Signature and Name of Invigilator

1. (Signature) _____

   (Name) _____

2. (Signature) _____

   (Name) _____

Answer Sheet No. : .....

(To be filled by the Candidate)

Roll No. | | | | | | | |

(In figures as per admission card)

Roll No. _____

(In words)

PAPER – II **Test Booklet No.**

J – 8707

COMPUTER SCIENCE AND APPLICATIONS

Time : 1¼ hours] **[Maximum Marks : 100**

Number of Pages in this Booklet : **8** Number of Questions in this Booklet : **50**

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 multiple-choice type of questions.
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 Serial No. of the booklet should be entered in the Answer-sheets and the Serial No. of Answer Sheet should be entered on this 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) (B) ● (D)

   where (C) is the correct response.
5. Your responses to the items are to be indicated in the Answer Sheet given **inside the Paper I booklet only**. If you mark at any place other than in the ovals in the 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 or put any mark on any part of the test booklet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
9. You have to return the test question booklet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall.
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.**

परीक्षार्थियों के लिए निर्देश

1. पहले पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए।
2. इस प्रश्न-पत्र में पचास बहुविकल्पीय प्रश्न हैं।
3. परीक्षा प्रारम्भ होने पर, प्रश्न-पुस्तिका आपको दे दी जायेगी। पहले पाँच मिनट आपको प्रश्न-पुस्तिका खोलने तथा उसकी निम्नलिखित जाँच के लिए दिये जायेंगे जिसकी जाँच आपको अवश्य करनी है :
   (i) प्रश्न-पुस्तिका खोलने के लिए उसके कवर पेज पर लगी कागज की सील को फाड़ लें। खुली हुई या बिना स्टीकर-सील की पुस्तिका स्वीकार न करें।
   (ii) **कवर पृष्ठ पर छपे निर्देशानुसार प्रश्न-पुस्तिका के पृष्ठ तथा प्रश्नों की संख्या को अच्छी तरह चैक कर लें कि ये पूरे हैं। दोषपूर्ण पुस्तिका जिनमें पृष्ठ/प्रश्न कम हों या दुबारा आ गये हों या सीरियल में न हों अर्थात किसी भी प्रकार की त्रुटिपूर्ण पुस्तिका स्वीकार न करें तथा उसी समय उसे लौटाकर उसके स्थान पर दूसरी सही प्रश्न-पुस्तिका ले लें। इसके लिए आपको पाँच मिनट दिये जायेंगे। उसके बाद न तो आपकी प्रश्न-पुस्तिका वापस ली जायेगी और न ही आपको अतिरिक्त समय दिया जायेगा।**
   (iii) इस जाँच के बाद प्रश्न-पुस्तिका की क्रम संख्या उत्तर-पत्रक पर अंकित करें और उत्तर-पत्रक की क्रम संख्या इस प्रश्न-पुस्तिका पर अंकित कर दें।
4. प्रत्येक प्रश्न के लिए चार उत्तर विकल्प (A), (B), (C) तथा (D) दिये गये हैं। आपको सही उत्तर के दीर्घवृत्त को पेन से भरकर काला करना है जैसा कि नीचे दिखाया गया है।

   उदाहरण : (A) (B) ● (D)

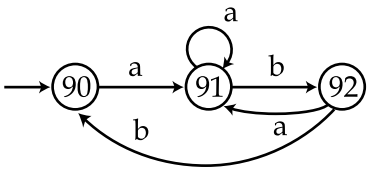
   जबकि (C) सही उत्तर है।
5. प्रश्नों के उत्तर **केवल प्रश्न पत्र I के अन्दर दिये गये** उत्तर-पत्रक पर ही अंकित करने हैं। यदि आप उत्तर पत्रक पर दिये गये दीर्घवृत्त के अलावा किसी अन्य स्थान पर उत्तर चिन्हांकित करते है, तो उसका मूल्यांकन नहीं होगा।
6. अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें।
7. कच्चा काम (Rough Work) इस पुस्तिका के अन्तिम पृष्ठ पर करें।
8. यदि आप उत्तर-पुस्तिका पर अपना नाम या ऐसा कोई भी निशान जिससे आपकी पहचान हो सके, किसी भी भाग पर दर्शाते या अंकित करते हैं तो परीक्षा के लिये अयोग्य घोषित कर दिये जायेंगे।
9. आपको परीक्षा समाप्त होने पर उत्तर-पुस्तिका निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्ति के बाद अपने साथ परीक्षा भवन से बाहर न लेकर जायें।
10. **केवल नीले/काले बाल प्वाईंट पैन का ही इस्तेमाल करें।**
11. **किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है।**
12. **गलत उत्तर के लिए अंक नहीं काटे जायेंगे।**

Computer Science and Applications

PAPER – II

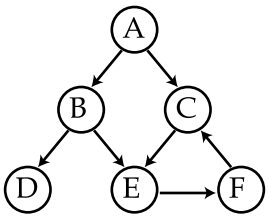
Note : This paper contains **fifty** (50) objective-type questions, each question carrying **two** (2) marks. Attempt **all** of them.

1. The following determiniotic finite automata recognizes :



(A) Set of all strings containing 'ab'
(B) Set of all strings containing 'aab'
(C) Set of all strings ending in 'abab'
(D) None of the above

2. Depth ion travels of the following directed graph is :



(A) A B C D E F
(B) A B D E F C
(C) A C E B D F
(D) None of the above

3. The maximum number of nodes in a binary tree of depth 10 :
(A) 1024 (B) $2^{10} - 1$ (C) 1000 (D) None of the above

4. The regular expression given below describes :

$r = (1+01)^*(0+\lambda)$

(A) Set of all string not containing '11'
(B) Set of all string not containing '00'
(C) Set of all string containing '01'
(D) Set of all string ending in '0'

5. Which of the following language is regular :
(A) $L = \{ a^n b^n \mid n \geq 1 \}$
(B) $L = \{ a^n b^m c^n d^m \mid n, m \geq 1 \}$
(C) $L = \{ a^n b^m \mid n, m \geq 1 \}$
(D) $L = \{ a^n b^m c^n \mid n, m \geq 1 \}$

6. 2's complement of -100 is :

(A) 00011100 (B) 10011101 (C) 10011100 (D) 11100100

7. Which of the following expression remove hazard form : $xy + z\bar{x}$?

(A) $xy + z\bar{x}$ (B) $xy + z\bar{x}$

(C) $xy + z\bar{x} + yz$ (D) $xy + z\bar{x} + wz$

8. How many 1's are present in the binary representation of $15 \times 256 + 5 \times 16 + 3$:

(A) 8 (B) 9 (C) 10 (D) 11

9. If $A \oplus B = C$, then :

(A) $A \oplus C = B$ (B) $B \oplus C = A$

(C) $A \oplus B \oplus C = 1$ (D) $A \oplus B \oplus C = 0$

10. What is the maximum counting speed of a 4-bit binary counter which is composed of Flip-Flop with a propagation delay of 25ns ?

(A) 1MHz (B) 10MHz (C) 100MHz (D) 4MHz

11. The following loop in 'C' :

```
int i=0;
While (i++<0)i--;
```

(A) will terminate

(B) will go into an infinite loop

(C) will give compilation error

(D) will never be executed

12. In case of right shift bitwise operator in 'C' language, after shifting n bits, the leftmost n bits :

(A) are always filled with zeroes

(B) are always filled with ones

(C) are filled with zeroes or ones and is machine dependent

(D) none of the above

13. What keyboard in class specification helps to hide data :

(A) Public (B) Private (C) Static (D) Void

14. What is the output of the following 'C' program ?

```
main( )
{printf ("%×", −1>>4);}
```

(A) ffff (B) Offf (C) OOOO (D) fffO

15. Runtime polymorphism can be achieved by :
(A) Accessing virtual function through the pointer of the base class
(B) Accessing virtual function through the object
(C) The derived class
(D) None of these

16. Which of the following statements is wrong ?
(A) 2-phase Locking Protocols suffer from dead locks.
(B) Time - Stamp Protocols suffer from more aborts.
(C) Time - Stamp Protocols suffer from cascading roll back where as 2-phase locking Protocol donot.
(D) None of these

17. A recursive foreign key is a :
(A) references a relation. (B) references a table.
(C) references its own relation (D) references a foreign key.

18. A subclass having more than one super class is called :
(A) Category (B) Classification
(C) Combination (D) Partial Participation

19. A Relation R = {A,B,C,D,E,F} is given with following set of functional dependencies : $F = \{A \rightarrow B, AD \rightarrow C, B \rightarrow F, A \rightarrow E\}$. Which of the following is Candidate Key ?
(A) A (B) AC (C) AD (D) None of these

20. Which statement is false regarding data Independence :
(A) Hierarchical data model suffers from data Indepedence.
(B) Network model suffers from data Independence.
(C) Relational model suffers only from logical data Independence.
(D) Relational model suffers only from physical data Independence.

SET - II

21. The time required to find shortest path in a graph with n vertices and e edges is :
(A) O(e) (B) O(n) (C) $O(e^2)$ (D) $O(n^2)$

22. Pre order is also known as :
(A) Depth first order (B) Breadth first order
(C) Topological order (D) Linear order

23. The equivalent postfix express for d/(e+f) + b*c is :
(A) defbc/ + + (B) def + /bc + *
(C) def + /bc* + (D) None of these

24. Which algorithm has some average, worst case and best case time :

(A) Binary search (B) Maximum of n numbers

(C) Quick sort (D) Fibonacci search

25. Application of data structure is queue is :

(A) Level wise printing of tree.

(B) Implementation of priority queues.

(C) Function call implementation

(D) Depth first search in a graph.

26. In case of Bus/Tree topology signal balancing issue is overcome by :

(A) Strong Transmitter (B) Polling

(C) Segmentation (D) Modulation

27. Which of the following techniques are used to control data flow ?

1. Windowing 2. Routing 3. RPCs 4. Buffering

(A) 1,4 (B) 2,3,4 (C) 1,3,4 (D) 1,2,3,4

28. TDM is _____ .

(A) A primary/secondary type protocol

(B) A peer/peer protocol

(C) A Non-priority peer/peer protocol

(D) A priority type protocol

29. What services does the Internet Layer provide ?

1. Quality of service 2. Routing

3. Addressing 4. Connection-oriented delivery

5. Framming bits

(A) 1,2,3 (B) 2,3,4 (C) 1,3,4,5 (D) 2,3,4,5

30. Which of the following protocols is used to prevent looping ?

(A) OSPF (B) Spanning tree

(C) SRB (D) Fragment free switching

31. The parsing technique that avoids back tracking is :

(A) Top - down parsing (B) Recursive - descent parsing

(C) Predicative (D) Syntax tree

32. A Top - down Parse generates :

(A) Right - most derivation. (B) Right - most derivation, in reverse.

(C) Left - most derivation. (D) Left - most derivation in reverse.

33. In an absolute loading scheme, which loader function is accomplished by programmer ?
(A) Allocation (B) Linking
(C) Rellocation (D) Both (A) and (B)

34. Symbol table can be used for :
(A) Checking type compability
(B) Suppressing duplication of error message
(C) Storage allocation
(D) All of these above

35. Moving process from main memory to disk is called :
(A) Caching (B) Termination
(C) Swapping (D) Interruption

36. Part of a program where the shared memory is accessed and which should be executed indivisibly, is called :
(A) Semaphores (B) Directory
(C) Critical section (D) Mutual exclusion

37. Windows is a _____ operating system :
(A) Non-preemptive (B) Preemptive
(C) Multi-user (D) Real time

38. The "nice" command is used in Unix :
(A) to decrease the priority of a process.
(B) to increase the priority of a process.
(C) to get the highest priority.
(D) nothing to do with the priorities.

39. Which page replacement policy suffers from Belady's anomaly ?
(A) LRV (B) LFU (C) FIFO (D) OPTIMAL

40. Cache memory is :
(A) High-Speed Register (B) Low-Speed RAM
(C) Non-Volatile RAM (D) High-speed RAM

41. Which of the following combination is preferred with respect to cohesion and coupling :
(A) low and low (B) low and high
(C) high and low (D) high and high

42. Difference between flow-chart and data-flow diagram is :
(A) there is no difference
(B) usage in high level design and low level design
(C) control flow and data flow
(D) used in application programs and system programs

43. Match the following :

(a)	Unit test	(i)	Requirements
(b)	System test	(ii)	Design
(c)	Validation test	(iii)	Code
(d)	Integration test	(iv)	System Engineering

Which of the following is true :

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

(D) None of the above

44. Problems with waterfall model are :

1. Real projects rarely follow this model proposes
2. It is often difficult for the customer
3. Working model is available only in the end
4. Developers are delayed unnecessarily

Which of the following is true :

(A) 1 and 4 only (B) 2 and 3 only
(C) 1, 2 and 3 only (D) 1, 2, 3 and 4

45. Which one of the following is a object-oriented approaches :

(A) The Booch method (B) The Rambaugh method
(C) The Load and Yomdon method (D) All of the above

46. Which technical concept sets cellular apart from all preceding mobile/radio systems ?

(A) FM-Transmission (B) Duplex Functionality
(C) Frequency Reuse (D) TDMA Technology

47. Wireless interconnection to the PSTN are also known as :

(A) Localities (B) CLECs
(C) POPs (D) IXCs

48. Dimentional modeling in Data Mining refers to :

(A) view and interrogate data (B) define structures and store data
(C) retrieve information only (D) none of these

49. The U-NII (Unlicensed National Information Infrastructure) band operates at the _____ frequency :

(A) 2.4 GHz (B) 33 MHz (C) 5 GHz (D) 16 GHz

50. Which digital radio technology employs an N = 1 frequency-reuse plan ?

(A) GSM (B) TDMA (C) D AMPS (D) CDMA

- o O o -

Space For Rough Work