PAPER-II
COMPUTER SCIENCE AND APPLICATIONS

Signature and Name of Invigilator

1. (Signature) _____

   (Name) _____

2. (Signature) _____

   (Name) _____

| J | 8 | 7 | 1 | 2 |

Time : 1 ¹/₄ hours]

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

[Maximum Marks : **100**

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 OMR 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 circle as indicated below on the correct response against each item.
   Example : Ⓐ Ⓑ ● Ⓓ
   where (C) is the correct response.
5. Your responses to the items are to be indicated in the **OMR Sheet given inside the Paper I 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 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 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 the test question booklet and Original OMR 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 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 marks for incorrect answers.**

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 अर्थात् 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 OMR 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 वृत्त को पेन से भरकर काला करना है जैसा कि नीचे दिखाया गया है ।
   उदाहरण : Ⓐ Ⓑ ● Ⓓ
   जबकि (C) सही उत्तर है ।
5. प्रश्नों के उत्तर **केवल प्रश्न पत्र I के अन्दर दिये गये OMR पत्रक पर ही** अंकित करने हैं । यदि आप OMR पत्रक पर दिये गये वृत्त के अलावा किसी अन्य स्थान पर उत्तर चिह्नांकित करते हैं, 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 OMR पत्रक पर नियत स्थान के अलावा अपना नाम, रोल नम्बर, फोन नम्बर या कोई भी ऐसा चिह्न जिससे आपकी पहचान हो सके, अंकित करते हैं अथवा अभद्र भाषा का प्रयोग करते हैं, या कोई अन्य अनुचित साधन का प्रयोग करते हैं, तो परीक्षा के लिये अयोग्य घोषित किये जा सकते हैं ।
9. आपको परीक्षा समाप्त होने पर प्रश्न-पुस्तिका एवं मूल OMR पत्रक निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्ति के बाद उसे अपने साथ परीक्षा भवन से बाहर न लेकर जायें । हालांकि आप परीक्षा समाप्ति पर OMR पत्रक की डुप्लीकेट प्रति अपने साथ ले जा सकते हैं ।
10. केवल नीले/काले बाल प्वाईंट पेन का ही इस्तेमाल करें ।
11. किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।
12. गलत उत्तरों के लिए कोई अंक काटे नहीं जाएँगे ।

COMPUTER SCIENCE AND APPLICATIONS
Paper – II

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

1. The postfix expression AB + CD – ∗ can be evaluated using a

   (A) stack

   (B) tree

   (C) queue

   (D) linked list

2. The post order traversal of a binary tree is DEBFCA. Find out the pre-order traversal.

   (A) ABFCDE

   (B) ADBFEC

   (C) ABDECF

   (D) None of the above

3. The branch logic that provides making capabilities in the control unit is known as

   (A) Controlled transfer

   (B) Conditional transfer

   (C) Unconditional transfer

   (D) None of the above

4. The number of colours required to properly colour the vertices of every planer graph is

   (A) 2

   (B) 3

   (C) 4

   (D) 5

5. Networks that use different technologies can be connected by using

   (A) Packets

   (B) Switches

   (C) Bridges

   (D) Routers

6. Both hosts and routers are TCP/IP protocol software. However, routers do not use protocol from all layers. The layer for which protocol software is not needed by a router is

   (A) Layer – 5 (Application)

   (B) Layer – 1 (Physical)

   (C) Layer – 3 (Internet)

   (D) Layer – 2 (Network Interface)

7. In multiuser database if two users wish to update the same record at the same time, they are prevented from doing so by

   (A) Jamming

   (B) Password

   (C) Documentation

   (D) Record lock

8. A binary search tree is a binary tree :

   (A) All items in the left subtree are less than root

   (B) All items in the right subtree are greater than or equal to the root

   (C) Each subtree is itself a binary search tree

   (D) All of the above

9. What deletes the entire file except the file structure ?

(A) ERASE

(B) DELETE

(C) ZAP

(D) PACK

10. Which command is the fastest among the following ?

(A) COPY TO <NEW FILE>

(B) COPY STRUCTURE TO <NEW FILE>

(C) COPY FILE <FILE 1> <FILE 2>

(D) COPY TO MFILE-DAT DELIMITED

11. B+ tree are preferred to binary tree in Database because

(A) Disk capacity are greater than memory capacities

(B) Disk access is much slower than memory access

(C) Disk data transfer rates are much less than memory data transfer rate

(D) Disks are more reliable than memory

12. A Transaction Manager is which of the following ?

(A) Maintains a log of transactions

(B) Maintains before and after database images

(C) Maintains appropriate concurrency control

(D) All of the above

13. Leaves of which of the following trees are at the same level ?

(A) Binary tree

(B) B-tree

(C) AVL-tree

(D) Expression tree

14. Which of the following TCP/IP Internet protocol is diskless machine uses to obtain its IP address from a server ?

(A) RAP

(B) RIP

(C) ARP

(D) X.25

15. Decryption and encryption of data are the responsibility of which of the following layer ?

(A) Physical layer

(B) Data Link layer

(C) Presentation layer

(D) Session layer

16. In which circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM ?

(A) Space division

(B) Time division

(C) Virtual

(D) Packet

17. In which Routing Method do all the routers have a common database ?

(A) Distance vector

(B) Link state

(C) Link vector

(D) Dijkestra method

18. Page Shift Keying (PSK) Method is used to modulate digital signal at 9600 bps using 16 level. Find the line signals and speed (i.e. modulation rate).

(A) 2400 bauds   (B) 1200 bauds

(C) 4800 bauds   (D) 9600 bauds

19. The station to hub distance in which it is 2000 metres.

(A) 100 Base-T_x

(B) 100 Base-F_x

(C) 100 Base-T_4

(D) 100 Base-T_1

20. Main aim of software engineering is to produce

(A) program

(B) software

(C) within budget

(D) software within budget in the given schedule

21. Key process areas of CMM level 4 are also classified by a process which is

(A) CMM level 2

(B) CMM level 3

(C) CMM level 5

(D) All of the above

22. Validation means

(A) are we building the product right

(B) are we building the right product

(C) verification of fields

(D) None of the above

23. If a process is under statistical control, then it is

(A) Maintainable

(B) Measurable

(C) Predictable

(D) Verifiable

24. In a function oriented design, we

(A) minimize cohesion and maximize coupling

(B) maximize cohesion and minimize coupling

(C) maximize cohesion and maximize coupling

(D) minimize cohesion and minimize coupling

25. Which of the following metric does not depend on the programming language used ?

(A) Line of code

(B) Function count

(C) Member of token

(D) All of the above

26. A / B^+ tree index is to be built on the name attribute of the relation STUDENT. Assume that all students names are of length 8 bytes, disk block are of size 512 bytes and index pointers are of size 4 bytes. Given this scenario what would be the best choice of the degree (i.e. the number of pointers per node) of the B^+ tree ?

(A) 16   (B) 42

(C) 43   (D) 44

27. The Inorder traversal of the tree will yield a sorted listing of elements of tree in

(A) Binary tree

(B) Binary search tree

(C) Heaps

(D) None of the above

28. Mobile IP provides two basic functions.

(A) Route discovery and registration

(B) Agent discovery and registration

(C) IP binding and registration

(D) None of the above

29. Pre-emptive scheduling is the strategy of temporarily suspending a gunning process

(A) before the CPU time slice expires

(B) to allow starving processes to run

(C) when it requests I/O

(D) to avoid collision

30. In round robin CPU scheduling as time quantum is increased the average turn around time

(A) increases

(B) decreases

(C) remains constant

(D) varies irregularly

31. Resources are allocated to the process on non-sharable basis is

(A) mutual exclusion

(B) hold and wait

(C) no pre-emption

(D) circular wait

32. Cached and interleaved memories are ways of speeding up memory access between CPU's and slower RAM. Which memory models are best suited (i.e. improves the performance most) for which programs ?

(i) Cached memory is best suited for small loops.

(ii) Interleaved memory is best suited for small loops

(iii) Interleaved memory is best suited for large sequential code.

(iv) Cached memory is best suited for large sequential code.

(A) (i) and (ii) are true.

(B) (i) and (iii) are true.

(C) (iv) and (ii) are true.

(D) (iv) and (iii) are true.

33. Consider the following page trace :

4,3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5

Percentage of page fault that would occur if FIFO page replacement algorithm is used with number of frames for the JOB m = 4 will be

(A) 8

(B) 9

(C) 10

(D) 12

34. Check sum used along with each packet computes the sum of the data, where data is treated as a sequence of

(A) Integer

(B) Character

(C) Real numbers

(D) Bits

35. If an integer needs two bytes of storage, then the maximum value of a signed integer is

(A) $2^{16} - 1$

(B) $2^{15} - 1$

(C) 2^{16}

(D) 2^{15}

36. Which of the following logic families is well suited for high-speed operations ?

(A) TTL

(B) ECL

(C) MOS

(D) CMOS

37. Interrupts which are initiated by an instruction are

(A) Internal

(B) External

(C) Hardware

(D) Software

38. printf("%c", 100);

(A) prints 100

(B) prints ASCII equivalent of 100

(C) prints garbage

(D) none of the above

39. For the transmission of the signal, Bluetooth wireless technology uses

(A) time division multiplexing

(B) frequency division multiplexing

(C) time division duplex

(D) frequency division duplex

40. Consider the following statements :

I. Recursive languages are closed under complementation.

II. Recursively enumerable languages are closed under union.

III. Recursively enumerable languages are closed under complementation.

Which of the above statements are true ?

(A) I only

(B) I and II

(C) I and III

(D) II and III

41. What is the routing algorithm used by RIP and IGRP ?

(A) OSPF

(B) Link-state

(C) Dynamic

(D) Dijkestra vector

42. Identify the incorrect statement :

(A) The overall strategy drives the E-Commerce data warehousing strategy.

(B) Data warehousing in an E-Commerce environment should be done in a classical manner.

(C) E-Commerce opens up an entirely new world of web server.

(D) E-Commerce security threats can be grouped into three major categories.

43. Reliability of software is directly dependent on

(A) quality of the design

(B) number of errors present

(C) software engineers experience

(D) user requirement

44. _____ is not an E-Commerce application.

(A) House banking

(B) Buying stocks

(C) Conducting an auction

(D) Evaluating an employee

45. _____ is a satellite based tracking system that enables the determination of person's position.

(A) Bluetooth

(B) WAP

(C) Short Message Service

(D) Global Positioning System

46. A complete microcomputer system consists of

(A) Microprocessor

(B) Memory

(C) Peripheral equipment

(D) All of the above

47. Where does a computer add and compare data ?

(A) Hard disk

(B) Floppy disk

(C) CPU chip

(D) Memory chip

48. Pipelining strategy is called implement

(A) instruction execution

(B) instruction prefetch

(C) instruction decoding

(D) instruction manipulation

49. Which of the following data structure is linear type ?

(A) Strings

(B) Lists

(C) Queues

(D) All of the above

50. To represent hierarchical relationship between elements, which data structure is suitable ?

(A) Dequeue

(B) Priority

(C) Tree

(D) All of the above

Space For Rough Work