Test Booklet Code & No.
प्रश्नपत्रिका कोड व क्र.

A

Paper-III
COMPUTER SCIENCE AND APPLICATION

Signature and Name of Invigilator

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No. | | | | | | |

(In figures as in Admit Card)

Seat No. .....

(In words)

OMR Sheet No. | | | | | | |

(To be filled by the Candidate)

MAY - 37316

Time Allowed : 2½ Hours] **[Maximum Marks : 150**

Number of Pages in this Booklet : **32**

Number of Questions in this Booklet : **75**

Instructions for the Candidates

1. Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
2. This paper consists of **75** objective type questions. Each question will carry *two* marks. *All* questions of Paper-III will be compulsory, covering entire syllabus (including all electives, without options).
3. At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :
   (*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 or 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 missing pages/ questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given. The same may please be noted.**
   (*iii*) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. Each question has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
   Example : where (C) is the correct response.

   (A) (B) ● (D)

5. Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only.** If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done at the end of this booklet.
8. If you write your Name, Seat Number, Phone Number or put any mark on any part of the OMR 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, you will render yourself liable to disqualification.
9. You have to return original OMR 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 the Test Booklet and duplicate copy of OMR 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 is no negative marking for incorrect answers.**

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
2. सदर प्रश्नपत्रिकेत **75** बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
   (*i*) प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
   (*ii*) **पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून पहावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चूकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.**
   (*iii*) वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
4. प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.
   उदा. : जर (C) हे योग्य उत्तर असेल तर.

   (A) (B) ● (D)

5. या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे **ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत.** इतर ठिकाणी लिहीलेली उत्तरे तपासली जाणार नाहीत.
6. आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
7. प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
8. जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरीक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूण केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमार्गाचा अवलंब केल्यास विद्यार्थ्याला परीक्षेस अपात्र ठरविण्यात येईल.
9. परीक्षा संपल्यानंतर विद्यार्थ्याने मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापी, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
10. **फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.**
11. **कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.**
12. **चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.**

Computer Science and Application

Paper III

Time Allowed : 2½ Hours] **[Maximum Marks : 150**

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

---

1. The most important advantage of an integrated circuit is its :

   (A) Easy replacement in case of circuit failure

   (B) Extremely high reliability

   (C) Reduced cost

   (D) Low power consumption

2. Which of the following is used to store critical data during subroutines and interrupt ?

   (A) Stack (B) Queue

   (C) Accumulator (D) Data register

3. CS stands for :

   (A) Cost Segment (B) Counter Segment

   (C) Code Segment (D) Coot Segment

---

4. ..... is the most important segment and it contains the actual assembly language instruction to be executed by the microprocessor.

(A) Data segment (B) Code segment

(C) Stack segment (D) Extra segment

5. An integrated circuit is :

(A) a complicated circuit

(B) an integrating device

(C) much costlier than a single transistor

(D) available in the form of a silicon chip

6. In order to maintain the consistency during transactions database provides :

(A) Commit (B) Atomic

(C) Flashback (D) Retain

7. It is an abstraction through which relationships are treated as higher level entities :

(A) Generalization (B) Specialization

(C) Aggregation (D) Inheritance

8. In multiple granularity of locks SIX lock is compatible with :

(A) IX (B) IS

(C) S (D) SIX

9. Let E1 and E2 be 2 entities in an ER diagram with simple single-valued attributes. R1 and R2 are 2 relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model ?

(A) 2 (B) 3

(C) 4 (D) 5

10. In domain relational calculus we create a variable for every :

(A) Row (B) Column

(C) Table (D) None of these

11. Which one of the following is the tightest upperbound that represents the time complexity of inserting an object into a binary search tree of 'n' nodes ?

(A) O(1) (B) O(log n)

(C) O(n) (D) O(n log n)

12. A layer-4 firewall (a device that can look at all protocol headers upto the transport layer) cannot :

(A) block entire HTTP traffic during 9 : 00 pm and 5 : 00 am

(B) block all ICMP traffic

(C) stop incoming traffic from a specific IP address but allow outgoing traffic to same IP address

(D) block TCP traffic from a specific user on a multi-user system during 9 : 00 pm and 5 : 00 am

13. The lexical analysis for a modern language such as JAVA needs the power of which one of the following machine models in a necessary and sufficient sense ?

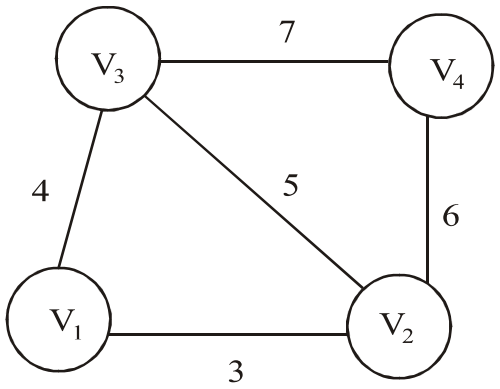
(A) Finite state automata

(B) Deterministic pushdown automata

(C) Non-deterministic pushdown automata

(D) Turing machine

14. An undirected graph G(V, E) contains $n(n > 2)$ nodes named V_1, V_2 ..... V_n. Two nodes V_i, V_j are connected if and only if $0 < |i - j| \leq 2$. Each edge (V_i, V_j) is assigned a weight $i + j$. A sample graph with n = 4 is shown below :



What will be the cost of the Minimum Spanning Tree (MST) of such a graph with 'n' nodes ?

(A) $\frac{1}{12}(11\,n^2 - 5n)$ (B) $n^2 - n + 1$

(C) $6n - 11$ (D) $2n + 1$

15. Let G be a simple undirected planar graph on 10 vertices with 15 edges. If G is a connected graph, then the number of 'bounded' faces in any embedding of G on the plane is equal to :

(A) 3 (B) 4

(C) 5 (D) 6

16. Let G be a complete undirected graph on 6 vertices. If vertices of G are labelled, then the number of distinct cycles of length 4 in G is equal to :

(A) 15 (B) 45

(C) 90 (D) 360

17. The transform at the heart of JPEG compression standard for digital images is :

(A) Fourier transform

(B) Log transform

(C) Discrete cosine transform

(D) Laplace transform

18. In a network of LANs connected by bridges, packets are sent from one LAN to another through intermediate bridges. Since more than one path may exist between two LANs, packets may have to be routed through multiple bridges. Why is the spanning tree algorithm used for bridge-routing ?

(A) For shortest path routing between LANs

(B) For avoiding loops in the routing paths

(C) For fault tolerance

(D) For minimizing collisions

19. The maximum window size for data transmission using the selective reject protocol with n-bit frame sequence numbers is :

(A) 2^n (B) $2^{(n-1)}$

(C) $2^n - 1$ (D) $2^{(n-2)}$

Q. Nos. 20 & 21 :

A wireless LAN has mobile stations communicating with a base station. Suppose that the channel available has WHz of bandwidth and suppose that the inbound traffic from the mobiles to the base is K times smaller than the outbound traffic from the base to the workstations. Two methods are considered for dealing with the inbound/outbound communications. In frequency-division duplexing the channel is divided into two frequency bands, one for inbound and one for outbound communications. In time-division duplexing all transmission use the full channel but the transmissions are time-division multiplexed for inbound and outbound traffic.

20. The efficiency of TDD in comparison with FDD is :

(A) more

(B) less

(C) equal

(D) inbound is less compare to outbound

21. The ratio K taken into account in the two methods as :

(A) FDD uses K to allocate bandwidth

(B) TDD uses K to allocate times slots

(C) Options (A) and (B)

(D) FDD and TDD will not take K for allocation

Q. Nos. 22 & 23 :

Suppose two Ethernet LANs are interconnected by a box that operates as follows :

The box has a table that tells it the physical addresses of the machines in each LAN. The box listens to frame transmissions on each LAN. If a frame is destined to a station at the other LAN, the box retransmits the frame onto the other LAN, otherwise the box does nothing.

22. The resulting network still can be called as :

(A) Extended LAN (B) P to P Network

(C) Special WAN (D) MAN

23. The resulting network belongs to :

(A) The network layer (B) The transport layer

(C) The datalink layer (D) The physical layer

24. According to the IEEE project 802.11, there are two types of wireless LAN. In an infrastructure based-network, what is a BSA (Basic Serivce Area) ?

(A) A BSA is a wireless station

(B) A BSA is a gateway which connects a wireless station to a network

(C) A BSA is simply a cell

(D) A BSA is another word for server

25. If we are allowed to replicate items and if each processor can store O(1) items at a time, then we can sort N items on an N-cell ring in :

(A) N + 1 steps (B) $\frac{N}{2} + 1$ steps

(C) $\frac{N}{3} + 1$ steps (D) $\frac{N}{4} + 1$ steps

26. SISD, SIMD, MISD and MIMD are known as :

(A) Flynn's taxonomy

(B) Moores law

(C) Amdahl effect

(D) Cleens taxonomy

27. Let T(n) be the function defined by :

T(1) = 1

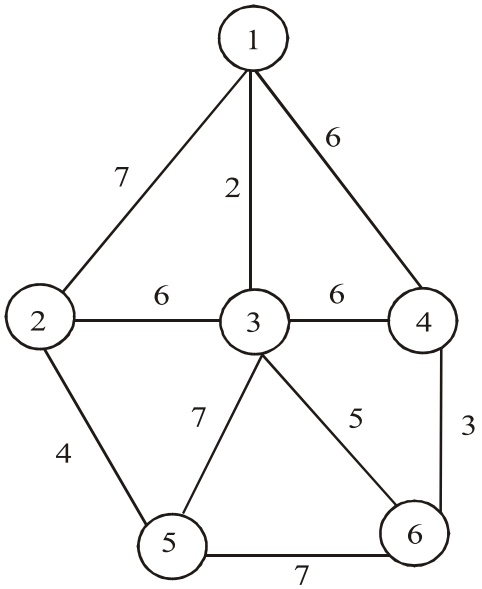
$$T(n) = T\left(\left\lfloor \frac{n}{2} \right\rfloor\right) \sqrt{n} \quad \text{for} \quad n \geq 2$$

Which of the following statements is *true* ?

(A) $T(n) = O\left(\sqrt{n}\right)$ (B) $T(n) = O(n)$

(C) $T(n) = O(\log\ n)$ (D) $T(n) = O(\log\ \log\ n)$

28. Consider the following undirected weighted graph. The minimum cost spanning tree for this graph has the cost :



(A) 18 (B) 20

(C) 24 (D) 22

29. Quick sort is run on two inputs shown below to sort in ascending order :

(1) 1, 2, 3, ..., n.

(2) n, n – 1, n – 2, ..., 2, 1.

Let C_1 and C_2 be the number of comparison made for the inputs 1 and 2 respectively. Then :

(A) $C_1 < C_2$ (B) $C_1 > C_2$

(C) $C_1 = C_2$ (D) $C_1 = 5, C_2 = 8$

30. Complexity of Kruskal's algorithm for finding the minimum spanning tree of an undirected graph containing n vertices and m edges if the edges sorted is :

(A) $O(m)$ (B) $O(n)$

(C) $O(m + n)$ (D) $O(m^3)$

31. Assume 5 buffer pages are available to sort a file of 105 pages. The cost of sorting using m-way merge sort is :

(A) 206 (B) 618

(C) 840 (D) 926

32. In software engineering the following are some of the software specification tools :

(A) Data Dictionary, FSM, Petri-nets

(B) DFDs, FSM, ERP

(C) FSM, Petri-nets, ADA

(D) Data Dictionary, FSM, Unix

33. Variant of waterfall model in software engineering is :

(A) B-method (B) Agile method

(C) Concurrent method (D) Incremental method

34. In software engineering, the fundamental part of agile approach is basically used by :

(A) Spiral model (B) Incremental model

(C) Unified model (D) Probabilistic model

35. In software engineering, spiral model have a speciality of having combination in :

(A) Change avoidance with change tolerance

(B) Change assessment with change tolerance

(C) Change validation with change assessment

(D) Change planning with change validation

36. What role do user stories play in agile planning ?

(A) Define useful software features and functions delivered to endusers

(B) Determine a schedule used to deliver each software increment

(C) Provide a substitute to performing detailed scheduling of activities

(D) Used to estimate the effort required to build the current increment

37. Which of the following is *not* one of the requirement classifications used in Quality Function Deployment (QFD) ?

(A) Exciting (B) Expected

(C) Mandatory (D) Normal

38. ..... is the process, which controls the changes made to a system, and manages the different versions of the evolving software product.

(A) Software management (B) Configuration management

(C) Version management (D) Release management

39. Which of the following is *not* a desirable characteristic of SRS document ?

(A) Concise (B) Traceable

(C) Ambiguous (D) Verifiable

40. How is WINWIN spiral model different from spiral model ?

(A) It defines a set of negotiation activities at the beginning of each pass around the spiral

(B) It defines tasks required to define resources, timelines, and other project related information

(C) It defines tasks required to assess both technical and management risks

(D) It defines tasks required to construct, test, install and provide user support

41. The data flow diagram is the basic component of the ..... system.

(A) conceptual (B) logical

(C) physical (D) virtual

42. Enhancements, upgrades and bug fixes are undertaken during the ..... step in the SDLC.

(A) maintenance and evaluation

(B) problem and opportunity identification

(C) design

(D) development and documentation

43. An appraisal of a system's performance after it has been installed, is called system ..... .

(A) planning (B) review

(C) maintenance (D) batch processing

44. It is necessary to prioritize information requirements of an organization at the requirements determination phase *because* :

(A) it is always good to prioritize

(B) there are conflicting demands from users

(C) there are constraints on budget, time, human resource and requirements

(D) all good organizations do it

45. It is necessary to consult the following while drawing up requirements specifications :

(A) Only top managers

(B) Only top and middle managers

(C) Only top, middle and operational managers

(D) Top, middle and operational managers and also all who will use the system

46. **Context** : Rama gave a Physics book to Shama. She studied Physics from her book.

In the given context which of the following knowledge is sufficient to resolve the referential ambiguity due to 'she' and 'her' ?

(A) One among Rama and Shama is a boy

(B) Resolve the pronoun reference by replacing it with the most recently used noun

(C) Either (A) or (B)

(D) Neither (A) nor (B)

47. Based upon the information, "Wordnet, a semantic network of syn(onyms)-sets in English, follows the following relations : meronymy (P is part of Q, i.e. Q has P as a part of itself), holonymy (Q is part of P, i.e. P has Q as a part of itself), hyponymy (P is subordinate of Q; P is kind of Q), hypernymy (P is superordinate of Q), synonymy (P denotes the same as Q) and antonymy (P denotes the opposite of Q)", name the following (P, Q) relations :

(*i*) (chair, backrest of the chair),

(*ii*) (broken hand, repaired hand)

(*iii*) (seat, chair)

(*iv*) (bookshelf, cupboard)

(A) (*i* –> holonymy, *ii* –> antonymy, *iii* –> hypernymy, *iv* –> hyponymy)

(B) (*i* –> holonymy, *ii* –> antonymy, *iii* –> hoponymy, *iv* –> hyponymy)

(C) (*i* –> meronymy, *ii* –> hypernymy, *iii* –> holonymy, *iv* –> hyponymy)

(D) (*i* –> holonymy, *ii* –> antonymy, *iii* –> synonymy, *iv* –> hyponymy)

48. Customer reviews play vital role in the launch of a product in market. They are becoming part of a protocol for on-line purchase. CRM department makes sure that the reviews will be submitted, analyzed and the inputs would be used in designing the further marketing strategy. Software that facilitates the CRM department for the submission, analysis and report generation of the customer reviews would be ..... .

(A) a DSS

(B) an Expert system

(C) an ERP

(D) an MIS

49. The most appropriate predicate logic representation of, "He loves all" is ..... .

(A) loves (He, all)

(B) loves (x, y) $\wedge$ x = He $\wedge$ y = all

(C) $\forall y, \exists x$ loves (x, y)

(D) All of the above

50. **Information** : Books are on a shelf. Books are in a bag. Shelf is furniture. Furniture and bag are blue. Furniture and bag are housed in a store.

In a tree representation of the above information which of the following is *true* ?

(A) Started with Book by following BFS, Colour is the last node to be visited

(B) Started with Book by following BFS, Store is the last node to be visited

(C) Started with Book by following BFS, Furniture is the last node to be visited

(D) All of the above are true

51. Number of states required to accept strings that end with 01 :

(A) 3 (B) 2

(C) 1 (D) Can't be represented

52. Let N_f and N_p denote the classes of languages accepted by non-deterministic finite automata and non-deterministic pushdown automata respectively. Let D_f and D_p denote the classes of languages accepted by deterministic finite automata and deterministic pushdown automata respectively. Which one of the following is *True* ?

(A) $D_f \subset N_f$ and $D_p \subset N_p$

(B) $D_f \subset N_f$ and $D_p = N_p$

(C) $D_f = N_f$ and $D_p = N_p$

(D) $D_f = N_f$ and $D_p \subset N_p$

53. Number of states required to simulate a computer with memory capable of storing m words each of length n :

(A) $m*(2^n)$

(B) $2^{(m*n)}$

(C) $2^{(m + n)}$

(D) None of the above mentioned

54. Consider the following problem x :

Given a turing machine M over the input alphabet $\sum$, any state q of M and a word $w \in \sum^*$ does the computation of M on w visit the state q ?

Which of the above statements about x is *correct* ?

(A) x is decidable

(B) x is undecidable but partially decidable

(C) x is undecidable and not even partially decidable

(D) x is not a decision problem

55. Consider the following languages :

L1 = $\{WW \mid W \in (a, b)^*\}$

L2 = $\{WW^R \mid W \in (a, b)^*, W^R$ is reverse of W$\}$

L3 = $\{0^{2i} \mid i$ is an integer$\}$

L4 = $\{0^{i2} \mid i$ is an integer$\}$

Which of the language/s is/are regular ?

(A) Only L1 and L2 (B) Only L2, L3 and L4

(C) Only L3 and L4 (D) Only L3

56. Given an arbitrary non-deterministic finite automation (NFA) with n states, the maximum number of states in an equivalent minimized DFA is at least :

(A) n^2 (B) 2^n

(C) 2n (D) n!

57. Alta Vista's BabelFish Website is a :

(A) Language translation program

(B) Wealth of information about species of fish

(C) AI search engine

(D) AI organizational page of information

58. Where is the minimum criterion used in Fuzzy Logic ?

(A) When there is AND operation

(B) When there is OR operation

(C) In De-Morgan's Theorem

(D) None of the above

59. Knowledge base contains :

(A) Rules, facts and relationships

(B) Only rules and relationships

(C) Simulation of human thinking

(D) Only facts

60. Fuzzy logic has rapidly become one of the most successful technologies for developing sophisticated control systems. Which of the following reasons are valid for this ?

(*i*) Fuzzy logic resembles the human way of thinking

(*ii*) Fuzzy logic enables the ability to generate precise solutions from certain or approximate information

(*iii*) Fuzzy logic is easy to implement

(A) (*i*), (*ii*) and (*iii*) (B) (*i*) and (*ii*)

(C) (*ii*) and (*iii*) only (D) None of these

61. Consider the following linear programming problem :

The standard weight of a special purpose brick is 5 kg and it contains 2 ingredients B_1 and B_2. B_1 costs Rs. 5 per kilogram and B_2 costs Rs. 10 per kilogram. Strength consideration dictate that the brick contains not more than 4 kg of B_1 and at least 2 kg of B_2. Find the proportion of B_1 and B_2 so as to minimize the cost of the brick.

For this problem the feasible region is :

(A) The region enclosed by the polygon joining (0, 0), (4, 0), (4, 1), (3, 2) and (0, 2)

(B) The triangular region joining (0, 2), (0, 5) and (3, 2)

(C) The line segment joining (3, 2) and (0, 5)

(D) The unbounded region between the y-axis and the lines x = 4 and y = 2

62. Consider the transportation problem given below :

Destination / Source	D_1	D_2	D_3	Demand
S1	2	7	4	5
S2	3	3	1	8
S3	5	4	7	7
S4	1	6	2	14
Capacity	7	9	18	34

Total

The initial basic solution for this problem was found by the Least cost method and Vogel's Approximation method. The initial cost of transportation by these two methods is respectively.

(A) 102 and 83 (B) 102 and 76

(C) 83 and 76 (D) 104 and 83

Information for Q. Nos. 63 & 64 :

A modern IT park has 7 buildings viz. B_1, ..., B_7 and 9 roads connecting them. B_1 is centrally located and is connected to all the 6 buildings B_2, ..., B_7 surrounding it. The pair (B_2, B_3), (B_4, B_5) and (B_6, B_7) are connected. Cleaning of the roads in the IT park is done by a cleaning truck and the depot of the vehicle is located on the road joining B_4 and B_5. The truck operator needs some help in planning the cleaning tour. Help him by identifying the correct statements about the tour.

63. An optimal tour will have :

(A) At least one road travelled twice

(B) At least two roads travelled twice

(C) No road travelled twice

(D) One road travelled thrice

64. In an optimal tour :

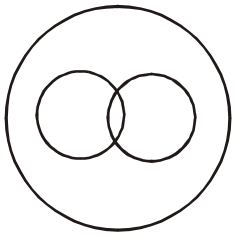
(A) Each building will be visited only once

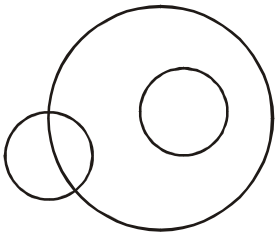
(B) B_1 will be visited more than once

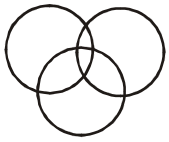
(C) Each building will be visited twice

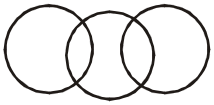
(D) B_4 and B_5 will be visited twice

65. Which of the following combination of circles best represents athletes, sprinter and marathon runners ?

(A) 

(B) 

(C) 

(D) 

Q. Nos. 66 & 67 :

A multilayer feed-forward artificial neural network has 16 neurons in the input layer. The number of neurons in every following layer is half of that in the previous layer. There is only 1 neuron in the output layer.

66. In order to model a non-linear property how many of the neurons in this architecture should have a non-linear type activation function ?

(A) Exactly one (B) Minimum one

(C) 15 (D) 31

67. In this architecture a neuron that receives maximum number of signals can have ..... inputs and at the most there could be ..... such neuron(s).

(A) (16, 8)

(B) (8, 16)

(C) (8, 8)

(D) (30, 1)

68. A half-filled glass is shown. Is it filled ? Yes and No. Is it empty ? Again, Yes and No. With their usual meanings in English we know that fill and empty are complementary operations of each other. The situation, a half filled glass, tells you that negation of a statement is the statement itself. This is unusual in the Boolean logic. A tri-state logic has been suggested in which the third state unknown (U) represents the truth value : Neither true nor false. Extension of Boolean NOT for U will be, NOT (U) = U and that for Boolean OR will be S OR U = Max (S, U) where S is the truth value of a given statement and F < U < T holds. Compute U -> T.

(A) T

(B) F

(C) U

(D) Data is inadequate for the computation

69. Data : Long hair is rare. Girls good in Mathematics is rare. Rina is a girl. Rina has long hair. Rina is good in Mathematics. Which of the following helps you to model the statements :

(*i*) You don't get many people like Rina.

(*ii*) Rina is an example of rare persons.

(A) (ANN, Fuzzy sets)

(B) (Probability theory, Fuzzy sets)

(C) (Fuzzy classifier, Fuzzy sets)

(D) (Fuzzy classifier, Crisp sets)

70. If 60% people have long hair and 10% people are good in Mathematics then how many in a college that has 5000 students are likely to be good in Mathematics and have grown long hair ?

(A) 30

(B) 300

(C) 500

(D) Data is inadequate to compute the result

71. The 32-bit versions of Windows (including all versions of Windows NT, Windows 95 and Windows 98) include ..... file for 16-bit compatibility.

(A) user32.exe (B) user.exe

(C) user16.exe (D) user.dll

72. Which variable contains current shell process id ?

(A) $* (B) $?

(C) $$ (D) $!

73. In Unix, the static library has the extension of :

(A) .i (B) .a

(C) .o (D) .h

74. Which of the following system program/software always resides in main memory ?

(A) Text editor (B) Loader

(C) Assembler (D) Linker

75. If a grammar is not LALR(1), YACC will produce one or more multiply defined entries in the parsing table action function. These entries are reported as ..... .

(*i*) shift/reduce conflicts

(*ii*) reduce/shift conflicts

(*iii*) shift/shift conflicts

(*iv*) reduce/reduce conflicts

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

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

ROUGH WORK

ROUGH WORK