COMPUTER SCIENCE AND APPLICATIONS

Name & Signature of the Invigilator

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PAPER-III
SEPT/13/19

ICR Answer Sheet No. : | | | | | | |

Roll No. : | | | | | | |

Roll Number in words : .....

.....

Time : 2.30 Minutes] **No. of Printed Pages : 28** **[Maximum Marks : 150**

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page.
2. This paper consists of **Seventy five (75)** multiple choice type questions. **All questions are compulsory.**
3. At the commencement of examination, the question booklet will be given to candidate. **In the first 5 minutes, candidate is requested to open the booklet and compulsorily examine it as below :**
   (*i*) **To have access to the question booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.**
   (*ii*) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of five minutes. Afterwards, neither the question booklet will be replaced nor any extra time will be given.**
   (*iii*) **After this verification is over, the test booklet number should be entered in the ICR answer sheet and the ICR Answer Sheet number should be entered on this test booklet.**
4. **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 [A] Wrong method [A] OR [A]

5. **Your responses to the items for this paper are to be indicated on the ICR Answer Sheet under Paper III only.**
6. **Read instructions given inside carefully.**
7. **Rough work is to be done in the end of the booklet only.**
8. **You have to return the original ICR Answer Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the examination hall. You are, however, allowed to carry duplicate copy of ICR sheet and test booklet on conclusion of the examination.**
9. **Use black ball point pen.**
10. **Use of any Calculators or log tables or any other electronic devices is prohibited.**
11. **There shall be no negative marking.**
12. **In case of any discrepancy in Gujarati and English version of questions the English version should be taken as final.**

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

1. આ પાનાની ટોચમાં દર્શાવેલી જગ્યામાં તમારો રોલનંબર લખો.
2. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા કુલ પંચોતેર (૭૫) પ્રશ્નો આપેલા છે. **બધા જ** પ્રશ્નો ફરજિયાત છે.
3. પરીક્ષાની શરૂઆતમાં ઉમેદવારને પ્રશ્નપુસ્તિકા આપવામાં આવશે. પ્રથમ પાંચ મિનિટ દરમ્યાન, ઉમેદવારે પ્રશ્નપુસ્તિકા ખોલી અને ફરજિયાતપણે નીચે મુજબ પરીક્ષણ કરવું.
   (*i*) પ્રશ્નપુસ્તિકાનો વપરાશ કરવા માટે આ કવર પેજની ધાર પર આપેલ સીલ ફાડી નાખો. કોઈપણ સંજોગોમાં સીલ સ્ટીકર વગરની કે ખુલ્લી પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં.
   (*ii*) કવર પૃષ્ઠ પર છપાયેલ નિર્દેશાનુસાર પ્રશ્નપુસ્તિકાના પ્રશ્નો પૃષ્ઠો અને સંખ્યાને બરાબર ચકાસી લો. ખામીયુક્ત પ્રશ્નપુસ્તિકા કે જેમાં પૃષ્ઠો/પ્રશ્નો ઓછા હોય, બે વાર છપાયા હોય, અનુક્રમમાં અથવા કોઈ અન્ય ક્રમ હોય અર્થાત કોઈપણ કારણે ખામીયુક્ત પ્રશ્નપુસ્તિકા સ્વીકારવી નહીં. એને જો ખામીયુક્ત પ્રશ્નપુસ્તિકા મળી હોય તો નિરીક્ષક પાસેથી તુરંત જ બીજી સારી પ્રશ્નપુસ્તિકા મેળવી લેવી. આ માટે ઉમેદવારને પાંચ મિનિટનો સમયગાળો આપવામાં આવશે. પછીથી, પ્રશ્નપુસ્તિકા બદલવામાં આવશે નહીં કે કોઈ વધારાનો સમય પણ આપવામાં આવશે નહીં.
   (*iii*) આ ચકાસણી સમાપ્ત થયપછી, ટેસ્ટ પુસ્તિકા નંબર ICR જવાબ પત્રકમાં લખવો અને ICR જવાબ પત્રક નંબર પ્રશ્નપુસ્તિકા પર લખવો.
4. પ્રત્યેક પ્રશ્ન માટે ચાર ઉત્તર વિકલ્પ (A), (B), (C) અને (D) આપવામાં આવેલ છે. પસંદગીનો જવાબ માત્ર અંગ્રેજી કેપીટલ મૂળાક્ષર દ્વારા જ આપવો. પસંદ કરેલ અંગ્રેજી કેપીટલ અક્ષર આપેલ ખાનામાં સંપૂર્ણ રીતે સમાઈ જાય તે રીતે લખવો.

   સાચી રીત : [A] ખોટી રીત : [A] અથવા [A]

5. આ પ્રશ્નપુસ્તિકાના પ્રશ્નોના જવાબ અલગથી આપવામાં આવેલ ICR જવાબ પત્રકમાં પેપર–૩ લખેલ વિભાગમાં જ લખવા.
6. અંદર આપેલ સૂચનાઓ ધ્યાનપૂર્વક વાંચો.
7. આ પ્રશ્નપુસ્તિકાની અંતે આપેલ પાનું રફ કામ માટે છે.
8. પરીક્ષા સમય પૂરો થઈ ગયા પછી ઓરીજીનલ ICR જવાબ પત્રક જે તે નિરીક્ષકને ફરજીયાત સોંપી દેવું અને કોઈપણ સંજોગોમાં પરીક્ષાખંડની બહાર જઈ શકશે નહીં. પરીક્ષા પૂર્ણ થયા બાદ ઉમેદવાર પ્રશ્નપુસ્તિકા તથા ICR જવાબવહીની ડુપ્લિકેટ કોપી પોતાની સાથે લઈ જઈ શકે છે.
9. માત્ર કાળી પેન/કાળી બોલ પેન વાપરવી.
10. કેલ્કયુલેટર અને અન્ય ઈલેકટ્રોનિક યંત્રોનો ઉપયોગ કરવાની મનાઈ છે.
11. ખોટા જવાબ માટે નેગેટિવ ગુણાંકન પ્રથા નથી.
12. પ્રશ્નપુસ્તિકાના કોઈ પ્રશ્નમાં અનુવાદ અંગે કોઈ વિવાદ/મતભેદ જણાય તો અંગ્રેજી વર્ઝન યોગ્ય ગણાશે.

SEAL

COMPUTER SCIENCE & APPLICATIONS

PAPER-III

Note : This paper contains **Seventy Five (75)** multiple-choice/matching questions. Each question carries **TWO (2)** marks. Attempt **All** the questions.

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1. Given that two T-type flip-flops are connected in a "ripple" fashion to the clock with both T inputs set to '1'. After 4 clock cycles, the outputs Q_0 and Q_1 are :

   (A) Certain and given by 11

   (B) Uncertain, but excluding 11

   (C) Uncertain, depending upon initial values

   (D) Certain and given by 00

2. Which of the following is *not* necessarily a benefit of a hard-wired CPU design over a microprogrammed one ?

   (A) Speed of Computation

   (B) Smaller imprint on VLSI estate

   (C) Smaller number of logic gates

   (D) Ease of extensibility of the design

3. A micropogrammed CPU design essentially requires which of the following hardware ?

(A) On Chip Instruction Pipeline

(B) Multiple ALUs

(C) On Chip Microprogram read-only memory

(D) On Chip Instruction Cache

4. Which of the following steps is the first step required when a microprocessor starts the interrupt processing ?

(A) Saving of return address

(B) Disabling of further interrupts

(C) Polling of devices

(D) Jump to interrupt processing address

5. During interrupt processing, the processor first reads which of the following from the system data bus ?

(A) The first byte of data from interrupting device

(B) An interrupt vector code for indexing into the interrupt table

(C) The interrupt mask value

(D) The interrupt priority value

6. For the normalization of a relational schema corresponding to Ternary and higher order ER diagrams, which of the following is valid ?

(A) One needs to do upto BCNF normalization only

(B) One needs to take into account 4NF and 5NF normalization

(C) There is no correspondence between normalization and ER diagrams

(D) Upto 3NF normalization would be sufficient

7. In an RDBMS, access to rows of a table can be granted :

(A) Only to the complete table, if at all

(B) Only to the owner of the table

(C) To the complete or partial set of rows based on condition (if specified), to any user

(D) To the owner of the table and the DBA only

8. If Thomas Write Rule is used for concurrency control, then :

(A) some serializable schedules are permitted that are not conflict serializable

(B) it is equivalent to 2PL

(C) transaction abort takes place

(D) deadlocks occur in all cases

9. In a distributed database, fragmentation and replication affect :

(A) Both selection and projection

(B) Only selection

(C) Only projection

(D) Neither selection nor projection

10. Read the statements below in context to SQL92 and choose the most appropriate option :

(I) It allows updates on some types of views defined on tables

(II) It allows updates on arbitrary views

(III) It allows updates on some views defined on views

(A) Only (I) is true

(B) Only (I) and (II) are true

(C) Only (I) and (III) are true

(D) Only (II) and (III) are true

11. Which of the following is a graphics/multimedia authoring tool ?

(A) Cold Fusion (B) Power Builder

(C) Maya (D) Visual Studio

12. The specification of display being '1080p' implies which of the following ?

(A) Compliance with HD standard

(B) Compliance with XGA standard

(C) 1080 being the number of columns in the image

(D) The image size is 1080 × 1080 pixels in size

13. Consider this affine transformation matrix for 2D.

$$\begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$$

This represents a transformation of a point (x, y) into :

(A) A line with slope θ

(B) A circle with radius given by $r = [(x\cos\theta)^2 + (y\sin\theta)^2]^{1/2}$

(C) A point rotated by θ clockwise, with respect to the origin

(D) A point which is scaled by θ

14. What is the RGB equivalent of the color white ?

(A) 0, 255, 0 (B) 255, 0, 0

(C) 255, 255, 255 (D) 0, 0, 0

15. Dragging in computer graphics can be achieved by :

(A) Translation (B) Rotation

(C) Scaling (D) Mirroring

16. In a programming language that implements "call-by-value" parameter passing mechanism, what is printed by the below program ?

```
void add (int a, int b, int c)
{c = a + b ;
printf("%d", c) ;
}
main( )
{ int r, s, sum = 0 ;
sum = 2 ; r = 5 ; s = 7 ;
add(r, s, sum) ;
printf("%d \n", sum) ;
}
```

(A) 2 12 (B) 2 2

(C) 12 2 (D) 12 12

17. Which of the following is/are example(s) of the concept of "Lazy Evaluation" ?

(*i*) Evaluation of function parameters in Java, C, C++

(*ii*) Evaluation of boolean operators && and || in Java, C, C++

(A) (*i*) only (B) (*ii*) only

(C) Both (*i*) and (*ii*) (D) Neither (*i*) nor (*ii*)

18. Here is a PROLOG program :

father (rajpal, tejpal).

father (rajpal, sejpal).

mother (janki, rajpal).

mother (sarla, tejpal).

father (babu, sarla).

grandparent (X, Z) : — parent (X, Y), parent (Y, Z).

parent (X, Y) : — father (X, Y).

parent (X, Y) : — mother (X, Y).

What is the output of the following ?

(*i*) ? – grandparent (X, sejpal).

(*ii*) ? – grandparent (X, tejpal).

(A) (*i*) X = janki, (*ii*) X = janki, X = babu

(B) (*i*) X = janki, (*ii*) X = babu, X = janki

(C) (*i*) X = janki, babu (*ii*) X = janki, X = babu

(D) (*i*) X = babu, janki, (*ii*) X = babu, X = janki

19. Which one of the following is FALSE regarding formal languages ?

(A) There is unique minimal DFA for every regular language

(B) Every NFA can be converted to an equivalent PDA

(C) Complement of every context-free language is recursive

(D) Every nondeterministic PDA can be converted to an equivalent deterministic PDA

20. Consider the following statements :

(*i*) The intersection of context-free languages is context-free

(*ii*) The concatenation of regular languages is regular

(A) Both (*i*) and (*ii*) are false

(B) Both (*i*) and (*ii*) are true

(C) (*i*) is true, but (*ii*) is false

(D) (*i*) is false, but (*ii*) is true

21. Consider sliding window protocol where the window size is 0, ..., N – 1 packets. Consider the exchange between Sender A and Receiver B as follows. A : 0, 1, 2, 3, 4, ... N – 1; B : ACK N – 1 A : 0, 1, ..., N – 1; B : N – 3; A : N – 2, N – 1. The behaviour of A for retransmissions may be called as :

(A) Selective repeat (B) Cumulative ACKs

(C) Cumulative NACK (D) Go-back N

22. The number of IP addresses a router can have :

(A) only one (B) at least two

(C) at most two (D) not less than 2^8

23. In a communication system, noise can be introduced by :

(I) Transmitter Characteristics

(II) Channel Characteristics

(III) Receiver Characteristics

(A) (I) and (II) only (B) (II) and (III) only

(C) (I) and (III) only (D) (I), (II) and (III)

24. If the bandwidth of a channel is W = 3100 bps, and the number of possible voltage levels used for signals is M = 8, then the channel capacity is :

(A) 6200 bps (B) 12400 bps

(C) 18600 bps (D) 24800 bps

25. What is the size of the Marker field in the BGP protocol ?

(A) 16 octets (B) 8 octets

(C) 4 octets (D) 2 octets

26. Consider the following statements about quicksort :

(*i*) The worst case running time of quicksort is $O(n^2)$.

(*ii*) The average running time of quicksort is $O(n \log \log n)$.

(A) Both (*i*) and (*ii*) are false

(B) Both (*i*) and (*ii*) are true

(C) (*i*) is true, but (*ii*) is false

(D) (*i*) is false, but (*ii*) is true

27. Consider the following statements :

(*i*) A priority queue cannot be implemented as a linked list.

(*ii*) A priority queue is typically implemented as a heap.

(A) Both (*i*) and (*ii*) are false

(B) Both (*i*) and (*ii*) are true

(C) (*i*) is true, but (*ii*) is false

(D) (*i*) is false, but (*ii*) is true

28. The order of the divide-and-conquer recurrence relation :

$$T(n) = T(n / 2) + O(1)$$

is :

(A) $O(n)$ (B) $O(\log n)$

(C) $O(n \log n)$ (D) $O(n^2)$

29. Match the following terms :

(*i*)	All pairs shortest paths	(1)	Greedy
(*ii*)	Quick sort	(2)	Depth first search
(*iii*)	Minimum weight spanning tree	(3)	Dynamic programming
(*iv*)	Connected component	(4)	Divide-and-conquer

	(*i*)	(*ii*)	(*iii*)	(*iv*)
(A)	(2)	(4)	(1)	(3)
(B)	(3)	(4)	(1)	(2)
(C)	(3)	(4)	(2)	(1)
(D)	(4)	(1)	(2)	(3)

30. The postorder traversal of a binary tree is DEBFCA. It's preorder traversal is :

(A) ABFCDE (B) ADBFEC

(C) ABDECF (D) ABDCEF

31. Consider the following statements related to JavaScript :

(I) It is used for server side scripting.

(II) It is compiled.

(III) It is used for client side scripting.

Which one of the following is *correct* ?

(A) (I) and (II) are true

(B) (II) and (III) are true

(C) (I) and (III) are true

(D) (I), (II) and (III) are true

32. If the JVM was realised as a physical machine, it would belong to the ..... category of machines.

(A) Stack based RISC (B) Stack based CISC

(C) Hybrid (D) Vector

33. In which case is it mandatory to provide a destructor in a C++ class ?

(A) Almost in every class

(B) Class for which two or more than two objects will be created

(C) Class for which copy constructor is defined

(D) Class whose objects will be created dynamically

34. Runtime polymorphism in C++ is achieved by :

(A) friend function (B) virtual function

(C) operator overloading (D) function overloading

35. Why does an applet have no main( ) method ?

(A) The browser acts as the main.

(B) The paint( ) method is like the main method for an applet.

(C) Programs that do graphics don't need a main.

(D) Only simple programs need a main.

36. Which type of software maintenance requires maximum effort ?

(A) Perfective (B) Corrective

(C) Preventive (D) Adaptive

37. Which of the following is *not* used during Design phase of software engineering ?

(A) Abstraction (B) Information Hiding

(C) Refinement (D) Elicit Requirements

38. The extent to which a software can continue to operate correctly despite invalid input is called as :

(A) Fault Tolerance (B) Reliability

(C) Robustness (D) Portability

39. A quantitative measure of the degree to which a system or development process of software engineering possesses a given attribute is :

(A) Validation (B) Measurement

(C) Metric (D) Testing

40. Which one of the following is *not* a characteristic of a good requirement in software engineering ?

(A) Correctness (B) Verifiability

(C) Completeness (D) Ambiguity

41. Which one of the following is important while accessing data on the disk ?

(A) Seek time (B) Latency time

(C) Rotational time (D) Revolution time

42. The problem of resource starvation (such as CPU) is resolved by :

(A) Semaphore (B) Messages

(C) Aging (D) Mutual Exclusion

43. Dijkstra's Banker's algorithm is used for :

(A) Deadlock prevention (B) Disk scheduling

(C) CPU scheduling (D) Deadlock avoidance

44. Belady's anomaly is the behaviour of which page replacement algorithm ?

(A) LRU (B) FIFO

(C) MRU (D) Optimal

45. Which memory management scheme is used in Windows NT ?

(A) Segmentation

(B) Paging

(C) Paging with Virtual Memory

(D) Paging within Segmentation

46. Given $(P \rightarrow Q) \vee (R \rightarrow S)$, which of the following can be concluded ?

(A) $(P \rightarrow S) \vee (R \rightarrow Q)$ (B) $(\neg Q \rightarrow P) \vee (R \rightarrow S)$

(C) $(\neg Q \rightarrow P) \vee (R \rightarrow S)$ (D) $(\neg Q \rightarrow \neg P) \vee (R \rightarrow S)$

47. The statement $\neg \forall x[P(x) \wedge Q(x)]$ is the same as :

(A) $\forall x[\neg P(x) \wedge Q(x)]$ (B) $\forall x[\neg P(x) \wedge \neg Q(x)]$

(C) $\exists x[\neg P(x) \vee \neg Q(x)]$ (D) $\exists x[\neg P(x) \wedge \neg Q(x)]$

48. Here is a prolog program :

male (ravi).

male (sundar).

married (sundar).

bachelor (P) : — male (p), not (married (P)).

What is the output of the following ?

? — bachelor (raji).

? — bachelor (ravi).

(A) false, false (B) false, true

(C) true, false (D) true, true

49. A Tree-adjoining grammar (TAG) is :

(A) Less expressive than a regular grammar

(B) Less expressive than a context-free grammar

(C) More expressive than a context-free grammar

(D) More expressive than a context-sensitive grammar

50. Consider the following statements about the A* algorithm :

(*i*) It employs heuristics.

(*ii*) It uses "pessimistic" estimates for the cost for accuracy.

(*iii*) If a solution exists, A* will certainly find it.

Which of the following is *correct* ?

(A) (*i*) only (B) (*i*) and (*ii*) only

(C) (*ii*) and (*iii*) only (D) (*i*) and (*iii*) only

51. The language $\{a^m b^m c^m, m > 0\}$ can be recognised :

(A) Both by a finite state automaton and a pushdown automaton

(B) Neither by a finite state automaton nor by a pushdown automaton

(C) By a pushdown automaton but not by a finite state automaton

(D) By a turing machine but not by a pushdown automaton

52. Consider the following statements :

(*i*) A grammar in Greibach Normal Form (GNF) can be right recursive.

(*ii*) Any content-free grammar can be converted to GNF.

Which one of the following is *correct* ?

(A) (*i*) and (*ii*) are false

(B) (*i*) and (*ii*) are true

(C) (*i*) is false, (*ii*) is true

(D) (*i*) is true, (*ii*) is false

53. There are "pumping arguments" (pumping lemmas) that can be used to :

(*i*) prove that a language is regular.

(*ii*) prove that a language is not context-free.

Which of the following is *correct* ?

(A) (*i*) and (*ii*) are false

(B) (*i*) and (*ii*) are true

(C) (*i*) is false, (*ii*) is true

(D) (*i*) is true, (*ii*) is false

54. Linear bounded automata (LBA) :

(A) accept the set of regular, but not context-free languages.

(B) accept the set of context-free, but not context-sensitive languages.

(C) accept the set of context-sensitive languages.

(D) accept the set of recursive languages.

55. A language L is such that :

(*i*) An algorithm tells in finite time if a string s is in the language.

(*ii*) An algorithm tells in finite time if a string s is not in the language.

Which of the following is *correct* ?

(A) L is recursive and recursively enumerable.

(B) L is not recursive, and not recursively enumerable.

(C) L is not recursive, but recursively enumerable.

(D) L is not recursively enumerable, but recursive.

56. The Fourier transform when applied to a unit impulse function present at the origin in the spatial domain (x, y) bounded by limits M, N respectively is given by :

(A) $\delta(x - x_0, y - y_0)$ (B) $F(u, v)\, H(u, v)$

(C) $F(x, y) * \delta(x - x_0, y - y_0)$ (D) $\frac{1}{MN}$

57. Consider a random variable X taking values in the set S = {1, 2, 3, 4, 5} with probabilities 0.25, 0.25, 0.2, 0.15, 0.15 respectively. The optimal binary code for X must have the longest code words assigned to the symbols 4 and 5 of equal length. The average length of the Huffman coding for this variable is :

(A) 2 bits (B) 2.3 bits

(C) 2.5 bits (D) 3 bits

58. Consider the Hamming (7, 4) code; the minimum distance between any *two* code words is :

(A) 3 (B) 4

(C) 7 (D) 8

59. Let $H(p) = -p\log_2 p - (1-p)\log_2(1-p)$ be the binary entropy function. Evaluate $H\left(\frac{1}{4}\right)$ using the fact that $\log_2 3 \approx 1.584$:

(A) 0.811 bits (B) 0.406 bits

(C) 0.203 bits (D) 0.102 bits

60. Consider the code 0, 01. This code is :

(I) Instantaneous

(II) Uniquely decodable

(III) Singular

Which of the following is *correct* ?

(A) Only (I) and (II) are true

(B) Only (II) and (III) are true

(C) Only (I) and (III) are true

(D) All three are true

61. In Bipartite Graphs,

(*i*) The maximal matching is always unique.

(*ii*) A maximal matching can be found in polynomial time.

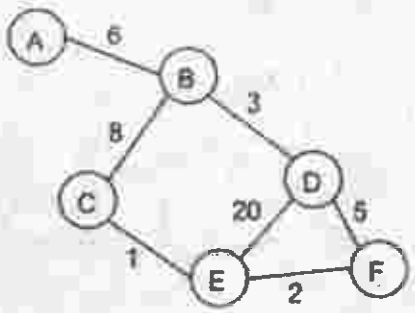
(*iii*) It is possible to find cycles of odd length.

Which of the above statements is/are *correct* ?

(A) (*i*) only (B) (*ii*) only

(C) (*iii*) only (D) (*i*) and (*iii*) only

62. Find the min-cut in the following graph :



(A) 6 (B) 2

(C) 4 (D) 7

63. Which of the following is *false* ?

(A) Dijkstra's algorithm may not terminate if the graph contains negative-weight edges.

(B) Breadth first search is shortest path algorithm that works on unweighted graphs.

(C) Consider a weighted directed graph G with positive edge weights and let X be a shortest path between vertices s and t. Then if we double the weight of every edge in the graph, then X will still be a shortest path between s and t.

(D) The running time of Dijkstra's algorithm is $O(n^2)$.

64. Solve the following LPP :

$$\min 2x_1 + 3x_2$$

$$\text{subject to } 4x_1 + 2x_2 \geq 12$$

$$x_1 + 4x_2 \geq 6$$

$$x_1, x_2 \geq 0$$

(A) $x_1 = 18/7, x_2 = 6/7$ (B) $x_1 = 18, x_2 = 6$

(C) $x_1 = -18/7, x_2 = 6/7$ (D) $x_1 = 18/7, x_2 = 6$

65. Solve :

$$\text{min. } x^2 + y^2$$

$$\text{subject to } x + y = 1$$

(A) $x = -1/2, y = 1/2$ (B) $x = 1/2, y = -1/2$

(C) $x = 1/2, y = 1/2$ (D) $x = 1, y = 0$

66. According to Hebb's learning rule, the updated value of a connection depends on the activations of the processing unit(s) on ..... of the connecting link.

(A) Input side only (B) Output side only

(C) Both sides (D) Inside

67. The logistic activation function $f(x) = \frac{1}{1+e^{-x}}$ and its derivative $f'(x)$ are connected by the relation :

(A) $f'(x) = f(x)[1 - f(x)]$ (B) $f'(x) = f(x)[1 + f(x)]$

(C) $f'(x) = \frac{1}{2}[1 - f(x)]$ (D) $f'(x) = \frac{1}{2}[1 + f(x)]$

68. The back propagation learning rule for a multilayer perceptron belongs to the following category :

(A) competitive learning (B) gradient descent learning

(C) reinforcement learning (D) unsupervised learning

69. Which of the following descriptions of the membership function *cannot* represent a fuzzy set ?

(A) Gaussian (B) Trapezoidal

(C) Rectangular (D) Triangular

70. Consider the fuzzy sets S = {0.7, 0.3} and T = {0.2, 0.8} then their fuzzy intersection $S \cap T$ is given by :

(A) {0.2, 0.3} (B) {0.3, 0.8}

(C) {0.7, 0.3} (D) {0.7, 0.8}

71. If a line which starts at location (5, 14) and ends at position (21, 2) has been rasterized by DDA algorithm, how many pixels will there be in the line ?

(A) 12 (B) 16

(C) 20 (D) 24

72. What is the difference between bitmapped graphics and vector graphics with respect to rescaling ?

(A) The bitmapped graphics will become pixelated/blurred whilst vector graphics are resolution independent which allows them to be rescaled without any loss of quality.

(B) The bitmapped graphics can be rescaled without any loss of quality while the quality of vector graphics will go down.

(C) The quality of both bitmapped graphics and vector graphics will go down.

(D) Both bitmapped graphics and vector graphics can be rescaled without loss of quality.

73. Homogeneous coordinates are used in computer graphics because :

(A) It is more efficient to perform calculations in a higher dimensional space.

(B) It is more efficient to perform calculations in a lower dimensional space.

(C) Rotation, scaling and translation matrices may be concatenated.

(D) All matrices thus used are orthogonal.

74. The menu name in a MDI child window :

(A) should be NULL.

(B) should be user defined.

(C) is to be provided by the user at run time.

(D) is defined as SYSMENU.

75. The GetWindowTextLength function gets the following :

(A) Length of the text displayed in the window.

(B) Length of the text displayed in the window in pixels.

(C) Length of the title string of the window.

(D) Length of the printable area of the window.

ROUGH WORK

SEAL