

COMPUTER SCIENCE & APPLICATIONS

Paper - II

OCT-10/19

Signature of Invigilators

Roll No.

(In figures as in Admit Card)

1.

Roll No.

2.

(in words)

Time Allowed : 75 Minutes]

[Maximum Marks : 100

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page.
2. This paper consists of **fifty (50)** multiple choice type questions. **All** questions are compulsory.
3. Each item has upto four alternative responses marked (A), (B), (C) and (D). The answer should be a capital letter for the selected option. The answer letter should entirely be contained within the corresponding square.

Correct method



Wrong method



OR



4. Your responses to the items for this paper are to be indicated on the ICR Answer Sheet under Paper II only.
5. Read instructions given inside carefully.
6. Extra sheet is attached at the end of the booklet for rough work.
7. You should return the test booklet to the invigilator at the end of paper and should not carry any paper with you outside the examination hall.
8. There shall be no negative marking.
9. Use of calculator or any other electronic devices is prohibited.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

૧. આ પાનાની ટોચમાં દર્શાવેલી જગ્યામાં તમારો રોલનંબર લખો.
૨. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા કુલ **પચાસ (૫૦)** પ્રશ્નો આપેલા છે. **બધા જ** પ્રશ્નો ફરજિયાત છે.
૩. પ્રત્યેક પ્રશ્ન વધુમાં વધુ ચાર બહુવૈકલ્પિક ઉત્તરો ધરાવે છે. જે (A), (B), (C) અને (D) વડે દર્શાવવામાં આવ્યા છે. પ્રશ્નનો ઉત્તર કેપીટલ સંજ્ઞા વડે આપવાનો રહેશે. ઉત્તરની સંજ્ઞા આપેલ પાનામાં બરાબર સમાઈ જાય તે રીતે લખવાની રહેશે.

ખરી રીત :



ખોટી રીત :



૪. આ પ્રશ્નપત્રના જવાબ આપેલ ICR Answer Sheet ના Paper II વિભાગની નીચે આપેલ પાનાઓમાં આપવાના રહેશે.
૫. અંદર આપેલ સૂચનાઓ કાળજીપૂર્વક વાંચો.
૬. આ બુકલેટની પાછળ આપેલું પાનું રફ કામ માટે છે.
૭. પરીક્ષા સમય પૂરો થઈ ગયા પછી આ બુકલેટ જે તે નિરીક્ષકને સોંપી દેવી. કોઈપણ કાગળ પરીક્ષા ખંડની બહાર લઈ જવો નહીં.
૮. ખોટા જવાબ માટે નેગેટિવ ગુણાંકન પ્રથા નથી.
૯. કેલ્ક્યુલેટર અને ઈલેક્ટ્રોનિક યંત્રોનો પ્રયોગ કરવાની મનાઈ છે.

Comp. Sci. & App.-II

1

[P.T.O.]

SEAL

COMPUTER SCIENCE & APPLICATIONS

PAPER-II

Note : This paper contains **FIFTY (50)** multiple-choice/matching questions, each question carrying **TWO (2)** marks. Attempt **All** the questions.

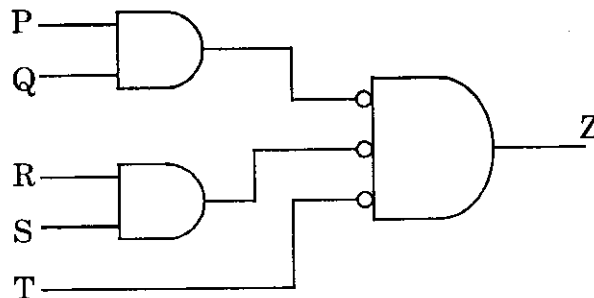
1. Which of the following best describes the relationship between rooted trees and binary trees ?
 - (A) Every rooted tree is a binary tree
 - (B) Every binary tree is a rooted tree
 - (C) No binary tree can be a rooted tree
 - (D) Not all binary trees are rooted trees

2. If n and k are positive integers with $n > k > 1$ and the number of permutations of n different things taken k at a time and c is the number of combinations of n different things taken k at a time, then which of the following is valid ?
 - (A) $c > p$
 - (B) $c = p$
 - (C) $c < p$
 - (D) c and p are incomparable

3. Which of the following statements is true regarding walks, paths and circuits in an undirected graph ?
 - (A) Every walk is a path
 - (B) Every circuit is a walk
 - (C) Every path is a circuit
 - (D) Every walk is a circuit

4. Which of the following is *not* true ?
 - (A) Any language accepted by a NDFSA (NFA) is regular
 - (B) Every regular language is accepted by a FSA (FA)
 - (C) For every NDFSA (NFA), there is an equivalent FSA (FA)
 - (D) Every context free language is accepted by an NDFSA (NFA)

5. Which of the following is a partial order relationship on the set of integers ?
- (A) $<$ (less than) (B) $>$ (greater than)
 (C) \geq (not less than) (D) \neq (is not equal to)
6. Decimal equivalent of binary number 1110101.110 is :
- (A) 117.6 (B) 118.75
 (C) 117.75 (D) 117.375
7. A circuit that uses clock pulses in the inputs of memory elements is called :
- (A) Asynchronous sequential circuit
 (B) Combinational circuit
 (C) Synchronous sequential circuit
 (D) Full adder circuit
8. The sum of all minterms of a Boolean function of n variables is :
- (A) low (B) negative
 (C) one (D) off
9. A TTL gate can use a supply voltage V_{DD} of :
- (A) +3 volts (B) +5 volts
 (C) +6 volts (D) +9 volts
10. The implementation of function Z for the logic diagram shown in below figure is :



- (A) NAND-AND (B) AND-OR
 (C) AND-NOR (D) AND-NAND

11. What will be the output of the following code segment ?

```
int i, k = 0;
char c[100];
for(i = 0; i < 10; i += 3)
    if(&c[i + 20] - &c[i + 16]) k += &c[4] - &c[1];
printf("k = %d", k);
```

- (A) k = 12 (B) k = 9
(C) k = 0 (D) Compiler Error

12. Consider the following program :

```
main( )
{
    int i, a[5] = {5, 1, 15, 20, 25}, j, k = 1, m;
    i = ++a[k++];
    j = a[++k]++;
    m = a[i++];
    printf("%d %d %d", i, j, m);
}
```

The output is :

- (A) 3 20 25 (B) 3 20 15
(C) 6 20 15 (D) 15 20 25

13. Which of the following terms is related to "Polymorphism" ?

- (A) Static allocation (B) Static typing
(C) Dynamic binding (D) Dynamic allocation

14. Which of the following statements is false ?
- (A) There is no input/output statement in C.
 - (B) Every if-else statement can be replaced by switch statement.
 - (C) The do-while loop executes at least once.
 - (D) "abcdef" [3] equals to "d".
15. How many parameters can a destructor have ?
- (A) one
 - (B) none
 - (C) there is no limit
 - (D) depends on compiler
16. A derived attribute is not beneficial because :
- (A) it can be used to keep track of historical data
 - (B) it is required to be computed always with each usage
 - (C) it can not be used as a primary key
 - (D) it requires regular maintenance to ensure that the derived value is current
17. An entity is called a :
- (A) weak entity because it is not mandatory for that entity to have a foreign key
 - (B) weak entity because it is existence dependent and it has a primary key which is partially or totally derived from the parent entity in the relationship
 - (C) composite entity if it is a weak entity
 - (D) weak entity because it is existence independent
18. If ORDER BY DESC clause is used in a SQL statement, the null values are :
- (A) Displayed first
 - (B) Displayed last
 - (C) Not displayed
 - (D) Displayed randomly

19. What will not happen when the DROP TABLE command is executed ?
- (A) All data in the table is deleted
 - (B) All pending transactions are committed
 - (C) All views on this table are deleted
 - (D) All indexes on this table are deleted
20. The TOP-N analysis requires :
- (A) an ORDER BY clause, rownum, an inline view
 - (B) a GROUP BY clause, an inline view
 - (C) an ORDER BY clause, a rowid
 - (D) only in inline view
21. Items A, B, C, D and E are pushed onto a stack, in order. Then the stack is popped four times and each popped element is added to a FIFO queue. Then two elements are removed from the queue and pushed onto the stack again in order. Finally, one element is popped out of the stack. The popped element is :
- (A) B
 - (B) D
 - (C) A
 - (D) E
22. Suppose we have numbers between 1 and 1000 in a binary search tree and want to search for the number 365. Which of the following sequence could not be the sequence of nodes examined ?
- (A) 2, 252, 401, 398, 330, 344, 397, 365
 - (B) 924, 220, 911, 244, 898, 258, 362, 365
 - (C) 925, 202, 911, 240, 912, 245, 365
 - (D) 51, 101, 602, 500, 403, 398, 365

23. Suppose you have a directed graph representing all the flights that an airline flies. What algorithm might be used to find the best sequence of connection from one city to another ?
- (A) Breadth first search (B) Depth first search
(C) Minimum spanning tree (D) Shortest path algorithm
24. Priority queues are best implemented by using which of the following data structures ?
- (A) Stack (B) Circular queue
(C) Heap (D) Circular linked list
25. Suppose a B-tree can store a maximum of 10 keys in its node, and that a node already contains integers 1 through 10. If a new value, 11, is added to this node, the node will split into two nodes. What will be the values in these two nodes ?
- (A) The first node will have only 1 and the second node will have rest of the numbers
(B) The first node will have 1 through 10 and the second node will have only 11
(C) The first node will have 1 through 5 and the second node will have 6 through 11
(D) The first node will have 1 through 5 and the second node will have 7 through 11
26. Which one from the following is a smart-hub ?
- (A) Bridge (B) Repeater
(C) Switch (D) S hub
27. Which protocol from the following is used for the transmission of e-mail messages across the internet ?
- (A) Telnet (B) FTP
(C) SMTP (D) UDP

28. Suppose you have a network address of 196.202.56.0 with four subnets. Which subnet mask from the following you need to apply to allow maximum number of hosts.
- (A) 255.255.255.0 (B) 255.255.255.224
(C) 255.255.255.192 (D) 255.255.255.128
29. The method of breaking data into packets, to be sent over various routes at the same time, is called :
- (A) A circuit switching (B) An open circuit
(C) A closed circuit (D) A packet switching
30. Which one of the following is an example of good packet screener ?
- (A) Hub (B) Firewall
(C) Router (D) Gateway
31. Which one of the following is 3 byte instruction ?
- (A) MOV (B) ADD
(C) MVI (D) JMP
32. A context free grammar is a :
- (A) 2 tuple (B) 3 tuple
(C) 4 tuple (D) 5 tuple
33. A linker :
- (A) generates multiple object modules
(B) generates a single load module
(C) generates multiple load modules
(D) generates a single executable module

34. A grammar in which every production rule is of the form $X \rightarrow a$ is known as :
- (A) LL(0) (B) LL(1)
(C) Context free (D) Regular
35. Which data structure is usually used during shift-reduce parsing ?
- (A) Pointer (B) Array
(C) Stack (D) Queue
36. Non-contiguous memory allocation splitting code into blocks of memory that can be loaded into non-adjacent memory blocks is called :
- (A) Pages (B) Partition
(C) Frames (D) Segments
37. Which scheduling algorithm from the following penalizes processes running for longer time ?
- (A) FCFS (B) Round Robin
(C) Shortest Process Next (D) Shortest Remaining Time
38. Which one of the following controls the degree of multiprogramming ?
- (A) Medium term scheduler
(B) Long term scheduler
(C) Long term and short term scheduler
(D) Short term scheduler

39. The wait() system call :
- (A) returns the PID of the parent process in which terminated child process belongs
 - (B) returns the PID of the terminated child process
 - (C) returns the termination status as well as PID of the terminated child process
 - (D) returns the PPID of the terminated child process
40. Multiprocessing means :
- (A) running two or more processes simultaneously
 - (B) running two or more processes concurrently
 - (C) running two or more programs simultaneously
 - (D) simultaneously processing with two or more processors
41. Purpose of CRC in object-oriented modelling is to :
- (A) Define classes and their relationships with other classes.
 - (B) Create an alternative of class diagram, where each CRC card contains a description of one class and these cards are placed appropriately and connected as per the collaboration between the classes.
 - (C) Connect classes together to show their responsibilities.
 - (D) Go through cyclical redundancy check.
42. Which one of the following statements is *not* true ?
- (A) If the average value for each of 14 value adjustment factors is taken, it contributes to 35% of Function Point (FP) in the Function Point metric.
 - (B) Software estimation models need to be calibrated for local needs.
 - (C) Function points and object points are not direct software measures.
 - (D) The advantage of using LOC and FP metrics is that effort and cost estimated using these metrics will be the same across all organizations.

43. Which one of the following is the *correct* arrangement for :

- (i) Procedural Cohesion
- (ii) Logical Cohesion
- (iii) Communicational Cohesion and
- (iv) Functional Cohesion,

with respect to the order of preference ?

- (A) (i), (ii), (iii), (iv)
- (B) (iii), (iv), (ii), (i)
- (C) (iv), (iii), (i), (ii)
- (D) (iv), (iii), (ii), (i)

44. A context-level DFD does *not* contain :

- (A) Data Flow
- (B) Process
- (C) External Entity
- (D) Data Store

45. Which type of coupling is best amongst the following ?

- (A) Stamp Coupling
- (B) Control Coupling
- (C) Content Coupling
- (D) Common Coupling

46. In Electronic cash payment :

- (A) a debit card payment system is used
- (B) a customer buys several electronic coins which are digitally signed by coin issuing bank
- (C) a credit card payment system is used
- (D) RSA cryptography is used in the transactions

47. The data cube is a metaphor for :
- (A) Linear data storage
 - (B) 2-Dimensional data storage
 - (C) 3-Dimensional data storage
 - (D) Multidimensional data storage
48. An on-line analytical processing (OLAP) system :
- (A) is same as OLTP
 - (B) includes drill down, roll up, etc. operations on data cubes
 - (C) commands are part of SQL statements
 - (D) usually adopts an entity-relationship data model
49. Which of the following is part of logical network used in an e-commerce ?
- (A) Internet and Extranet
 - (B) World Wide Web
 - (C) Local Area Network
 - (D) Search Engine
50. Digital Encryption standard works by using :
- (A) permutation and substitution on 64 bit blocks of plain text
 - (B) only permutations on blocks of 128 bits
 - (C) exclusive OR with key bits with 64 bit blocks
 - (D) 2 rounds of substitution on 64 bit blocks with 64 bit keys

ROUGH WORK