -4 & -7 \\ 7 & -2 & -5 \\ 10 & -4 & -6 \end{pmatrix}$ also find its inverse if possible. **(OR)**
    b) List out the types of matrices with an example.
13. a) Verify if the following proposition (p∧q)∧~(p∨q) is a contradiction with truth table. **(OR)**
    b) Obtain the principal disjunctive and conjunctive normal forms of the following formulae
    i) q∧(p∨~q) ii) p→(p∧(q→p)
    Which of the above formulas are tautologies?
14. a) Using mathematical induction prove that
    $2+5+8+\ldots+(3n-1)=\frac{n(3n+1)}{2}$. **(OR)**
    b) Find the generating function for the infinite sequence $1, \alpha, \alpha^2, \alpha^3, \ldots$ where α is a fixed constant.
15. a) Discuss on Traversal of a tree with neat diagram. **(OR)**
    b) Write short notes on Incidence and Adjacency matrices with an example.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Explain about the relation between set with an example.
17. Explain the following Matrices association
    i) Transpose of a Matrix ii) Conjugate of a Matrix
    iii) Conjugate Transpose of a Matrix
    iv) Symmetric and skew Symmetric Matrix
18. Draw logical networks for
    i) (a + b).c ii) (a + b).($\bar{a}$ + b)
    iii) (a . b)+(c . d).e iv) (a + b).(c + d)
19. Find the recurrence relation satisfying y_n = (A + Bn) 4^n.
20. Explain in detail about the basic concepts of graph with neat diagram.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Allied Subject : Third Semester : Paper – I

OPERATIONS RESEARCH

Under CBCS – Credit 5

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. Operation research approach is
   a) Multi-disciplinary b) Scientific
   c) Initiative d) Need analysis
2. The graphical method of L.P. problem uses
   a) Objective function equation b) Constraint equations
   c) Linear equations d) All the above
3. For maximization linear programming problem, the simplex method is terminated when all the net-evaluations are
   a) negative b) non-negative c) zero d) non-positive
4. An optimal assignment requires that the maximum number of lines which can be drawn through squares with zero opportunity cost be equal to the number of _____.
   a) Rows or columns b) Rows and columns
   c) Rows + columns-1 d) Rows + columns +1
5. The following methods is used in transportation models of operations research
   a) North-west corner rule b) Least cost method
   c) Vogel's approximation method d) All the above
6. OR is a _____ to problem solving.
7. For maximization LPP, the objective function coefficient for an artificial variable is _____.
8. At any iteration usual simplex method, if there is at least one basic variable in the basic at zero level and all $(z_j - c_j) \geq 0$, the current solution is _____.
9. An unbalanced problem must first be balanced with the introduction of a ____ source or destination as required.
10. In an assignment model the number of rows must be equal to the number of _____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) What are the characteristics of operations research?

(OR)

b) List out the limitations of Operations research.

12. a) Consider the following problem faced by a production planner in a soft drink plant. He has two bottling machines A and B. A is designed for 8-ounce bottles and B for 16-ounce bottles. However, each can used on both types with some loss of efficiency. The following data is available:

Machine	8-ounce bottles	16-ounce bottles
A	100/minute	40/minute
B	60/minute	75/minute

Each machine can be run 8-hours per day, 5 days per week. Profit on a 8-ounce bottle is 25 paise and on a 16-ounce bottle is 35 paise. Weekly production of the drink cannot exceed 3,00,000 ounces and the market can absorb 25,000 8-ounce bottles and 7,000 16-ounce bottles per week. The planner wishes to maximize his profit subject, of course, to all the production and marketing restrictions. Formulae this as a linear programming problem. **(OR)**

b) A Complete unit of a certain product consists of four units of component A and three units of component B. The two components (A and B) are manufactured from two different raw materials of which 100 units and 200 units, respectively, are available. Three departments are engaged in the production process with each department using a different method for manufacturing the components per production run and the

recoulting units of each component are given below:

Department	Input per run (units)		Output per run (units)	
	Raw material I	Raw material II	Component A	Component B
1	7	5	6	4
2	4	8	5	8
3	2	7	7	3

Formulate this problem as a linear programming model so as to determine the number of production runs for each department which will maximize the total number of complete units of the final product.

13. a) Obtain all the basic solutions to the following system of linear equation:

$$x_1 + 2x_2 + x_3 = 4 \qquad 2x_1 + x_2 + 5x_3 = 5.$$

(OR)

b) Show that the following system of linear equations has a degenerate solution:

$$2x_1 + x_2 - x_3 = 2 \qquad 3x_1 + 2x_2 + x_3 = 3.$$

14. a) A departmental head has four subordinates, and four tasks to be performed. The subordinates differ in efficiency, and the tasks differ in their intrinsic difficulty. His estimate, of the time each man would take to perform each task, is given in the matrix below:

Tasks	Men			
	E	F	G	H
A	18	26	17	11
B	13	28	14	26
C	38	19	18	15
D	19	26	24	10

How should the tasks be allocated, one to a man, so as to minimize the total man-hours? **(OR)**

b) A department head has four tasks to be performed and three subordinates, the subordinates differ in efficiency. The estimates of the time, each subordinate would take to perform, is given below in the matrix. How should he allocate the tasks one to each man, so as to minimize the total man-hours?

Task	**Men**		
	1	**2**	**3**
I	9	26	15
II	13	27	6
III	35	20	15
IV	18	30	20

15. a) Obtain an initial basic feasible solution to the following transportation problem using the north-west corner rule:

	D	**E**	**F**	**G**	**Available**
A	11	13	17	14	**250**
B	16	18	14	10	**300**
C	21	24	13	10	**400**
Requirement	200	225	275	250	

(OR)

b) Obtain an initial basic feasible solution to the following T.P using the matrix minima method:

	D_1	D_2	D_3	D_4	**Capacity**
O_1	1	2	3	4	**6**
O_2	4	3	2	0	**8**
O_3	0	2	2	1	**10**
Demand	**4**	**6**	**8**	**6**	

Where O_i and D_j denote ith orgin and jth destination respectively.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Explain the scope of operations research.

17. A company makes two kinds of leather belts. Belt A is a high quality belt, and belt B is of lower quality. The respective profits are Rs.4.00 and Rs.3.00 per belt. Each belt of type A requires twice as much time as a belt of type B, and if all belts were of type B, the company could make 1000 belts per day. The supply of leather is sufficient for only 800 belts per day (Both A and B combined). Belt A requires a fancy buckle and only 400 buckles per day are available. There are only 700 buckles a day available for belt B. Determine the optimal product mix.

18. Use simplex method to solve the following L.P.P:

    Maximize $z = 4x_1 + 10x_2$

    Subject to the constraints:

    $2x_1 + x_2 \leq 50$

    $2x_1 + 5x_2 \leq 100$

    $2x_1 + 3x_2 \leq 90$

    $x_1 \geq 0$ and $x_2 \geq 0$

19. A pharmaceutical company is producing a single product and is selling it through five agencies located in different cities. All of a sudden, there is a demand for the product in another five cities not having any agency of the company. The company is faced with the problem of deciding on how to assign the existing agencies to dispatch the product to needy cities in such a way that the travelling distance is minimized. The distance between the surplus and deficit cities (in km) is given in the following table:

		Deficit cities				
		a	**b**	**c**	**d**	**e**
Surplus cities	**A**	85	75	65	125	75
	B	90	78	66	132	78
	C	75	66	57	114	69
	D	80	72	60	120	72
	E	76	64	56	112	68

Determine the optimum assignment schedule.

20. Find the initial basic feasible solution to the following transportation problem using VAM , given the cost matrix:

	D_1	D_2	D_3	D_4	**Supply**
S_1	20	25	28	31	**200**
S_2	32	28	32	41	**180**
S_3	18	35	24	32	**110**
Demand	**150**	**40**	**180**	**170**	

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : First Semester : Paper – I

PROGRAMMING IN C

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. Find the value of flag where flag = (10<5) ? 5 : 10;
   a) 10 b) 5 c) false d) true
2. _____ is the special function used by the C system to tell the computer where the program starts.
   a) get() b) start() c) main() d) scanf()
3. For the array declaration int [4][2], maximum of _____ number of elements can be stored in memory.
   a) 4 b) 8 c) 42 d) 100
4. If the two strings are identical, then strcmp() function returns
   a) 1 b) 0 c) -1 d) true
5. Recursion is a function which calls _____.
   a) main function b) itself
   c) void function d) recursive function
6. _____ is a group of related data items that share a common name.
   a) Matrix b) Pointer c) Structure d) Array
7. C supports a constructed data type _____ which is a method of packing data of different types.
   a) matrix b) array c) structure d) pointer
8. All the member of a Union _____.
   a) has its own location b) has multiple locations
   c) occupies no location d) use the same location
9. _____ is a derived data type in C.
   a) Pointer b) integer c) float d) double
10. Find the value of p2 after executing the following statement. (provided, p1 is an integer pointer with initial value 1800)
    p2 = p1++;
    a) 1800 b) 1801 c) 1802 d) 1803

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) Discuss the usage of 'simple if' and 'else-if' statements. Discuss the usage of simple if and else-if statements.-7 marks

    (OR)

    b) Explain the rules and syntax to be followed or FOR statement with suitable examples.
12. a) Explain the following string handling functions.
    1. strcmp(), 2. strcat(), 3. Strcpy(), 4. Strlen()

    (OR)

    b) Write in detail about 1D arrays declaration and initialization with suitable examples.
13. a) What Recursion? Give an example program.

    (OR)

    b) What about the need for user defined functions.
14. a) Distinguish Unions from Structures.

    (OR)

    b) Write a C program to create a Structure contains the details of a book (acc. No., title, author, publication, year, edition, price and availability) and to print the same in a neat format.
    C program to print the students marks using structures.-7 marks
15. a) Discuss how a new file can be created in C.

    (OR)

    b) Write about pointer expressions.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. What are the primary data types available in C. Discuss.
17. Write a C program to find the transpose of a given n × m matrix.
18. What are the various types of functions in C? Explain.
19. Explain how structures are declared, initialized and its members are accessed? Elaborate.
20. Write about the following.
    a) Declaring and initializing of pointer variables.
    b) Write about the basic file operation in C.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : First Semester : Paper – II

DIGITAL ELECTRONICS

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. How many entries will be in the truth table of a 3 input NAND gate?

   a) 3 b) 6 c) 8 d) 9

2. The K-map contains a pair of 1's that are horizontally adjacent is called as _____.

   a) Pairs b) Quads c) Octets d) All of these

3. _____ Parity means an n-bit input has an even number of 1's.

   a) Odd b) Checker c) Even d) All of these

4. In a D flip flop number of input circuit is.

   a) 4 b) 3 c) 2 d) 1

5. A binary ripple counter can be constructed using _____ flip flops.

   a) Clocked JK b) RS c) D d) Register

6. AND operation is equivalent to _____.

7. X+X.Y=?

8. 1's complement of 11001010 is _____.

9. Master-Slave flip flop consists of _____ flip flop(s).

10. A counter is called a_____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) Briefly explain any two basic gates with neat logic circuit and truth table. **(OR)**

    b) Illustrate the Octal numbers and its explanation

12. a) Write short notes on Boolean Laws with neat logic circuit.

    (OR)

    b) Explain about the Product of Sum method with truth table and logic circuit.

13. a) Give short notes on Multiplexer (16 to 1) or (4 to 1) with truth table and neat logic circuit.**(OR)**

    b) Briefly explain about Parity Generators and Checkers with logic circuit.

14. a) Write short notes on clocked D flip flops.

    (OR)

    b) Discuss on JK Master Slave flip flop with symbol and truth table.

15. a) Write short notes on Asynchronous counters with neat diagram and truth table. **(OR)**

    b) Define registers and its types with neat diagram only.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Explain about Universal logic gates with neat logic circuit and truth table.
17. Explain in detail about K-map truth tables and its Pairs, Quads and Octets.
18. Illustrate the Demultiplexer with neat logic circuit.
19. Discuss on RS flip flop and clocked RS flip flop with neat symbol and truth table.
20. Explain the following Shift Register with neat diagram

    i) Serial In – Serial Out ii) Parallel In – Parallel Out

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : Third Semester : Paper – I

COMPUTER ORGANISATION

Under CBCS – Credit 5

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. A light sensitive device that converts drawing, printed text or other images into digital form is
   a) Keyboard b) Scanner c) OMR d) Joystick
2. Central Processing Unit (CPU) consists of
   a) control unit b) arithmetic and logic unit
   c) Memory d) all the above
3. Which representation is most efficient to perform arithmetic operations on the numbers?
   a) Sign-magnitude b) 1's compliment
   c) 2's compliment d) None of the above
4. Devices that accept data from outside computer and transfer into CPU are called
   a) input devices b) digital devices
   c) analogue devices d) truth table peripherals
5. During transfer of data between the processor and memory we use _____.
   a) Cache b) TLB c) Buffers d) Registers
6. The system software used to compile the source program is called as _____.
7. RAM is located in _____.
8. ALU stands for _____.
9. _____ is a pointing device.
10. _____ is the basic unit of memory.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) Differentiate Compiler and Interpreter.
    (OR)
    b) List out and explain the important functions of Operating system.

12. a) Write brief note on pipe line processing of instructions.
    (OR)
    b) Discuss instruction formats.

13. a) Explain about serial adder
    (OR)
    b) Comment on the division algorithm.

14. a) How does the programmed I/O basically works?
    (OR)
    b) Discuss about I/O bus.

15. a) Write short notes on auxiliary memory.
    (OR)
    b) Evaluate the difference between Virtual and Cache memory.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Discuss the basic building blocks of a computer.
17. Explain about the various addressing modes.
18. List out and explain various program control instruction.
19. Elaborately discuss about DMA.
20. Classify the different types of memory and discuss memory hierarchy.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : Third Semester : Paper – II

OBJECT ORIENTED PROGRAMMING WITH C++

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. Which day type is used to represent the absence of parameters?
   a) int b) short c) void d) float
2. Where does the execution of the program starts?
   a) User-defined function b) main function
   c) void function d) none
3. Function overloading is also similar to which of the following?
   a) operator overloading b) constructor overloading
   c) destructor overloading d) none of the mentioned
4. What is meant by multiple inheritance?
   a) Deriving a base class from derived class
   b) Deriving a derived class from base class
   c) Deriving a derived class from more than one base class
   d) None of the mentioned
5. How many types of polymorphisms are supported by C++?
   a) 1 b) 2 c) 3 d) 4
6. C++ is a true Object Oriented language: TRUE/FALSE
7. _____ is the instance of a class.
8. _____ is the function which automatically invokes the object.
9. _____ is the symbol used to create multiple inheritance.
10. The operator used for dereferencing or indirection is _____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) State and explain various benefits of OOP.
    (OR)
    b) Discuss the various data types in C++.
12. a) Write short notes on inline functions.
    (OR)
    b) Demonstrate the use of friend function.
13. a) Illustrate copy constructor in C++.
    (OR)
    b) Explain the two types of type conversion in C++.
14. a) What is Virtual base class? Explain its uses.
    (OR)
    b) How do the constructors in the derived class are implemented? Explain.
15. a) Give the significance of this pointer in C++ with illustration.
    (OR)
    b) Discuss I/O streams in C++.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Discuss the various operators in C++.
17. How to creating Objects and allocate Memory for Objects in C++?
18. Discuss Operator overloading in C++.
19. Elaborately explain various types of inheritance in C++.
20. Discuss about the virtual functions in C++ and how it helps for polymorphism?

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : Third Semester : Paper – III

DATA STRUCTURE & ALGORITHM

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. A _____ is a list of elements in which an element may be inserted or deleted only at one end.
   a) push b) pop c) stack d) none
2. A linked list is a linear collection of _____ elements.
   a) memory b) data c) type d) homogeneous
3. Nonlinear data structure is called a _____.
   a) tree b) binary c) both d) none
4. A graph G is said to be _____ if its edges are assigned data.
   a) Labeled b) loop c) edge d) weighted graph
5. _____ refers to the operation of arranging data in some giving order.
   a) order b) Sorting c) both d) none
6. A_____ is when you put a new item in the stack.
7. _____ is a linear data structure.
8. _____ is a tree data structure.
9. A _____ graph is sometimes called a digraph or directed network.
10. _____ sort is a sorting technique based on divide and conquers technique.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) Discuss about array representation of stacks.

(OR)

b) Write in detail about linked representation of queues.

12. a) Explain single linked lists with example.

(OR)

b) Explain doubly linked lists with example.

13. a) Discuss about Heap and Heap property.

(OR)

b) Write in detail about the insertion process of binary tree.

14. a) Discuss about Graph representation.

(OR)

b) Discuss about shortest paths.

15. a) Write in detail about insertion sort.

(OR)

b) Explain selection sort.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Discuss about priority queues in the standard template library.
17. Discuss about skip lists.
18. Explain polish notation and expressions trees.
19. Discuss about cycle detection.
20. Discuss about decision trees.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : Fifth Semester : Paper – I

COMPUTER NETWORKS

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. _____ networks have a single communication channel that is shared by all the machines on the network.
   a) Broadcast b) Point-to Point c) both d) none
2. An optical system has _____ components.
   a) One b) two c) three d) four
3. CRC stands for
   a) Cycle Redundancy Code b) Cyclic Redundancy Code
   c) Cycle Reduced Code d) Cycle Read Code.
4. UDP stands for
   a) User Data Protocol b) User Drive Protocol
   c) User Datagram Protocol d) Used Datagram Protocol
5. The messages to be encrypted know as the _____.
   a) Plain text b) text code c) graphics d) bits code
6. _____ networks consist of many connections between individual pair of machines.
7. _____ cable consists of a stiff copper wire as the core.
8. The _____ code is also known as CRC.
9. A variation of flooding that is slightly more practical is _____.
10. DES stand for _____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) Explain uses of computer network.

    (OR)

    b) Explain OSI reference model.
12. a) Write in detail about i) baseband coaxial cable
    ii) broadband coaxial cable.

    (OR)

    b) Explain twisted pair.
13. a) Explain error control.

    (OR)

    b) Explain flow control.
14. a) Discuss about IP address.

    (OR)

    b) Discuss about subnets.
15. a) Discuss about the user agent.

    (OR)

    b) Explain E-mail privacy.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Write in detail about TCP/IP reference model.
17. Discuss about switching in detail.
18. Explain Error detection and error correction.
19. Discuss about UDP.
20. Discuss about Digital signature.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : Fifth Semester : Paper – II

JAVA PROGRAMMING

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. _____ are the basic runtime entities in an object oriented system.
   a) Class b) Object c) both d) none
2. _____ is a user defined data type.
   a) Class b) Method c) Object d) none
3. A symbol that represents a program object is _____.
   a) data b) identifier c) operator d) class
4. A _____ is similar to a program that has a single flow of control.
   a) thread b) method c) try d) catch
5. API stands for
   a) Application Programming Interface
   b) Applied Programming Interface
   c) both d) none.
6. A value used in text is called _____.
7. A class that inherits from a base class is called _____.
8. When a class simultaneously inherits methods and fields directly from more than one base class is called _____.
9. Running more than one computer program concurrently is called _____.
10. TCP stands for _____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) Discuss about java libraries.

    (OR)

    b) Discuss about different types of operators.
12. a) Explain class fundamentals.

    (OR)

    b) Explain string class with example.
13. a) Explain methods.

    (OR)

    b) Explain constructors.
14. a) Discuss about creating thread.

    (OR)

    b) Discuss about i) try
    ii) catch
15. a) Explain applet fundamental.

    (OR)

    b) Explain TCP/IP client sockets.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. Write in detail about data types.
17. Discuss about recursion.
18. Write a java program for matrix multiplication.
19. Discuss about Exception handling.
20. Discuss about catching proxy HTTP server datagram.

10EP1A

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – III : Core Subject : Fifth Semester : Paper –I

SOFTWARE ENGINEERING

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. Computer programs and associated documentation is called
   a) Software engineering b) software
   c) Specification d) software design
2. Which is not a software life cycle model?
   a) Spiral Model b) Waterfall Model
   c) Prototyping Model d) Capability maturity Model
3. An effort is measured in terms of?
   a) Person – Months b) Persons
   c) Rupees d) Months
4. A good specification should be?
   a) Unambiguous b) Distinctly Specific
   c) Functional d) All the Above
5. Which one is software requirements specification?
   a) error handling b) functional description
   c) Performance description d) maintainability description
6. A tool in design phase is _____.
7. _____is the single attribute of software that allows a program to be intellectually manageable.
8. _____ should be logical and consistent and help users recover from errors.
9. _____is a black box testing method.
10. In the software testing process, validation testing is performed after _____.

SECTION – B

Answer ALL Questions: **(5 × 7 = 35)**

11. a) What are the Project Size Categories? Explain.

(OR)

b) How to plan an Organization Structure? Explain briefly.

12. a) Explain the software cost factors in detail.

(OR)

b) How to Estimate Software Maintenance Cost? Explain.

13. a) Give the note on Relational Notations.

(OR)

b) Describe Problem Statement Analyzer.

14. a)What are the Fundamental Design Concepts? Explain.

(OR)

b) Elaborate on Structure Analysis and Design Techniques.

15. a) Write note on Configuration Management.

(OR)

b) How to Enhance Maintainability during Software Development? Explain in detail.

SECTION – C

Answer any THREE Questions: **(3 × 10 = 30)**

16. How to plan a development process? Explain in detail.
17. Describe the Software Cost Estimation Techniques in detail.
18. Explain the format of SRS.
19. Give the detailed note on Design notations.
20. Describe the Series of System Testing.

10NE11

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

(Autonomous & Residential)

[Affiliated to Madurai Kamaraj University]

B.A./B.Sc. Degree (Semester) Examinations, November 2017

Part – IV : NME Subject : First Semester : Paper – I

INTRODUCTION TO INFORMATION TECHNOLOGY

Under CBCS – Credit 2

Time: **2** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. Computers are used in business to
   a) Process transaction
   b) Allow people to work at home
   c) Do desktop publishing of documents d) All of the above
2. The most common pointing devices
   a) Finger b) Mouse c) Trackball d) Joystick
3. Which one of the following is an output device?
   a) Keyboard b) Mouse c) Printer d) Scanner
4. The most widely used operating system is _____.
   a) DOS b) Microprocessor c) LED d) Microcontroller
5. Computers are used in home for
   a) weather forecast b) 3D Arts
   c) Online Shopping d) Process transaction
6. What is Computer?
7. Define Control unit?
8. What is ROM?
9. Explain memory?
10. Define USB?

SECTION – B

Answer ALL Questions: **(4 × 10 = 40)**

11. a) What is the use of IT in Business and Industry?

    (OR)

    b) How is IT used in Science, Engineering and Mathematics.

12. a) Explain about different type of computer.

    (OR)

    b) Explain about Memory.

13. a) Discuss about Floppy disk with neat diagram.

    (OR)

    b) Discuss about pointing devices with neat diagram.

14. a)What are the major software issues?

    (OR)

    b) How to browse the web?

SECTION – C

Answer any TWO Questions: **($2 \times 12\frac{1}{2} = 25$)**

15. What is Operating System and its types and explain the file management.
16. Briefly explain about the usage of IT in different filed.
17. Explain the storage media and its types and explain the hard disk with neat diagram.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – IV : Skill Based Subject : Third Semester : Paper – I

SYSTEM SOFTWARE

Under CBCS – Credit 2

Time: **2** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(10 × 1 = 10)**

1. All VAX programs operate in a virtual address space of _____bytes.
   a) 28 b) 216 c) 232 d) 264
2. In a assembly language program, the end of the each record is marked with a null character that is
   a) decimal 00 b) binary 00 c) octal 00 d) hexadecimal 00
3. An object program that contains the information necessary to perform modification is called a _____ program.
   a) relocatable b) object c) assembler d) system
4. A grammar for a programming language is also known as _____.
   a) syntax b) tokens c) statements d) semantics
5. Structure variables are _____.
   a) arrays b) resources c) strings d) all of these
6. In the actual editing phase, the target document is created (or) altered with a set of operations such as
   a) insert b) delete c) copy d) all the above
7. The assembler statements are called as _____.
8. What is loader?
9. Define re locatable program?
10. What is the use of the scanner in compiler design?

SECTION – B

Answer ALL Questions: **(4 × 10 = 40)**

11. a) Briefly discuss VAX architecture.

    (OR)

    b) Draw and explain T_3E architecture.

12. a) Briefly explain basic assembler functions?

    (OR)

    b) Describe the structure and logic of on pass assembler.

13. a) Briefly discuss Descent parsing with suitable example.

    (OR)

    b) What is dynamic linking? Write short note.

14. a) Briefly discuss about different types of compilers.

    (OR)

    b) Briefly discuss about Unix operating system with diagram.

SECTION – C

Answer any TWO Questions: **($2 \times 12\frac{1}{2} = 25$)**

15. Discuss about SIC/XE machine architecture.
16. Explain Multi-pass assembler in detail.
17. Explain the term “load on call” in detail.

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B.Sc. Computer Science Degree (Semester) Examinations, November 2017

Part – IV : Skill Based Subject : Fifth Semester : Paper – I

COMPETITIVE EXAMINATION FOR IT

Under CBCS – Credit 2

Time: **2** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions: **(75 × 1 = 75)**

1. Average of all prime numbers between 30 to 50
   a) 37 b) 37.8 c) 39 d) 39.8
2. Reeya obtained 65, 67, 76, 82 and 85 out of 100 in different subjects, what will be the average
   a) 70 b) 75 c) 80 d) 85
3. Find the sum of first 30 natural numbers
   a) 470 b) 468 c) 465 d) 463
4. Find the average of all numbers between 6 and 34 which are divisible by 5
   a) 15 b) 20 c) 25 d) 30
5. What was the day on 15th august 1947
   a) Saturday b) Monday c) Friday d) Sunday
6. Today is Monday. After 61 days, it will be:
   a) Saturday b) Monday c) Friday d) Sunday
7. What was the day of the week on, 16th July, 1776?
   a) Tuesday b) Monday c) Saturday d) Sunday
8. It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?
   a) Saturday b) Friday c) Monday d) Sunday
9. Find the value of $x \log_{10}{}^{3} + \log_{10}{}^{(4x+3)} = \log_{10}(x+1)+1$
   a) 7/2 b) 5/2 c) 2/5 d) ½
10. Evaluate $\log_3 27$
    a) 1 b) 2 c) 5 d) 3

11. A man buys an article for Rs. 27.50 and sells it for Rs 28.60. Find his gain
a) 1% b) 2% c) 4% d) 3%

12. A TV is purchased at Rs. 5000 and sold at Rs. 4000, find the lost percent.
a) 10% b) 20% c) 25% d) 28%

13. A person incurs a loss of 5% be selling a watch for Rs. 1140. At what price should the watch be sold to earn 5% of profit?
a) RS.1200 b) RS.1230 c) RS.1260 d) RS.1290

14. A book was sold for Rs 27.50 with a profit of 10%. If it were sold for Rs. 25.75, then would have been percentage of profit and loss?
a) 1% profit b) 3% profit c) 2% loss d) 3% loss

15. Alfred buys an old scooter for Rs. 4700 and spends Rs. 800 on its repairs. If he sells the scooter for Rs. 5800, his gain percent is
a) 6/19% b) 6/17% c) 5*5/11% d) 3*5/11%

16. What percent is 70 of 280?
a) 25% b) 50% c) 75% d) none

17. What percent is 36paisa's of 12 rupees?
a) 3% b) 0.03% c) 0.0035% d) none

18. Find the highest common factor of 36 and 84.
a) 4 b) 6 c) 12 d) 18

19. Find the H.C.F of 2/3, 8/9, 94/81, 10/27
a) 2/3 b) 2/81 c) 160/3 d) 160/81

20. The L.C.M of 148 and 185 is
a) 680 b) 740 c) 2960 d) 3700

21. Distance between two stations A and B is 778 km. A train covers a journey from A to B at 84 km per hour and returns back to A with uniform speed of 56 km per hour. Find the average speed of train during the whole journey.
a) 67.2 km/hr b) 68 km/hr c) 69 km/hr d) 65 km/hr

22. Find the square root of 6084
a) 75 b) 74 c) 78 d) 72

23. Arrange the words given below in a meaningful sequence.

1. Income 2. Status 3. Education

4. Well-being 5. Job

a) 3, 1, 5, 2, 4 b) 1, 3, 2, 5, 4 c) 1, 2, 5, 3, 4 d) 3, 5, 1, 2, 4

24. Arrange the words given below in a meaningful sequence.
1. Leaves 2. Branch 3. Flower
4. Tree 5. Fruit
a) 4, 3, 1, 2, 5 b) 4, 2, 5, 1, 3 c) 4, 3, 2, 1, 5 d) 4, 2, 1, 3, 5

25. Computers use the _____ language to process data.
a) relational b) megabyte c) binary d) Processing

26. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?
a) 1/2 b) 2/5 c) 8/15 d) 9/20

27. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?
a) 10/21 b)2/7 c) 7/2 d) 21/10

28. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?
a) 1/3 b) 3/1 c) 5/8 d) 4/3

29. What is the probability of getting a sum 9 from two throws of a dice?
a) 1/6 b) 1/8 c) 1/9 d) 1/12

30. Three unbiased coins are tossed. What is the probability of getting at most two heads?
a) 3/4 b) 1/4 c) 3/8 d) 7/8

31. Four dice are thrown simultaneously. Find the probability that all of them show the same face.:
a) 1/216 b) 1/36 c) 4/216 d) 3/216

Directions 32 to 36 find odd man out

32. 3, 5, 11, 14, 17, 21
a) 21 b) 11 c) 14 d) 21

33. 8, 27, 64, 100, 125, 216, 343
a) 27 b) 100 c) 125 d) 343

34. 10, 25, 45, 54, 60, 75, 80
a) 45 b) 10 c) 54 d) 80

35. 396, 462, 572, 427, 671, 264
a) 396 b) 427 c) 572 d) 264

36. 6, 9, 15, 21, 24, 28, 30
a) 28 b) 24 c) 6 d) 30

37. A person crosses a 600 m long street in 5 minutes. What is his speed in km per hour?
a) 3.6 b) 7.2 c) 8.4 d) 10

38. An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in $1\frac{2}{3}$ hours, it must travel at a speed of
a) 300 kmph b) 360 kmph c) 600 kmph d) 720 kmph

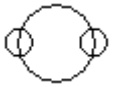
39. Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?
a) 7 b) 10 c) 12 d) 13

40. Look at this series: 53, 53, 40, 40, 27, 27, ... What number should come next?
a) 12 b) 14 c) 27 d) 53

41. Look at this series: 31, 29, 24, 22, 17, ... What number should come next?
a) 15 b) 14 c) 13 d) 12

42. Which of the following diagrams indicates the best relation between Author, Lawyer and Singer?
a)  b)  c)  d) 

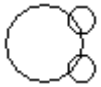
43. Which of the following diagrams indicates the best relation between Travellers, Train and Bus?
a)  b)  c)  d) 

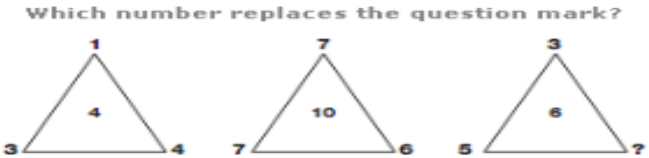
44. Which of the following diagrams indicates the best relation between Profit, Dividend and Bonus
a)  b)  c)  d) 

45. Which of the following diagrams indicates the best relation between Women, Mothers and Engineers?

a)  b)  c)  d) 

46. Which of the following diagrams indicates the best relation between Factory, Product and Machinery

a)  b)  c)  d) 

47. 

a) 5 b) 4 c) 1 d) 3

48. A/2, B/4, C/6, D/8 .?,?

a) E/8, F/10 b) E/12, F/14 c) E/10, F/12 d) D/10, E/10

49. Coffee : cup :: soup : ?

a) chicken b) apptizer c) bowl d) plate

50. Doctor : Patient : : Politician : ?

a) voter b) chair c) money d) people

51. Add, Subtract, Multiple and logic operations are performed by

a) Memory b) Control unit c) ALU d) none of the above

52. In digital computer, data is represented in

a) Octal form b) Hexadecimal form
c) Binary form d) Numerical form

53. Which of the following memories must be refreshed many times per second ?

a) **A** ROM b) **A** RAM c) Dynamic RAM d) EPROM

54. What is a set of instructions that directs the computer to process information?

a) Software b) Compiler
c) Both [A] and [B] d) None of the above

55. The intersection areas of rows and columns in spreadsheet are called

a) Box b) Cells c) Line d) None of the above

56. CD-ROM is a _____.
a) A Memory register b) Semiconductor memory
c) Secondary Memory d) none of the above

57. Which of the following is a secondary memory device?
a) A ROM b) A MEMORY Disk
c) Keyboard d) Mouse

58. Which of the following is used as primary storage devices?
a) A Magnetic drum b) Floppy
c) DVD d) **D** RAM

59. Which memory is volatile in nature?
a) A ROM b) A RAM c) Dynamic RAM d) EPROM

60. Where was the first computer installed in India?
a) Indian Statistical Institute, Kolkata
b) Indian Statistical Institute, Chennai
c) Indian Space Research Institute
d) none

61. In internet terminology IP means
a) Internet Protocol b) internet
c) process intranet protocol d) none

62. The first page of a website is called the
a)web page b) home page c) static page d) website

63. A website address is a unique name that identifies a specific _____ on the web.
a) link b) connection c) protocol d) website

64. A _____ is a computer attached to the internet that runs special web server software and can send web pages out to the other computer over the internet.
a) web server b) http c) protocol d) none

65. Which software application is used for accessing sites or information on a network (as the world wide web)?
a) web applications b) applications software
c) web browser d) website

66. It is a small piece of text stored on a user's computer by a web browser for maintaining the state. What we are talking about?
a)cache b) memory c) cookies d) none

67. Which company is nicknamed "Big Blue"?
a) IBM b) HCL c) TCS d) WIBRO

68. paint: brush::thread::_____
a) dress b) scissors c) drawing brush d) needle

69. 
a)  b)  c)  d) 

70. The decimal number 58 is equivalent to
a) 111010 b) 100111 c) 100110 d) 000111

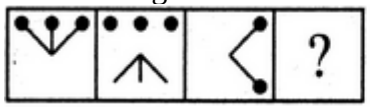
71. The Binary number 10101111 is equivalent to
a) 175 b) 176 c) 170 d) 172

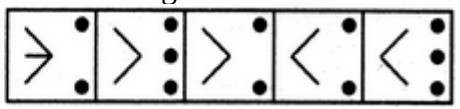
72. The medicine gave him a short _____ escape from the suffering.
a) Escape b) relief c) respite d) release

73. The serious _____ with her is that she does not know typing.
a) disadvantage b) inconvenience c) handicap d) obstacle

74. 

a) 1 b) 2 c) 3 d) 4

75. Select a suitable figure from the Answer Figures that would replace the question mark (?).
Problem Figures: Answer Figures:



(A) (B) (C) (D) (1) (2) (3) (4) (5)
a) 1 b) 2 c) 3 d) 4