JKPSC
AP

Previous Year Paper
(Computer Applications)
17 Mar, 2024

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

Booklet Serial No. 216953

Test Booklet Series

TEST BOOKLET
COMPUTER APPLICATIONS
Written Test - 2023
(36)

A

Time Allowed: Two Hours ***Maximum Marks: 120***

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET ***DOES NOT*** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. **Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.**
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4. This Test booklet contains **120** items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ***ONLY ONE*** response for each item.
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9. Sheets for rough work are appended in the Test Booklet at the end.
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11. **Penalty for wrong answers:**

    THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).

    (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **(0.25)** of the marks assigned to that question will be deducted as penalty.

    (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.

    (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

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1. Compute the result of arithmetic addition of -7 and -11 using signed 2's Complement representation and 8 bit representation?

   A) 00010010

   B) 11101110

   C) 00010001

   D) 11110101

2. What will be the Gray Code of (01110110)

   A) 10001001

   B) 10011010

   C) 01001101

   D) 10001010

3. An Index is Clustered if

   A) It is on a set of fields that form a candidate key

   B) It is on a set of fields that include the primary key

   C) The data records of the file are organized in the same order as the data entries of the Index

   D) The data records of the file are not organized in the same order as the data entries of the Index

4. Student and Courses enrolled is an example of

   A) One-to-One Relationship

   B) One-to-Many Relationship

   C) Many-to-One Relationship

   D) Many-to-Many Relationship

5. Write the instruction in the Basic Computer in order to set the Z Flip Flop to 1 ?

   A) Z<- 1

   B) Z = 1

   C) CLZ, CMZ

   D) CMZ

6. Convert the following arithmetic expression from Infix to Reverse Polish Notation.
A*[B+C*(D+E)] F*(G+H)

A) ABCDE *+*+ FGH + */

B) ABCDE + * + * FGH + */

C) ABCDE + * + * FGH *+/

D) ABCDE * + *+ FGH */+

7. The Memory Unit of Computer has 256K words of 32 bits each. The computer has an instruction format with four fields: An operation code field, A mode field to specify one of seven addressing modes, A register address field to specify one of 60 processor registers and a memory address. State the instruction format and the number of bits in each field if the instruction is in one Memory Word.

A) Address bits: 3, Addressing Mode bits:18, Register address field bits: 5, op code bits:6

B) Address bits: 17, Addressing Mode bits:5, Register address field bits: 5, op code bits:5

C) Address bits: 5, Addressing Mode bits:17, Register address field bits: 5, op code bits:5

D) Address bits: 18, Addressing Mode bits:3, Register address field bits: 6, op code bits:5

8. Any given Boolean Expression can be implemented by using

A) Only NAND gates

B) Only NOR gates

C) Only OR gates

D) Only AND gates

9. The Instruction is stored at location 300 with its address field at location 301. The address field has the value 400. An index Register R1 contains number 200. Evaluate the effective address when the addressing mode of the instruction is Direct, Immediate, Relative, Register Indirect

A) Direct: 400, Immediate:301, Relative:702, Register indirect:200

B) Direct: 400, Immediate:301, Relative:701, Register indirect:200

C) Direct: 400, Immediate:301, Relative:300, Register indirect:500

D) Direct: 301, Immediate:300, relative:700, Register Indirect:400

10. Which of the following statement about Binary Tree is Not True

A) Degree of any given must not exceed two.

B) Binary tree cannot contain zero nodes.

C) Subtree of binary tree is called left subtree and right subtree

D) None of the Above

11. Consider a computer with eight floating point pipeline Processors. Suppose that each Processor uses a Cycle Time of 80 ns. How long will it take to perform 800 floating point operations?

A) 800 ns

B) 640 ns

C) 8000 ns

D) 6400 ns

12. What does the SQL statement SELECT SUBSTR ('abcdefghij' INSTR ('123321234', '2',3,2),2) FROM DUAL Print?

A) g h

B) 23

C) bc

D) ab

13. In an entity relationship, *y* is the dominant entity and *x* is a subordinate entity. Which of the following is/are correct?

A) operationally, if y is deleted, so is *x*

B) *x* is existence dependent on *y*

C) operationally, if *x* is deleted, so is *y*

D) operationally, if *x* is deleted, *y* remains the same

14. The Direct Memory Access is technique used to transfer data between:

A) CPU and Fast storage device

B) CPU and I/O device

C) I/O device and fast storage device

D) None of these

15. How many 64*8 RAM chips are needed to provide a memory capacity of 2048 bytes?
    A) 8
    B) 16
    C) 32
    D) 4

16. The Access time of a Cache memory is 100 ns and that of Main memory is 1000 ns. It is estimated that 70% of memory request are for read and the remaining 30% for write. The hit ratio for read access only is 0.8. A write through procedure is used then what is the average access time of the system considering only memory read cycle and for both read and write requests?
    A) 200 ns and 360 ns
    B) 300 ns and 510 ns
    C) 400 ns and 720 ns
    D) None of these

17. What is the transfer rate of an eight track magnetic tape whose speed is 120 inches per second and whose density is 1600 bits per inch?
    A) 1,92,000 character
    B) 15,36,000 character
    C) 24,000 characters
    D) None of these.

18. For the sequence ABCDBEDACECE count the number of miss if the LRU Algorithm is used for a four way set associative Cache Memory has four words in each set.
    Start ABCE as the initial four words, with word A being the least recently used.
    A) 7
    B) 3
    C) 4
    D) 0

19. An address space is specified by 24 bits and the corresponding memory space by 16 bits. How many words are there in address space and memory space? If the page consists of 2 K words, how many pages and blocks are there in the system
    A) 16M, 64K, 8K, 32
    B) 16K, 64M, 8, 32K
    C) 16K, 64K, 8K, 32
    D) None of these

20. What would be the output of following program in C?

```
main()
{
    int x = 50;
    {
        int x = 10;
    }   printf("\n%d",x)

}
```

A) 50
B) 10
C) Garbage Value
D) None of the above

21. Find the error in the below code

```
main()
{
    extern int i;
    i = 20;
    printf("%d",sizeof(i));
}
```

A) The value of i is not defined
B) Syntax of print f is incorrect
C) Type of compiler has not been mentioned
D) extern variable cannot be declared inside main

22. What will be the output of following code in C?

```
main()
{
    int a[5] = {20,30};
    printf("\n %d
%d",a[2],a[3])
}
```

A) Garbage value
B) 30 30
C) 20 30
D) 0 0

23. If a=9, b=5 and c=3, then the expression (a- a/b * b % c) > a % b % c

A) True

B) False

C) Invalid

D) 0

24. The body of the following *for* loop

For(putchar('a'); putchar(0);

putchar('c'))

putchar('b'); will be executed

A) 0 times

B) 1 time

C) infinitely many times

D) will not be executed because of syntax error

25. Which two files are used during operation of the DBMS?

A) Query language and utilities

B) Data manipulation language and query language

C) Data dictionary and transaction log

D) Data dictionary and query language

26. The following statement printf("%f", 9/5); prints

A) 1.8

B) 1.0

C) 2.0

D) None of the above

27. What would be the output of following program?

```
main()
{
int *p1, x= 10;
void *p2;
p1 = &x;
p2 = &x;
p1= p2;
p2 = p1;
}
```

A) Warning: Suspicious assignment of x to p2

B) Warning: Variable and Pointer type should be same

C) Error

D) No error

28. The maximum number of temporary variables needed to swap the contents of two variables is

A) 1

B) 2

C) 3

D) 0

29. Which of the following syntax is used to overload post increment ++ operator in C++?

A) class_name operator++()
{}

B) class_name operator++(int)
{}

C) None of these

D) All of the above

30. Which of the following statement is not true in C++?

A) Constructors should be always public.

B) Constructor must not return the value

C) Constructors cannot be overloaded.

D) Constructors can be inherited.

31. What would be the output of following program in c++? #include<iostream.h>class A

```
{
    private:
        int x;
    public:
        A(int s)
        {
            x = s;
        }
        void display()
        {
            cout<<"
value of x = "<<x;
            }
};
void main()
{
        A obj1(10);
        A obj2;
        obj1.display();
        obj2.display();
}
```

A) value of x = 10 value of x = 0
B) value of x = 10
C) Error
D) value of x = 10 value of x = 10

32. Which of the following types of inheritance can suffer from ambiguity problem?
A) Single Inheritance
B) Multiple inheritance
C) Multilevel inheritance
D) Hierarchical Inheritance

33. Which of the following statement is true in C++?
A) Creating a derived class from a base class does not requires fundamental change to the base class
B) It is illegal to make objects of one class as members of another class
C) The size of the derived class object is equal to the sum of sizes of data members in base class and the derived class.
D) If a base class and a derived class each include a member function with the same name, the member function of the base class will be called by an object of the derived class.

34. What would be the output of following program in C++? #include<iostream.h>

```
class base
{
protected:
    void print()
    {
        cout<<"JKPSC";
    }
};
class derived: public base
{
public:
    void show()
    {
        print();
    }
};
void main()
{
base b1;
b1.print();
derived d1;
d1.show();
}
```

A) JKPSC JKPSC

B) JKPSC

C) warning protected cannot be inherited.

D) Error

35. Let the page fault service time be 10 ms in a computer with average memory access time being 20 ns. If one page fault is generated for every 10^6 memory accesses, what is the effective access time for the memory?

A) 21 ns

B) 30 ns

C) 23 ns

D) 35 ns

36. A process that is based on IPC mechanism which executes on different systems and can communicate with other processes using message-based communication, is called ___.

A) Local Procedure Call

B) Inter Process Communication

C) Remote Procedure Call

D) Remote Machine Invocation

37. An Operating System contains 3 user processes each requiring 2 units of resource R. The minimum number of required units of R such that no deadlock will ever occur is

A) 3

B) 4

C) 5

D) 6

38. At a particular time, the value of counting semaphore is 10. It will become 7 after

A) 3 V operations

B) 3 P operations

C) 5 V operations and 2 P operations

D) 13 P operations and 10 V operations

39. The best-fit, first-fit and worst-fit algorithms can be used for

A) Contiguous allocation of memory

B) linked allocation of memory

C) indexed allocation of memory

D) all of the above

40. In round-robin CPU scheduling, as the time quantum is increased, the average turnaround time

A) Increases

B) Decreases

C) remains constant

D) varies irregularly

41. What is the correct matching for the following pairs?

a)	Disk Scheduling	1)	Round Robin
b)	Batch Processing	2)	SCAN
c)	Time Sharing	3)	LIFO
d)	Interrupt Processing	4)	FIFO

A) a-3, b-4, c-2, d-1

B) a-4, b-3, c-2, d-1

C) a-2, b-4, c-1, d-3

D) a-2, b-1, c-4, d-3

42. Thrashing

A) Reduces page I/O

B) Decreases the degree of multiprogramming

C) Implies excessive page I/O

D) Improves the system performance

43. What is the disk bandwidth?

A) the total number of bytes transferred

B) total time between the first request for service and the completion on the last transfer

C) the total number of bytes transferred divided by the total time between the first request for service and the completion on the last transfer

D) none of the mentioned

44. Which of the following instruction is not valid?

A) MOV AX, BX

B) MOV DS, 5000H

C) MOV AX, 5000H

D) PUSH AX

45. If every non-key attribute is functionally dependent on the primary key, then the relation will be in

A) 1NF

B) 2NF

C) 3NF

D) 4NF

46. Working set model for page replacement is based on the assumption of

A) globalization

B) random access

C) modularity

D) locality

47. The computational technique used to compute the disk storage address of individual records is called

A) Bubble memory

B) Key fielding

C) Dynamic reallocation

D) Hashing

48. McCall proposed which of the following quality factors?

A) Correctness, reliability, usability, integrity, efficiency

B) Maintainability, testability, flexibility

C) Portability, reusability, interoperability

D) None of the above

49. RAID level 3 supports a lower number of I/O s per second, because

A) Every disk has to participate in every I/O request
B) Only one disk participates per I/O request
C) I/O cycle consumes a lot of CPU time
D) All of the mentioned

50. The segment base contains the

A) starting logical address of the segment /process
B) starting physical address of the segment in memory
C) segment length
D) none of the above

51. _____ are often used where very rapid access is required, where fixed length records are used, and where records are always accessed one at a time.

A) Direct files
B) Indexed Sequential files
C) Indexed files
D) Sequential files

52. If the kernel is single threaded, then any user level thread performing a blocking system call will

A) cause the entire process to run along with the other threads
B) cause the thread to block with the other threads running
C) cause the entire process to block even if the other threads are available to run
D) none of the mentioned

53. Multithreading on a multi - CPU machine

A) decreases concurrency
B) increases concurrency
C) doesn't affect the concurrency
D) can increase or decrease the concurrency

54. With limit registers and relocation, each logical address must be _____ the limit register.

A) Not equal to
B) Equal to
C) Greater than
D) less than

55. Time Complexity of a computer program includes-

A) Compile Time Only
B) Run Time Only
C) Both compile time and run time
D) None of the Above

56. Consider the following set of functional dependencies on the schema (A,B,C)
$a \rightarrow bc$
$b \rightarrow c$
$a \rightarrow b$
$ab \rightarrow c$
The canonical cover for this set is
A) $a \rightarrow bc$ and $b \rightarrow c$
B) $a \rightarrow bc$ and $ab \rightarrow c$
C) $a \rightarrow bc$ and $a \rightarrow b$
D) $a \rightarrow b$ and $b \rightarrow c$

57. Which of the following statement about singly linked list is not true
A) The nodes of the list dose not reside in sequential location.
B) Insertion and Deletion of ordered lists in singly linked list are less time consuming compare to array
C) The location of the nodes of linked list will not change on different runs of the program.
D) None of the Above

58. A weather forecasting computation requires 240 billion floating point operations. The problem is process in a super computer that can perform 100 mega flops. How long it take to do these calculations.
A) 32 minutes
B) 40 minutes
C) 42 minutes
D) 48 minutes

59. Which of the Following Statement is False with respect to tree traversal
A) In postorder, we visit a node after we have traversed its left and right subtree
B) In preorder the visit of a node is done before the traversal of left and right subtrees
C) In Inorder, we traverse left subtree then node and then right subtree.
D) None of the Above

60. For a complete directed and undirected graph with 'n' vertices, maximum number of edges respectively will be-
A) $n(n-1)/2$ and $n(n-1)$
B) $n(n-1)$ and $n(n-1)/2$
C) $n(n-1)$ and $n(n-1)$
D) None of the above

61. Tree is best defined as :

A) Cyclic graph

B) Acyclic graph

C) Connected acyclic graph

D) None of the above

62. Find the correct sentence with respect to the Sequential search and Binary search-

A) Order of the key fields required is relevant in case of sequential search but not binary search.

B) Order of the key fields required is relevant in case of binary search but not sequential search.

C) Both of the above

D) None of the above

63. The average time complexity of the Quick Sort Algorithm is

A) O(N)

B) O(N log N)

C) O(log N)

D) None of the above

64. While construction a data dictionary, the analyst considers:

A) Each data flow in the DFD has one data dictionary entry

B) Definitions must be readily accessible by name

C) There should be no redundancy in the data definition

D) None of the above

65. In unit testing of a module, it is found for a set of test data at the maximum 90% of the code alone were tested with the probability of success 0.9. The reliability of the module is

A) Atleast greater than 0.9

B) Atmost 0.81

C) Equal to 0.9

D) Atleast 1/0.81

66. A* algorithm is based on _____

A) Breadth-First-Search
B) Depth-First -Search
C) Best-First-Search
D) Hill climbing

67. What is the hash function used in the division method?

A) Hash(k) = k/m
B) Hash(k) = k mod m
C) Hash(k) = m/k
D) Hash(k) = m mod k

68. An Eulerian path is a path in a graph that visits every _____ exactly once.

A) vertex
B) edge
C) path
D) circuit

69. Pointers can be dangerous-

A) It may access out of range memory.
B) It may reference to a NULL memory location.
C) Both A and B
D) None of the above

70. What is the primary objective of the Traveling Salesman Problem (TSP)?

A) Maximizing profit while travelling
B) Finding the shortest path that visits all cities exactly once and returns to the starting city
C) Finding the longest path that visits all cities
D) Minimizing travel time

71. What are the necessary condition for a Tree to be a heap?

A) The tree is a complete tree
B) Value at the root must be greater or smaller than the value of the root
C) Both A and B
D) None of the Above

72. Stack data structure follows First In First Out (FIFO)-

A) True

B) False

C) Partially true

D) cannot be determined

73. Which of the following data types is used internally when implementing a recursive function-

A) Stack

B) Queue

C) Linked list

D) Tree

74. Which of the following protocols are commonly used for flow control in data communication? (Select all that apply)

A) Sliding Window Protocol

B) HDLC (High-Level Data Link Control)

C) Token Passing

D) FDMA (Frequency Division Multiple Access)

75. In _____ transmission, the channel capacity is shared by both the communicating devices at all times.

A) Simplex

B) Half-Duplex

C) Full Duplex

D) Half-Simplex

76. A _____ provides long-distance transmission of data, image, audio, and video information over a large geographic areas.

A) LAN

B) WAN

C) MAN

D) none of the above

77. _____ is designed to use the high bandwidth capability of fibre- optic cable.

A) FDM
B) TDM
C) WDM
D) None of the above

78. Transmission media are usually categorized as

i) Fixed
ii) Guided
iii) Metallic
iv) Unguided

A) i) and ii) are correct
B) ii) and iv) are correct
C) i) and iv) are correct
D) ii) and iii) are correct

79. Which of the following protocols is commonly used for secure data transfer and file sharing over a network?

A) SMTP (Simple Mail Transfer Protocol)
B) POP (Post Office Protocol)
C) TELNET (Telecommunication Network)
D) FTP (File Transfer Protocol) over FTPS or SFTP

80. In computer networks, what is the primary role of a firewall?

A) To establish secure connections between devices.
B) To manage network configuration settings.
C) To filter and block malicious network traffic.
D) To map logical addresses to physical addresses.

81. What is the primary advantage of using IPv6 (Internet Protocol version 6) over IPv4?

A) Smaller address space
B) Use of classful addressing
C) More efficient routing
D) Limited support for multicast

82. Which of the following wireless networking standards operates in the 5 GHz frequency band and offers higher data rates with better resistance to interference?

A) 802.11a

B) 802.11b

C) 802.11g

D) 802.11n

83. In computer networking, what is the purpose of a VLAN (Virtual LAN)?

A) To establish secure connections between remote networks.

B) To segment a physical network into multiple logical networks.

C) To map logical addresses to physical addresses.

D) To provide encryption for data transmission

84. Which multiplexing technique combines multiple low-speed signals into a single high-speed signal for transmission over a shared medium?

A) FDM (Frequency Division Multiplexing)

B) TDM (Time Division Multiplexing)

C) CDM (Code Division Multiplexing)

D) WDM (Wavelength Division Multiplexing)

85. Which network protocol is primarily responsible for the dynamic allocation of IP addresses to devices on a network?

A) HTTP (Hypertext Transfer Protocol)

B) DNS (Domain Name System)

C) DHCP (Dynamic Host Configuration Protocol)

D) FTP (File Transfer Protocol)

86. Which type of transmission media is most susceptible to electromagnetic interference and signal attenuation?

A) Coaxial cable

B) Fiber-optic cable

C) Twisted-pair cable

D) Wireless transmission

87. Which of the following network topologies connects all devices in a linear fashion, where each device is connected to exactly two other devices, except for the endpoints?

A) Star

B) Bus

C) Ring

D) Mesh

88. Which OSI layer(s) is/are responsible for error detection and correction in data transmission?

A) Physical Layer

B) Data Link Layer

C) Transport Layer

D) Network Layer

89. Which of the following terms describes the process of converting analog data into digital form for transmission?

A) Modulation

B) Multiplexing

C) Demodulation

D) Encoding

90. To evaluate any arithmetic operation compilers generally use

A) Infix notation

B) Prefix notation

C) Postfix notation

D) None of the above

91. Which of the following protocols is commonly used for secure remote login to network devices and servers?

A) HTTP (Hypertext Transfer Protocol)

B) SMTP (Simple Mail Transfer Protocol)

C) TELNET (Telecommunication Network)

D) FTP (File Transfer Protocol)

92. Choose the Correct option

1.	Broadband Transmission	a.	Managing the flow of data between sender and receiver
2.	OSI Reference Model	b.	High- speed data transmission using multiple frequencies
3.	ARP	c.	Seven- layer framework for network design
4.	Sliding Window Protocol -	d.	Mapping logical addresses to physical addresses

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

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

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

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

93. Assertion: TCP Flow Control and Congestion Control serve similar purposes in network communication.

Reasoning: Both TCP Flow Control and Congestion Control mechanisms aim to regulate the flow of data within a network to ensure efficient and reliable data transmission.

A) The assertion is true, reasoning is also true.

B) The assertion is true, but the reasoning is false.

C) The assertion is false, but the reasoning is true.

D) The assertion is false, reasoning is also false.

94. Which of the following is a characteristic of analog signals?

A) They are continuous.

B) They can take on any value within a range.

C) They are commonly used in digital communication.

D) They are less susceptible to noise than digital signals.

95. In the context of the theory of computation, which of the following problems is considered non-computational?

A) Solving systems of linear equations

B) Calculating the factorial of a number

C) Sorting a list of integers

D) Determining if an arbitrary program halts on all inputs

96. Choose the statements that apply to the Pumping Lemma for regular languages:

A) It is used to prove that a language is regular.

B) It is used to prove that a language is not regular.

C) It applies only to context-free languages.

D) It involves breaking a string into three parts.

97. Which of the following is a characteristic of a context-free grammar in Chomsky Normal Form (CNF)?

A) It allows left-recursion.

B) Every production has the form $A \rightarrow BC$.

C) It can generate regular languages.

D) It is ambiguous.

98. Total number of edges in a complete graph with n vertices is

A) n^2

B) n(n-1)

C) (n x (n-1)) / 2

D) $(n-1)^2$

99. In the context of Turing Machines (TMs), what is the significance of a Universal Turing Machine (UTM)?

A) It can simulate the behavior of any other TM.

B) It is a TM that accepts only prime numbers.

C) It can solve NP-complete problems in polynomial time.

D) It is a TM that recognizes context-sensitive languages

100. Match the letters (A, B, C, D) with the corresponding descriptions (1, 2, 3, 4). Formal Languages:

a. Regular Language

b. Context-Free Language

c. Context-Sensitive Language

d. Recursively Enumerable Language

Descriptions:

1. Languages that can be recognized by a deterministic pushdown automaton (DPDA).
2. Languages generated by context- free grammars.
3. Languages that can be recognized by a linear-bounded automaton.
4. Languages that can be recognized by a Turing machine.

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

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

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

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

101. What are the characteristics of LL(1) parsing?

A) It uses leftmost derivation.

B) It allows arbitrary lookahead tokens.

C) It is suitable for all types of grammars.

D) It uses a parse table.

102. Which of the following statements are correct:

i) The sum of degrees of all vertices in a graph G is equal to twice the number of edges in G.

ii) In a graph the number of vertices of odd degree is even.

iii) Maximum degree of any vertex in a simple graph having n vertices is n-1.

A) Only (i) and (ii) are correct

B) Only (ii) and (iii) are correct

C) Ony (i) and (iii) are correct

D) (i), (ii) and (iii) are correct

103. In the context of context-free grammars, what does the term "ambiguity" refer to?

A) The presence of multiple possible parse trees for a given string

B) The use of left recursion

C) The inability to derive ε (the empty string)

D) The presence of ε-productions

104. What is the primary function of an attribute grammar in semantic analysis?

A) Parsing the input source code

B) Handling syntax errors

C) Defining the language grammar

D) Annotating the parse tree with additional information

105. Which of the following is a property of a Regular Language?

A) It can be recognized by a context-sensitive grammar.

B) It can be ambiguous.

C) It can be infinite.

D) It can be recognized by a Finite Automaton.

106. What is the significance of Russel's Paradox in set theory and formal logic?

A) It proves the existence of a universal set.

B) It demonstrates the limitations of formal systems.

C) It establishes the foundation for recursive languages.

D) It defines the Chomsky hierarchy.

107. In the context of regular expressions, what does the Kleene star (*) operator signify?

A) Concatenation of two regular expressions.

B) Zero or more occurrences of the preceding expression.

C) The start symbol of a context- free grammar.

D) The negation of an expression

108. Match Column A with Column B.

Column A	Column B
(i) minimum spanning tree of a weighted graph	(a) Kruskal's and Prim's Algorithm
(ii) All pair shortest path algorithm	(b) Dijkstra's Algorithm
(iii) Single-source shortest path where edge weight may be negative	(c) Bellman-Ford Algorithm
(iv) Single-source shortest path where edge weight is non- negative	(d) Floyd-Warshall Algorithm

A) i a ii d iii c iv b
B) i b ii d iii c iv a
C) i a ii c iii d iv b
D) i d ii a iii c iv b

109. Which class of languages is recognized by a Turing machine with an unrestricted grammar?

A) Context-sensitive languages

B) Regular languages

C) Context-free languages

D) Unsolvable languages

110. The Halting Problem is an example of a problem that is:

A) Solvable for all programs.

B) Decidable for all inputs.

C) Unsolvable for some programs and inputs.

D) Solvable in polynomial time.

111. Method in which the previously calculated probabilities are revised with values of new probability is called

A) Revision theorem

B) Bayes theorem

C) Dependent theorem

D) Updation theorem

112. Which of the following statements are true regarding attribute grammars in compiler design?

A) Synthesized attributes depend on inherited attributes.

B) Inherited attributes depend on synthesized attributes.

C) Dependency graphs are used to represent attribute dependencies.

D) Type-checking is not a part of semantic analysis.

113. Assertion: A Universal Turing Machine (UTM) can simulate the behavior of any other Turing machine.

Reasoning: The UTM can take the description of another Turing machine and its input and simulate the execution of that machine on that input.

A) The assertion is true, reasoning is also true.

B) The assertion is true, but the reasoning is false.

C) The assertion is false, but the reasoning is true.

D) The assertion is false, the reasoning is also false.

114. Assertion: A context-free language can always be recognized by a deterministic pushdown automaton (DPDA). Reasoning: A deterministic pushdown automaton (DPDA) is capable of recognizing context-free languages because it can process context-free grammars without ambiguity.

A) The assertion is true, the reasoning is also true.

B) The assertion is true, but the reasoning is false.

C) The assertion is false, but the reasoning is true.

D) The assertion is false, the reasoning is also false.

115. What is the name given to the Database Management System which is able to handle full Text, Image data , Audio and Video?

A) Full Media

B) Graphics

C) Multimedia

D) Hypertext

116. In which addressing mode the operand is given explicitly in the instruction?

A) Absolute Mode

B) Immediate Mode

C) Indirect Mode

D) Index Mode

117. What are the Potential Problems when a DBMS executes multiple transactions concurrently

A) The Lost Update Problem

B) The dirty Read Problem

C) The unrepeatable Problem

D) The Phantom Problem

118. The Employee Salary should not be greater than Rs 2000, this is

A) Integrity Constraint

B) Referential Constraint

C) Entity Contstraint

D) Domain Constraint

119. PERT and CPM are

A) Assignment Techniques

B) Network Techniques

C) Project Evaluation Techniques

D) Programming Techniques

120. Which of the following testing methods is normally used as the acceptance test for a Software System

A) Regression Testing

B) Integration Testing

C) Unit Testing

D) Functional Testing

ROUGH WORK

ROUGH WORK

Provisional Answer Key

Assistant Professor (Computer Application)

Test Booklet Question No. (Series A)	
Q1	B
Q2	C
Q3	C
Q4	D
Q5	C
Q6	B
Q7	D
Q8	A
Q9	A
Q10	B
Q11	C
Q12	D
Q13	C
Q14	C
Q15	C
Q16	B
Q17	A
Q18	B
Q19	A
Q20	B
Q21	D
Q22	D
Q23	A
Q24	D
Q25	C
Q26	D
Q27	D
Q28	D
Q29	B
Q30	C
Q31	C
Q32	B
Q33	C
Q34	D
Q35	B
Q36	C
Q37	B
Q38	B
Q39	A
Q40	D

Test Booklet Question No. (Series A)	
Q41	C
Q42	C
Q43	C
Q44	B
Q45	C
Q46	D
Q47	D
Q48	A
Q49	A
Q50	B
Q51	A
Q52	C
Q53	B
Q54	D
Q55	C
Q56	A
Q57	C
Q58	C
Q59	D
Q60	A
Q61	C
Q62	B
Q63	B
Q64	D
Q65	B
Q66	C
Q67	B
Q68	B
Q69	C
Q70	B
Q71	C
Q72	B
Q73	A
Q74	A
Q75	C
Q76	B
Q77	C
Q78	B
Q79	D
Q80	C

Test Booklet Question No. (Series A)	
Q81	C
Q82	A
Q83	B
Q84	B
Q85	C
Q86	D
Q87	C
Q88	C
Q89	A
Q90	C
Q91	C
Q92	A
Q93	B
Q94	A
Q95	D
Q96	B
Q97	B
Q98	C
Q99	A
Q100	A
Q101	A
Q102	D
Q103	A
Q104	D
Q105	D
Q106	B
Q107	B
Q108	A
Q109	A
Q110	C
Q111	B
Q112	C
Q113	A
Q114	A
Q115	C
Q116	B
Q117	A
Q118	A
Q119	C
Q120	D