20/12/2023

Printing Pages :2
Paper Code: BCA-301 B SVSU:2023-24/R)

Enrollment No.													

COURSE NAME: BCA
II YEAR III SEMESTER EXAMINATION
Subject Name: Discrete Mathematics, Subject Code: BCA -301

[Time : 3:00 Hours] **[Max. Marks : 70]**

I. Objectives Question: Answer All Question **[15×1=15]**

1. The truth values are .....
   (a) 0 (b) 1 , 2 (c) 0 and 1 (d) 2.
2. The Conditional is represented by :
   (a) ∨ (b) ∧ (c) → (d) ↔ .
3. The D' Morgan's low is:
   (a) ⌉p∧⌉q = ⌉p∧⌉q (b) ⌉(pv q)= ⌉p∧⌉q
   (c) ⌉(pv q)= p∧⌉q (d) ⌉(pv q)= ⌉p∧q
4. The output of a 2 input OR gate is 0 only when its
   (a) both input are 0 (b) either input is 0
   (c) both input are 1 (d) either input is 1
5. In Boolean Algebra , a.(a + b. (a + b)) is equal to :
   (a) a (b) c (c) a + b (d) c.b
6. The sum of products form of ab + bc′ is:
   (a) abc + abc′ +a′ bc′ (b)abc + abc′ +a′ b′c′
   (c) abc′ + a′ bc′ +a′ b′c′ (d) abc′ + a′bc′ +a′ b′c
7. The maximum number of edges in a simple graph with n vertices is :
   (a) $\frac{n(n-1)}{2}$ (b) $\frac{n(n+1)}{2}$ (c) $\frac{(n-1)}{2}$ (d) $\frac{n(n-1)}{3}$
8. The minimum number of edges in a connected graph with n vertices is:
   (a) n− 1 (b) n + 1 (c) n (d) none of these
9. Any connected graph with n vertices and (n − 1) edges is a :
   (a) rooted tree (b) tree (c) binary tree (d) none of these
10. Let A = { a , b } , determine whether or not r = a* is regular expression over A,
    (a)yes (b)no (c) both (a)&(b) (d)none of these
11. Determine type of the grammar G which consists of the production , S → aA, A → aAB, B → b, A→ a
    (a)Type-2 (b)Type-0 (c)Type-1 (a)Type-3
12. The Type-2 grammar is often called... ... ...grammar.
    (a)context sensitive (b)context free (c)regular (d) none of these.

13. The maximum number of states of a DFA converted from an NFA with n states is:
(a) n (b) 2^n (c) n^2 (d)none of these

14. Determine type of the grammar G which consists of the production , S → aB, B → AB, aA → b,A → b, B→ Aa
(a)Type-2 (b)Type-0 (c)Type-1 (d)Type-3

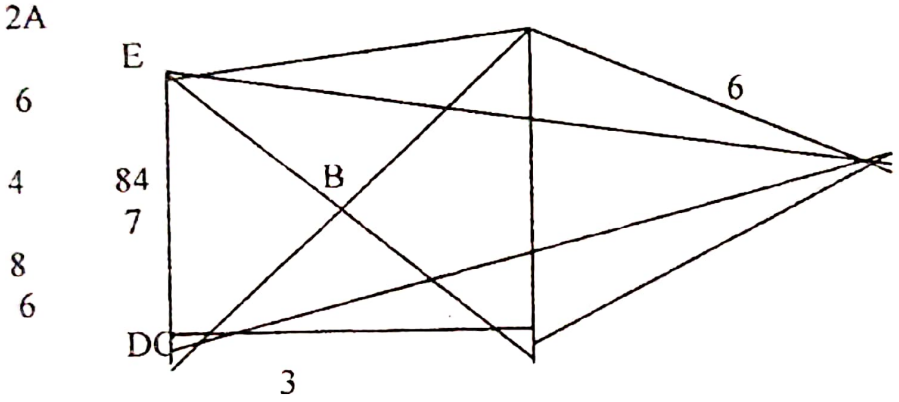
15. The Type-3 grammar is often called ... ... grammar.
(a)context sensitive (b)context free (c)regular (d) none of these

II Long Question : Answer Any Three **[10×3=30]**

1. Prove that:
(i) $p \rightarrow (q \rightarrow p) \equiv \sim p \rightarrow (p \rightarrow q)$ (ii) $\sim p \rightarrow (q \rightarrow r) \equiv q \rightarrow (p \vee r)$.

2. (i) In Boolean Algebra if $a + b = 1$ and $a.b = 0$, than show that $b = a'$
(ii) Use Karnaugh map to simplify the function :
$X = A'B'C' + A'B'C + A'BC + A'BC' + AB'C + ABC$.

3. Find the Minimum spanning tree for the weighted graph by using Kruskal's Algorithm.



4. Define and describe the finite state machine with one example.
5. Define Chomsky Hierarchy.

III. Short Question: Answer any Five **[5×5=25]**

1. Prove that by truth table: ~(P VQ)≡~PA~Q.
2. Explain tautology and contradiction with examples.
3. Define derived connectives NAND,NOR and XOR gates with the help of truth table.
4. Use Karnaugh map to simplify the:$X = ABC' + ABC$.
5. Explain union and intersection of graph with one example each.
6. Define binary tree with an example.
7. Define Finite State Automata.
8. Define phase structure grammars.
9. Find the difference between Moore Machine and Mealy Machine.
10. Define Pushdown Automata.

23/12/2023

Printing Pages :2

Paper Code: BCA-302 **B (SVSU:2023-24/R)**

Enrollment No.													

BCA

III SEMESTER/II YEAR EXAMINATION

Subject Code- BCA-302

Subject Name- OPERATING SYSTEM

[Time : 3:00 Hours] **[Max. Marks : 70]**

Note : **Attempt all the questions as per given instructions.**

I. Multiple Choice Questions(MCQ) **[1x15= 15]**

1. **Which of the following is a condition that causes deadlock?**
   a. Mutual exclusion b. Hold and wait c. Circular wait d. All of these
2. **Where are placed the list of processes that are prepared to be executed and waiting?**
   a. Job queue b. Ready queue c. Execution queue d. Process queue
3. **What type of scheduling is round-robin scheduling?**
   a. Linear data scheduling b. Non-linear data scheduling
   c. Preemptive scheduling d. Non-preemptive scheduling
4. **Which of the following options is correct about the windows operating system?**
   a. Windows is a CUI operating system. b. Windows is based on CUI.
   c. Windows is a GUI operating system. d. None of the these
5. **The operating system work between**
   a. User and Computer b. Network and User
   c. One user to another user d. All of the these
6. **Which of the following statement is correct about fragmentation?**
   a. It is software that connects the OS. b. It is part of the software.
   c. Loss the memory d. All of the these
7. **The PCB is identified by.**
   a. Real-Number b. Binary Number c. Store block d. Integer Process ID
8. **Which of the following is the extension of Notepad?**
   a. .txt b. .xls c. .ppt d. .bmp
9. **What is the full name of FAT?**
   a. File attribute table b. File allocation table
   c. Font attribute table d. Format allocation table
10. **When does page fault occur?**
    a. The page is present in memory. b. The deadlock occurs.
    c. The page does not present in memory. d. The buffering occurs
11. **Which of the following is a single-user operating system?**
    a. Windows b. MAC c. Ms-Dos d. None of these
12. **Which of the following is not application software?**
    a. Windows 7 b. WordPad c. Photoshop d. MS-excel

13. What is compaction?

a. a technique for overcoming internal fragmentation
b. a paging technique
c. a technique for overcoming external fragmentation
d. a technique for overcoming fatal error

14. Run time mapping from virtual to physical address is done by

a. Memory management unit b. CPU
c. PCI d. None of the mentioned

15. Light weight process is called?

a. Thread b. Tiny process c. Small process d. Stack

II. Long Question: Answer Any Three [10x3=30]

1. Explain about Paging.
2. What is operating system? Explain different types of operating system.
3. Consider a reference string: 3, 0, 6, 1, 7, 6, 1, 4, 7, 4. the number of frames in the memory is 3. Find out the number of page faults respective to optimal page replacement algorithm.
4. Discuss about round robin scheduling with example?

III. Short Question: Answer Any Five [5x5=25]

1. What is PCB in operating system?
2. What is compaction in memory management.
3. What are the three main purposes of an operating system?
4. What is schedular?
5. What is the use of mutual exclusion in deadlock?
6. What is difference between base address and limit address?
7. What do you mean by demand paging paging?
8. Discuss about external fragmentation.

26/12/2023

Printing Pages :2

Paper Code: BCA-303 B (SVSU:2023-24/R)

Enrollment No.													

BCA

III Semester / II Year Examination

Subject Code- BCA-303

Subject Name: Data structure & programming with "C"

|Time : 03:00 Hours | **|Max. Marks : 70|**

Note : Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **|01 × 15=15|**

I An index is a pair of elements comprising key and a file pointer or record number. A file in which indices are is known as ____

a. Index file c. Sort file

b. Key file d. None of above

II A data item that can be used to distinguish between two entities (records) is known as

a. Alternate key c. Primary key

b. Primary data item d. Unique data item

III A data structure whose elements form a sequence is known as_____

a. Heterogeneous data structure b. Homogeneous data structure

c. Linear data structures d. Non- linear data structure

IV Which of the following data structure is used to represent hierarchical relationship among its elements?

a. Queue b. Hash table c. Tree d. Graph

V Which of the following statements about a binary tree is not correct?

a. Every binary tree has at least one node

b. Every non-empty tree has exactly one root node

c. Every node has at most two children

d. Every non-root node has exactly one parent

VI What is the worst-case time for serial search finding a single item in an array?

a. Quadratic time b. Linear time

c. Logarithmic time d. Constant time

VII A non-circular doubly linked list can best and most generally be defined as a ___

a. Set of elements, each with two pointers

b. Set of elements chained together with pointers

c. Linear sequence of elements in sequential memory locations

d. Linear sequence of elements chained together with pointers

VIII Which of the following operations is a dictionary operation?

a. Search b. Delete c. Insert d. All of above

IX To create a linked structure, each node must have one member, which is

a. A pointer to the head of the list b. A pointer to NULL
c. A pointer to the node type d. A reference to the element type

X Each attribute of an entity has a defined set of values. This set of values is called a

a. Mapping b. Entity set c. Domain d. Range

XI Which of the following is not an open addressing technique to resolve collisions?

a. Linear probing b. Cubic probing
c. Double hashing d. Quadratic probing

XII Which of the following file organizations is not suitable for an interactive application?

a. Indexed sequential file organization b. Inverted file organization
c. Sequential file organization d. Relative file organization

XIII Which of following is not a type of a I/O channel?

a. Block multiplexer b. Multiplexer
c. Selector d. Demultiplexer

XIV A linear list in which elements can be added or removed at either end is known as

a. Circular queue b. Priority queue c. Queue d. Deque

XV Which of the following tree maintains a list of the keys in sequential order?

a. B+-tree b. B*-tre c. B-tree d. m-way search tree

2. Answer in long (any three) **[10 ×3=30]**

I Explain different operators used in C language with a suitable program?

II What is a Linked List and what are its types? Explain in details?

III What are pointers? Explain the use of pointers?

IV What is the use of searching and sorting in data structure? Explain its uses?

3. Answer in short (any five) **[5 x5=25]**

I What is a Queue, how it is different from stack and how is it implemented?

II What is an Array? Explain different types of array we can use in C language?

III What is a Queue? Explain different applications used by Queue?

IV What is a Stack? Explain different applications used by Stack?

V Convert the following infix expression to prefix expression:
((A - B) * C + (D / (E + F) – G) + H)

VI State the merits and demerits of static and dynamic memory allocation techniques?

VII What is the role of file handling in C? Explain.

VIII What is the use of Macros?

Printing Pages :2 29/12/2023

Paper Code: BCA-304S-A A (SVSU:2023-24/R)

Enrollment No.													

BCA

III Semester / II Year Examination

Subject Code- BCA – 304S - A

Computer Hardware Technology & Installation

[Time : 03:00 Hours] **[Max. Marks : 70]**

Note : Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01mark ×15=15]**

I .....is a combination of hardware and software that facilitates the sharing of information between computing devices.
a. Network b. Peripheral c. expansion board d. digital device

II Coded entries which are used to gain access to a computer system are called
a. Entry codes b. Passwords c. Security commands d. Code words

III Which of the following statements is true?
a. Minicomputer works faster than Microcomputer
b. Microcomputer works faster than Minicomputer
c. Speed of both the computers is the same
d. The speeds of both these computers cannot be compared with the speed of advanced

IV You organize files by storing them in
a. Archives b. Folders c. Indexes d. Lists

V What type of resource is most likely to be a shared common resource in a computer Network?
a. Printers b. Speakers c. Floppy disk drives d. Keyboards

VI Which one of the following is NOT a computer language
a. MS-Excel b. BASIC c. COBOL d. C++

VII RAM is also called as
a. Read / Write Memory b. Long Memory
c. Permanent Memory d. Primary Memory

VIII Select the Odd one
a. Operating system b. Interpreter c. Compiler d. Assembler

IX All of the following are examples of storage devices EXCEPT :
a. hard disk drives b. printers
c. floppy disk drives d. CD drives

X The CPU and memory are located on the :
a. expansion board b. motherboard
c. storage device d. output device

XI The new ___ integrates the function of a processor, memory and video on a single chip.
a. Chip processor b. System on a chip
c. Power processor d. Micro processor

XII The box that contains the central electronic components of the computer is the
a. Input device b. Peripheral c. System unit d. Motherboard

XIII A microprocessor used in
a. Personal computer b. ENIAC
c. Mini computer d. Mainframe computer

XIV Which of the following is not an example of hardware?
a. Excel b. Monitor c. Printer d. Mouse

XV A device that is connected to the motherboard is ___
a. must connect using ribbon cable b.called a peripheral device
c. called an adjunct device d. called an external device

2. Answer in long (any three) **[10 ×3=30]**

I What is the difference between an error and bug?

II What is a Virtual Machine and how does it work?

III What are the advantages of Windows?

IV What are Expansion slots in CPU? Explain.

3. Answer in short (any five) **[5x5=25]**

I How to fix a computer error? Explain.

II What are the different types of Windows installation?

III What are the disadvantages of Windows?

IV Explain Motherboard components?

V What do you mean by Troubleshooting? Explain it with a relevant example.

VI Where is the power supply located in a computer? Explain its functionality.

VII Explain the difference between On-Line UPS and Standby UPS?