COMPUTER SCIENCE AND APPLICATIONS

Name & Signature of the Invigilator

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PAPER-III
AUG–17/19

OMR Answer Sheet No. : | | | | | | |

Roll No. : | | | | | | |

(in figures as in Hall Ticket)

Roll Number in words : .....

.....

Time : 2½ Hours] **No. of Printed Pages : 24** **[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 Fifty (75)** multiple choice type of questions. **All** questions are compulsory.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are 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 5 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 on the OMR Answer Sheet and the OMR Answer Sheet Number should be entered on this Test Booklet.
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.

   Example : (A) ● (C) (D) where (B) is the correct response.
5. Your responses to the items are to be indicated on the OMR Answer Sheet under Paper – III only. If you mark your response at any place other than in the oval in the OMR Answer Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. You have to return the original OMR Answer Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet and duplicate copy of OMR Answer Sheet on conclusion of examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table etc., is prohibited.
12. There shall be no negative marking.
13. In case of any discrepancy in the English and Gujarati versions of questions, English version will be taken as final.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

1. આ પાનાની ટોચ પર દર્શાવેલી જગ્યામાં તમારો રોલ નંબર લખો.
2. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા **પંચોતેર (૭૫)** પ્રશ્નો આપેલા છે. **બધાજ** પ્રશ્નો ફરજિયાત છે.
3. પરીક્ષાની શરૂઆતમાં આપને પ્રશ્નપુસ્તિકા આપવામાં આવશે. પ્રથમ પાંચ (૫) મિનિટ દરમ્યાન તમારે પ્રશ્નપુસ્તિકા ખોલી અને ફરજિયાતપણે નીચે મુજબ પરીક્ષણ કરવું :
   (*i*) પ્રશ્નપુસ્તિકાનો વપરાશ કરવા માટે આ કવર પૃષ્ઠની ધાર પર આપેલ સીલ સ્ટીકર 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 પ્રશ્નો/પૃષ્ઠો ઓછા હોય, બે વાર છપાયા હોય, અનુક્રમમાં અથવા અન્ય કોઈ ફરક હોય અર્થાત કોઈપણ સંજોગોમાં ખામીયુક્ત પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં. અને જો ખામીયુક્ત પ્રશ્નપુસ્તિકા મળી હોય તો નિરીક્ષક પાસેથી તુરંત જ બીજી સારી પ્રશ્નપુસ્તિકા મેળવી લેવી. આ માટે ઉમેદવારને પાંચ (૫) મિનિટનો સમયગાળો આપવામાં આવશે. પછી થી, પ્રશ્નપુસ્તિકા બદલવામાં આવશે નહીં કે કોઈ વધારાનો સમયગાળો આપવામાં આવશે નહીં.
   (*iii*) આ ચકાસણી સમાપ્ત થાય પછી, પ્રશ્નપુસ્તિકાનો નંબર OMR જવાબ પત્રક પર લખવો અને OMR જવાબ પત્રકનો નંબર પ્રશ્નપુસ્તિકા પર લખવો.
4. પ્રત્યેક પ્રશ્ન માટે ચાર જવાબ વિકલ્પ (A), (B), (C) અને (D) આપવામાં ઓવલ છે. તમારે સાચા જવાબના ઓવલ (oval) ને નીચે આપેલ ઉદાહરણ મુજબ પેનથી ભરીને સંપૂર્ણ કાળું કરવાનું રહેશે.

   ઉદાહરણ : (A) ● (C) (D) કે જ્યાં (B) સાચો જવાબ છે.
5. આ પ્રશ્નપુસ્તિકાના પ્રશ્નો ના જવાબ અલગથી આપવામાં આવેલ OMR જવાબ પત્રકમાં પેપર–III લખેલ વિભાગમાં જ અંકિત કરવા. જો આપ OMR જવાબ પત્રકમાં આપેલ ઓવલ (oval) સિવાય અન્ય સ્થાને જવાબ અંકિત કરશો તો તે જવાબનું મૂલ્યાંકન કરવામાં આવશે નહીં
6. અંદર આપેલ સૂચનાઓ ધ્યાનપૂર્વક વાંચો.
7. કાચું કામ (Rough Work) પ્રશ્નપુસ્તિકાના અન્તિમ પૃષ્ઠ પર કરવું.
8. જો આપ OMR જવાબ પત્રક નિયત જગ્યા સિવાય અન્ય કોઈપણ સ્થાને, આપનું નામ, રોલ નંબર, ફોન નંબર અથવા એવું કોઈ ચિન્હકે જેનાથી તમારી ઓળખ થઈ શકે, અંકિત કરશો અથવા અભદ્ર ભાષાનો પ્રયોગ કરો, અથવા અન્ય કોઈ અનુચિત સાધનોનો ઉપયોગ કરો, જેમ કે અંકિત કરી દીધેલ જવાબ ભૂંસી નાખવો કે સફેદ શાહીનો ઉપયોગ કરી બદલશો તો આપને પરીક્ષા માટે અયોગ્ય જાહેર થઈ શકો છો.
9. પરીક્ષા સમય પૂરો થઈ ગયા બાદ ઓરીજીનલ OMR જવાબ પત્રક જે તે નિરીક્ષકને ફરજીયાત સોંપી દેવું અને કોઈ પણ સંજોગોમાં તે પરીક્ષાખંડની બહાર લઈ જવું નહીં. પરીક્ષા પૂર્ણ થયા બાદ ઉમેદવાર ઓરીજીનલ પ્રશ્નપુસ્તિકા અને OMR જવાબ પત્રકની ડુપ્લિકેટ કોપી પોતાની સાથે લઈ જઈ શકે છે.
10. માત્ર કાળી/ભૂરી બોલ પોઈન્ટ પેન વાપરવી.
11. કેલ્કયુલેટર અને અન્ય ઈલેકટ્રોનિક યંત્રોનો ઉપયોગ કરવાની મનાઈ છે.
12. ખોટા જવાબ માટે નકારાત્મક ગુણાંકન પ્રથા નથી.
13. પ્રશ્નપુસ્તિકાના કોઈ પ્રશ્નમાં અનુવાદ અંગે કોઈ વિવાદ/મતભેદ જણાય તો અંગ્રેજી વર્ઝન યોગ્ય ગણાશે.

SEAL

COMPUTER SCIENCE AND APPLICATIONS
PAPER-III

Note : This paper contains **Seventy Five (75)** multiple-choice questions, each question carrying **Two (2)** marks. Attempt **All** questions.

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1. Which register holds the address of the instruction to be fetched next ?

   (A) Instruction register

   (B) Program Counter

   (C) Accumulator

   (D) Memory Address register

2. Temporal locality refers to :

   (A) tendency to access memory locations that have been used recently.

   (B) memory locations that are clustered.

   (C) tendency of a program to access data locations sequentially.

   (D) tendency of a processor to access instructions sequentially.

3. PUSH Data transfer instruction transfers word from :

   (A) top of stack to destination. (B) source to top of stack.

   (C) memory to processor. (D) processor to memory.

4. Which addressing modes have the advantage of "no memory reference" other than the instruction fetch ?

   (A) Immediate and Direct

   (B) Immediate, Register and Stack

   (C) Direct and Register Indirect

   (D) Indirect, Displacement and Stack

5. Cache memory :

(A) improves the effective access time to main memory.

(B) extends the size of main memory.

(C) allows to run programs whose virtual address space is larger than physical memory.

(D) acts between CPU and hard disk.

6. Joining a table with itself is called :

(A) Equi join (B) Inner join

(C) Outer join (D) Self join

7. Which of the following is a valid sequence in SQL ?

(A) where, group by, order by, having

(B) where, having, group by, order by

(C) where, group by, having, order by

(D) where, order by, group by, having

8. Which of the following is fired automatically ?

(A) Procedure (B) Trigger

(C) View (D) Function

9. Which of the following is TRUE for relational model ?

(A) It is a mathematical model. (B) It uses predicate logic.

(C) It uses set theory. (D) All of these.

10. The model in which the data is organised into a tree-like structure is called :

(A) Hierarchical database model (B) Network model

(C) Object model (D) Relational model

11. While plotting a line from point (20, 10) to (30, 18) using Bresenham algorithm, which of the following point will NOT lie on the digital line ?

(A) (23, 13) (B) (25, 14)

(C) (28, 16) (D) (29, 17)

12. Which of the following algorithm is used for line clipping ?

(A) Pointer algorithm

(B) Cohen-Sutherland algorithm

(C) Bresenham's algorithm

(D) Gouraud algorithm

13. Consider a 24 bit RGB raster system with resolution of 1280 × 1024. If the available RAM is 3840 MB, then how many maximum frames can be stored in main memory ?

(A) 1024 (B) 1000

(C) 1280 (D) 960

14. Homogeneous coordinates are used in computer graphics because :

(A) They consume lesser memory.

(B) They work in lower dimensional space.

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

(D) Rotations, scaling and translation matrices may be concatenated.

15. The perspective projection is more practical because distant objects appear :

(A) Smaller (B) Larger

(C) Neither smaller nor larger (D) Brighter

16. Which of the following is TRUE for the language $L = \{0^m 1^m \mid m > 0\}$?

(A) It can be accepted by a NPDA, but not a DPDA.

(B) It can be accepted by a NPDA, as well as a DPDA.

(C) It can be accepted neither by a NPDA, nor a DPDA.

(D) It can be accepted by a DPDA, but not a NPDA.

17. Consider the following statements regarding languages, where ($w \in \{0,1\}^*$; w^R is the reverse of string w) :

S1. $x = wcw^R$ can be accepted by NFA.

S2. $x = wcw^R$ can be accepted by NPDA.

S3. $x = wcw^R$ can be accepted by DPDA.

Which of the above are *correct* ?

(A) S1 and S2 (B) S2 and S3

(C) S1 and S3 (D) S1, S2, S3

18. Which of the fbllówing is TRUE ?

(A) Every Type 0 grammar is a Type 2 grammar.

(B) Every Type 1 grammar is a Type 2 grammar.

(C) Every Type 4 grammar is a Type 3 grammar.

(D) Every Type 3 grammar is a Type 0 grammar.

19. Which of the following is FALSE ?

(A) For each DFA, we can construct a corresponding NPDA.

(B) For each DFA, we can construct a corresponding NFA.

(C) For each NFA, we can construct a corresponding DFA.

(D) For each DPDA, we can construct a corresponding NFA.

20. Consider the following statements regarding languages :

Sl. A type 0 grammar can be accepted by a DPDA.

S2. A type 1 grammar can be accepted by a NPDA.

S3. A type 2 grammar can be accepted by a DTM.

S4. A type 3 grammar can be accepted by a NDTM.

Which of the above is/are TRUE ?

(A) Only S2 (B) S2 and S3

(C) S3 and S4 (D) S1, S3 and S4

21. Analog transmission conveys which among the following :

1. voice

2. data

3. image

4. video

(A) 1 and 2 (B) 1 and 3

(C) 1 and 4 (D) 1, 2, 3 and 4

22. Consider the following statements :

1. Digital transmission may be transmitted via twisted pair.

2. Digital transmission may be transmitted via microwave.

Which of the above statements is/are correct ?

(A) Only 1 (B) Only 2

(C) Both 1 and 2 (D) Neither 1 nor 2

23. Consider the statements :

S1. Synchronous data transfer needs clock signal between the sender and the receiver.

S2. Synchronous data transfer has a slower data transfer rate.

Which of the following is *correct* ?

(A) Only S1 (B) Only S2

(C) Both S1 and S2 (D) Neither S1 nor S2

24. PAP is associated with :

(A) Presentation Layer (B) Session Layer

(C) Transport Layer (D) Physical Layer

25. An electronic device which amplifies the signal it receives and retransmits it at a higher level or higher power so that the signal can cover a longer distance is a :

(A) Hub (B) Switch

(C) Repeater (D) Hub and Repeater both

26. Let G be a directed graph whose vertex set is the set of numbers from 1 to 100. There is an edge from a vertex i to a vertex j iff either $j = i + 1$ or $j = 3i$. The minimum number of edges in a path in G from vertex 1 to vertex 100 is :

(A) 5 (B) 7

(C) 8 (D) 9

27. The smallest number of keys that will force a B-tree of order 3 to have a height 3 is (Assume root is at height 1)

(A) 12 (B) 10

(C) 8 (D) 7

28. What is the number of edges in a connected acyclic undirected graph with n vertices ?

(A) $n - 1$ (B) n

(C) $n + 1$ (D) $2n - 2$

29. Which sorting algorithm will you choose for sorting a list of almost sorted integers, where 98% of integers are already sorted and in place ?

(A) Insertion sort (B) Quick sort

(C) Selection sort (D) Heap sort

30. From the following, choose the one which uses different algorithm design technique (Greedy, Divide and Conquer, Dynamic Programming, etc.) than others :

(A) Floyd's all-pairs shortest path algorithm

(B) Dijkastra Shortest Path Algorithm

(C) Prim's Minimum Spanning Tree Algorithm

(D) Huffman Coding Algorithm

31. Accessing functions from multiple classes to a derived class is known as :

(A) multiple inheritance (B) single inheritance

(C) hybrid inheritance (D) multilevel inheritance

32. In C++, a class with pure virtual function is called :

(A) Pure Class (B) Virtual Class

(C) Nested Class (D) Abstract Class

33. When class B is inherited from class A, what is the order in which the constructor of those classes are called ?

(A) Class A first Class B next

(B) Class B first Class A next

(C) Class B's only as it is the child class

(D) Class A's only as it is the parent class

34. Which of the following is NOT a paired tag in HTML ?

(A) <p> (B) <b>

(C) <i> (D) <img>

35. The major advantage of XML over HTML is :

(A) Provision of user defined tags and attributes

(B) Support for programming

(C) Displays on all browsers

(D) Parsing is faster

36. The modification to be carried out to improve the original functionalities of software by adding new functionalities is known as :

(A) Perfective maintenance (B) Preventive maintenance

(C) Adaptive maintenance (D) Corrective maintenance

37. Which one of the following is NOT a requirements gathering technique ?

(A) Interview (B) Questionnaire

(C) Document Review (D) Inspection

38. Which one of the following statements is FALSE for Cohesion ?

(A) The weak (*i.e.* low) cohesion increases difficulty in understanding modules.

(B) Functional cohesion is the most desirable type of cohesion and modules are easy to maintain in this type of cohesion.

(C) A module whose elements are involved in activities that are related in time comes under Coincidental cohesion.

(D) Maintenance is easy for Functional cohesion modules.

39. When two or more modules share some global data item then the type of coupling is :

(A) Common Coupling (B) Content Coupling

(C) Data Coupling (D) External Coupling

40. Which one of the following statements related to Requirements analysis phase is TRUE ?

(A) The SRS document also describes how the requirements listed in it are implemented correctly.

(B) The SRS document must not include non-functional requirements.

(C) Requirements Review is carried out to find the errors of the system design.

(D) Prototyping is the method of requirements validation.

41. Which CPU scheduling algorithm usually has high average waiting time ?

(A) FCFS

(B) Shortest Job First

(C) Round Robin

(D) Priority based

42. Assume that there are n processes. Further, a system has 6 instances of resource tape-drive, which can be reserved and released one at a time. Also each process needs 3 instances of tape-drive. What will be the maximum value of n, for which the system is guaranteed to be deadlock free ?

(A) 4

(B) 3

(C) 2

(D) 1

43. Which disk scheduling algorithm may causes starvation ?

(A) SCAN

(B) FCFS

(C) SSTF

(D) Both FCFS and SSTF

44. For a demand page virtual memory consider the reference string as 1, 2, 3, 2, 4, 1, 3, 2, 4, 1 with initial empty memory size of 3 page frames. Consider FIFO and LRU as page replacement algorithm. Suppose FIFO and LRU denote the number of page faults respectively for FIFO and LRU page replacement algorithm. Which one of the following relations related to number of page fault is TRUE ?

(A) FIFO = LRU (B) FIFO < LRU

(C) FIFO > LRU (D) Cannot be determined

45. Consider 7 memory partitions of sizes 175 KB, 400 KB, 600 KB, 500 KB, 300 KB, 250 KB, and 700 KB. These partitions need to be allocated to four processes of sizes 350 KB, 210 KB, 475 KB, and 490 KB using Best fit algorithm. Which one of the following statement is FALSE ?

(A) Memory partition of 300 KB is not allocated to any process.

(B) Memory partition of 500 KB is allocated to a process of a size 475 KB.

(C) Memory partition of 500 KB is allocated to a process of a size 490 KB.

(D) Memory partition of 250 KB is allocated to a process of a size 210 KB.

46. Consider the following examples of propositional resolution :

R1. $\{p\}, \{\neg p\} \rightarrow \{\ \}$

R2. $\{p, q\}, \{\neg p, \neg q\} \rightarrow \{\}$

R3. $\{p, q\}, \{\neg p, q\} \rightarrow \{q\}$

Which of the above are valid resolutions ?

(A) R1 and R2 (B) R2 and R3

(C) R1 and R3 (D) All are valid

47. Consider the following statements :

S1. $\forall x[P(x) \wedge Q(x)] \Leftrightarrow (\forall xP(x) \wedge \forall xQ(x))$

S2. $\exists x[P(x) \wedge Q(x)] \Leftrightarrow (\exists xP(x) \wedge \exists xQ(x))$

S3. $\exists x[P(x) \vee Q(x)] \Leftrightarrow (\exists xP(x) \vee \exists xQ(x))$

S4. $\forall x[P(x) \vee Q(x)] \Leftrightarrow (\forall xP(x) \vee \forall xQ(x))$

Which of the above statements are *correct* ?

(A) S1 and S3 (B) S1 and S4

(C) S2 and S3 (D) S2 and S4

48. Which of the following grammars is/are ambiguous ?

G1. $A \rightarrow A|\varepsilon$

G2. $A \rightarrow aA \mid Aa|\varepsilon$

(A) G1 only (B) G2 only

(C) Neither G1 nor G2 (D) Both G1 and G2

49. The following grammar G1 is :

G1. $A \rightarrow A + A \mid a$

(A) Unambiguous

(B) Ambiguous as demonstrated in the derivation of the string 'a + a'

(C) Ambiguous as demonstrated in the derivation of the string 'a + a + a'

(D) Ambiguous for all the strings it generates

50. For which of the following graphs :

G1. An n-ary tree of depth 1.

G2. A binary tree of depth 2.

G3. A 1-ary tree of depth 3.

is the BFS traversal order the same as the DFS order ?

(A) G1 only (B) G2 only

(C) G2 and G3 (D) G1 and G3

51. What is the language accepted by the following CFG ?

$$S \rightarrow \varepsilon \mid 0S1S1S \mid 1S0S1S \mid 1S1S0S$$

(A) Binary strings containing even number of 1s.

(B) Binary strings containing odd number of 0s.

(C) Odd length Binary strings.

(D) Binary strings with twice as many 1s as 0s.

52. Which of the following is TRUE regarding Formal Languages ?

(A) Every NFA can be converted to an equivalent NFA that has only one final state.

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

(C) If L1 is a regular language and L2 is a finite language then L1 $\cup$ L2 is also finite.

(D) Intersection of a regular set and an irregular set is always an irregular set.

53. Which of the following is FALSE regarding Formal Languages ?

(A) $A = \{a^n b^n c^n \mid n \geq 0\}$ is not a Context Free Language.

(B) The shortest string not accepted by the Regular Expression 0* 1* 0* 1* is 1010.

(C) The Regular Expression (1+01)*0* accepts all binary strings that don't contain the substring 0001.

(D) All regular languages are accepted by Turing machines.

54. How many of the following statements are TRUE ?

- If a CFG G is in CNF, then G is also in GNF.
- Cocke-Younger-Kasami (CYK) parsing algorithm employs dynamic programming approach.
- Decidable languages are closed under the operation of concatenation.
- if A is reducible to B, and B is Turing-recognizable, then A is also Turing-recognizable.

(A) 1 (B) 2

(C) 3 (D) 4

55. The set of all palindromes over {0, 1} is :

(A) Regular but not CFL

(B) CFL but not regular

(C) Regular but not recursively enumerable

(D) Regular and CFL

56. A networking company uses a compression technique to encode the message before transmitting over the network. Suppose the message contains the following characters with their frequency :

Character	Frequency
a	5
b	9
c	12
d	13
e	16
f	45

If the compression technique used is Huffman Coding, how many bits will be used to code the word 'face' ?

(A) 9 (B) 10

(C) 11 (D) 12

57. Which data compression algorithm is used in GIF images ?

(A) LZW (B) Huffman coding

(C) Run length algorithm (D) Fractal compression

58. Fourier Transform is NOT used in which of the following tasks ?

(A) Image reconstruction (B) Image filtering

(C) Image compression (D) Image zooming

59. Which of the following algorithms is NOT related to error detection (check digit) ?

(A) Damm algorithm (B) Luhn algorithm

(C) Bresenham's algorithm (D) Verhoeff algorithm

60. Which of the following statements is/are TRUE ?

S1. Entropy captures the amount of randomness or uncertainty in a variable.

S2. There is less uncertainty in the outcome of the roll of a die than a flip of a coin.

S3. Mutual information measures how much one random variables tells us about another.

(A) S1 only (B) S1 and S2

(C) S1 and S3 (D) S2 and S3

61. At every iteration of the simplex method for the minimisation problem, a variable in the current basis is replaced with another variable that has :

(A) A positive $C_j - Z_j$ value

(B) A negative $C_j - Z_j$ value

(C) $C_j - Z_j = 0$

(D) None of the above

62. In a PERT network, the length of time by which an activity can be delayed until all preceding activities are completed is called :

(A) Free float (B) Total float

(C) Independent float (D) None of these

63. Dijkstra's algorithm for finding single-source shortest paths with all the nodes in the graph with $|V|$ vertices and $|E|$ edges runs in :

(A) $O(|E|^2)$ time (B) $O(|V|^2)$ time

(C) $O(|V|.|E|^2)$ time (D) $O(|E|^2 \log |V|)$ time

64. The Ford-Fulkerson algorithm is used to :

(A) Solve convex programming problems.

(B) Find single-source shortest paths in a graph.

(C) Find all pair shortest paths in a graph.

(D) Compute the maximal flow in a network.

65. Consider the following statements :

S1. The Ford-Fulkerson algorithm may take exponential time on some inputs.

S2. Solving the matching problem for bipartite graphs in NP-complete.

S3. It is possible to solve matching problems by solving network-flow problems.

Which of the above statements are TRUE ?

(A) S1 and S2 (B) S2 and S3

(C) S1 and S3 (D) All of these

66. The network that involves the transmission of error back through the network to allow weights to be adjusted so that the network can learn is called :

(A) Self-organizing map (B) Perceptron

(C) Back-propagation network (D) Multilayered perceptron

67. Which of the following statements is FALSE for Fuzzy logic ?

(A) Fuzzy logic is a multi-valued logic.

(B) Fuzzy logic provides an inference morphology that enables approximate human reasoning capabilities.

(C) Fuzzy logic addresses the issues of uncertainty and lexical precision.

(D) Fuzzy logic solve problems where crisp logic may fail.

68. Which unit (*i.e.* component) of Neural network determines the strength of input vector ?

(A) Weights

(B) Thresholds

(C) Activation function

(D) Weigths and Activation function

69. Consider the following statements for backpropagation.

S1. It does not require known, desired output.

S2. It uses two phase cycle, propagation and weight update.

Which of the following is NOT correct ?

(A) S1 only (B) S2 only

(C) Both S1 and S2 (D) Neither S1 nor S2

70. Which of the following is NOT an accepted definition of Fuzzy implication ?

(A) $x \rightarrow y = \min \{1, 1 - x + y\}$

(B) $x \rightarrow y = \min \{x, y\}$

(C) $x \rightarrow y = \max \{x, (1 - y)\}$

(D) $x \rightarrow y = \max \{(1 - x), y\}$

71. The first process created by the unix kernel is :

(A) init process with PID 1.

(B) init process with PID 0.

(C) boot process with PID 1.

(D) boot process with PID 0.

72. The command grep "^*abc*" temp | WC –1 will output :

(A) Total number of lines beginning with *abc* in file named temp.

(B) Total number of lines ending with *abc* in file named temp.

(C) All lines beginning with *abc* from file named temp.

(D) First line beginning with *abc* from file named temp.

[Instructions for Q.73 and Q.74]

The next two questions pertain to the contents of the file 'b.txt' on unix :

shah, sameer, 250, 300

sheth, atul, 198, 300

trivedi, ami, 222, 300

73. If we run the command :

```
$ awk –F, '{ print $2, $1, $3/$4 * 100 }' b.txt | sort
```

the output we get is :

(A) sameer, shah, 83.3333
atul, sheth, 66
ami, trivedi, 74

(B) ami trivedi 74
atul sheth 66
sameer shah 83.3333

(C) sameer shah 83.3333
atul sheth 66
ami trivedi 74

(D) ami, trivedi, 74
atul, sheth, 66
sameer, shah, 83.3333

74. If we run the command :

$ grep sh b.txt | tr –d '[0–9]'

the output we get is :

(A) shah, sameer,,

sheth, atul ,,

(B) shah, sameer, 25,3

sheth, atul, 18,3

(C) sameer shah

atul sheth

ami trivedi

(D) ami, trivedi, 74

atul, sheth, 66

sameer, shah, 83.3333

75. What is the unix system call to delete a file ?

(A) ioctl( ) (B) unlink( )

(C) exec( ) (D) rm( )

ROUGH WORK

SEAL