**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)

**Test Booklet No.**

**D—8704**

# PAPER—II
# 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 and also on the Answer Sheet given inside this booklet.
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 तथा इस पुस्तिका के अन्दर दिये गये उत्तर पत्रक 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) multiple-choice questions, each question carrying **two** (2) marks. Attempt **all** of them.

**1.** AVA = A is called :
(A) Identity law
(B) De Morgan's law
(C) Idempotant law
(D) Complement law

**2.** If $f(x) = x + 1$ and $g(x) = x + 3$ then $f\,0\ f\,0\ f\,0\ f$ is :
(A) g
(B) g + 1
(C) $g^4$
(D) None of the above

**3.** The context-free languages are closed for :
(i) Intersection
(ii) Union
(iii) Complementation
(iv) Kleene Star
then
(A) (i) and (iv)
(B) (i) and (iii)
(C) (ii) and (iv)
(D) (ii) and (iii)

**4.** The following lists are the degrees of all the vertices of a graph :
(i) 1, 2, 3, 4, 5
(ii) 3, 4, 5, 6, 7
(iii) 1, 4, 5, 8, 6
(iv) 3, 4, 5, 6
then
(A) (i) and (ii)
(B) (iii) and (iv)
(C) (iii) and (ii)
(D) (ii) and (iv)

**5.** If $I_m$ denotes the set of integers modulo m, then the following are fields with respect to the operations of addition modulo m and multiplication modulo m :
(i) $Z_{23}$
(ii) $Z_{29}$
(iii) $Z_{31}$
(iv) $Z_{33}$
Then
(A) (i) only
(B) (i) and (ii) only
(C) (i), (ii) and (iii) only
(D) (i), (ii), (iii) and (iv)

**6.** An example of a binary number which is equal to its 2's complement is :
(A) 1100
(B) 1001
(C) 1000
(D) 1111

**7.** When a tri-state logic device is in the third state, then :
(A) it draws low current
(B) it does not draw any current
(C) it draws very high current
(D) it presents a low impedance

**8.** An example of a connective which is not associative is :
(A) AND
(B) OR
(C) EX-OR
(D) NAND

**9.** Essential hazards may occur in :
(A) Combinational logic circuits
(B) Synchronous sequential logic circuits
(C) Asynchronous sequential logic circuits working in the fundamental mode
(D) Asynchronous sequential logic circuits working in the pulse mode

**10.** The characteristic equation of a T flip-flop is :
(A) $Q_{n+1} = T\overline{Q}_n + \overline{T}Q_n$ (B) $Q_{n+1} = T + Q_n$
(C) $Q_{n+1} = TQ_n$ (D) $Q_{n+1} = \overline{T}\,\overline{Q}_n$
The symbols used have the usual meaning.

**11.** Suppose $x$ and $y$ are two Integer Variables having values $0\times5AB6$ and $0\times61CD$ respectively. The result (in hex) of applying bitwise operator and to $x$ and $y$ will be :
(A) $0\times5089$ (B) $0\times4084$
(C) $0\times78A4$ (D) $0\times3AD1$

**12.** Consider the following statements,
Int $i=4$, $j=3$, $k=0$;
k= + +$i$ − −$j$ + $i$+ + − − −$j$ +$j$+ +; What will be the values of $i$, $j$ and $k$ after the statement.
(A) 7, 2, 8 (B) 5, 2, 10
(C) 6, 2, 8 (D) 4, 2, 8

**13.** What is the value of the arithmetic expression (Written in C)
2∗3/4 − 3/4∗2
(A) 0 (B) 1
(C) 1.5 (D) None of the above

**14.** A function object :
(A) is an instance of a class for which operator ( ) is a member function.
(B) is an instance of a class for which operator $\rightarrow$ is a member function.
(C) is a pointer to any function
(D) is a member function of a class

**15.** Polymorphism means :
(A) A template function
(B) Runtime type identification within a class hierarchy
(C) Another name for operator overloading
(D) Virtual inheritance

**16.** The E-R model is expressed in terms of :
(i) Entities
(ii) The relationship among entities
(iii) The attributes of the entities
Then
(A) (i) and (iii) (B) (i) and (ii)
(C) (ii) and (iii) (D) None of the above

**17.** Specialization is a _____ process.

(A) Top - down (B) Bottom - up
(C) Both (A) and (B) (D) None of the above

**18.** The completeness constraint has rules :

(A) Supertype, Subtype (B) Total specialization, Partial specialization
(C) Specialization, Generalization (D) All of the above

**19.** The entity type on which the _____ type depends is called the identifying owner.

(A) Strong entity (B) Relationship
(C) Weak entity (D) E - R

**20.** Match the following :

| | | | |
|---|---|---|---|
| (i) | 2 NF | (a) | Transitive dependencies eliminated |
| (ii) | 3 NF | (b) | Multivalued attribute removed |
| (iii) | 4 NF | (c) | Contains no partial functional dependencies |
| (iv) | 5 NF | (d) | Contains no join dependency |

(A) i-a, ii-c, iii-b, iv-d (B) i-d, ii-c, iii-a, iv-b
(C) i-d, ii-c, iii-b, iv-a (D) i-a, ii-b, iii-c, iv-d

**21.** What item is at the root after the following sequence of insertions into an empty splay tree :

1, 11, 3, 10, 8, 4, 6, 5, 7, 9, 2, ?

(A) 1 (B) 2
(C) 4 (D) 8

**22.** Suppose we are implementing quadratic probing with a Hash function, Hash $(y) = X$ mode 100. If an element with key 4594 is inserted and the first three locations attempted are already occupied, then the next cell that will be tried is :

(A) 2 (B) 3
(C) 9 (D) 97

**23.** Weighted graph :

(A) Is a bi-directional graph
(B) Is directed graph
(C) Is graph in which number associated with arc
(D) Eliminates table method

**24.** What operation is supported in constant time by the doubly linked list, but not by the singly linked list ?

(A) Advance (B) Backup
(C) First (D) Retrieve

**25.** How much extra space is used by heapsort ?

(A) O (1) (B) O (Log n)
(C) O (n) (D) O ($n^2$)

**26.** Error control is needed at the transport layer because of potential error occuring _____.

(A) from transmission line noise (B) in router
(C) from out of sequency delivery (D) from packet losses

**27.** Making sure that all the data packets of a message are delivered to the destination is _____ control.

(A) Error (B) Loss
(C) Sequence (D) Duplication

**28.** Which transport class should be used with a perfect network layer ?

(A) TP0 and TP2 (B) TP1 and TP3
(C) TP0, TP1, TP3 (D) TP0, TP1, TP2, TP3, TP4

**29.** Which transport class should be used with residual-error network layer ?

(A) TP0, TP2 (B) TP1, TP3
(C) TP1, TP3, TP4 (D) TP0, TP1, TP2, TP3, TP4

**30.** Virtual circuit is associated with a _____ service.

(A) Connectionless (B) Error-free
(C) Segmentation (D) Connection-oriented

**31.** Which activity is not included in the first pass of two pass assemblers ?

(A) Build the symbol table
(B) Construct the intermediate code
(C) Separate mnemonic opcode and operand fields
(D) None of the above

**32.** Which of the following is not collision resolution technique ?

(A) Hash addressing (B) Chaining
(C) Both (A) and (B) (D) Indexing

**33.** Code optimization is responsibility of :

(A) Application programmer (B) System programmer
(C) Operating system (D) All of the above

**34.** Which activity is included in the first pass of two pass assemblers ?

(A) Build the symbol table
(B) Construct the intermediate code
(C) Separate mnemonic opcode and operand fields
(D) None of these

**35.** In two pass assembler the symbol table is used to store :

(A) Label and value (B) Only value
(C) Mnemonic (D) Memory Location

**36.** Semaphores are used to :
(A) Synchronise critical resources to prevent deadlock
(B) Synchronise critical resources to prevent contention
(C) Do I/o
(D) Facilitate memory management

**37.** In which of the following storage replacement strategies, is a program placed in the largest available hole in the memory ?
(A) Best fit (B) First fit
(C) Worst fit (D) Buddy

**38.** Remote computing system involves the use of timesharing systems and :
(A) Real time processing (B) Batch processing
(C) Multiprocessing (D) All of the above

**39.** Non modifiable procedures are called
(A) Serially useable procedures (B) Concurrent procedures
(C) Reentrant procedures (D) Topdown procedures

**40.** Match the following

| | | | |
|---|---|---|---|
| (a) | Disk scheduling | (1) | Round robin |
| (b) | Batch processing | (2) | Scan |
| (c) | Time sharing | (3) | LIFO |
| (d) | Interrupt processing | (4) | FIFO |

(A) a-3, b-4, c-2, d-1 (B) a-4, b-3, c-2, d-1
(C) a-2, b-4, c-1, d-3 (D) a-3, b-4, c-1, d-2

**41.** The main objective of designing various modules of a software system is :
(A) To decrease the cohesion and to increase the coupling
(B) To increase the cohesion and to decrease the coupling
(C) To increase the coupling only
(D) To increase the cohesion only

**42.** Three essential components of a software project plan are :
(A) Team structure, Quality assurance plans, Cost estimation
(B) Cost estimation, Time estimation, Quality assurance plan
(C) Cost estimation, Time estimation, Personnel estimation
(D) Cost estimation, Personnel estimation, Team structure

**43.** Reliability of software is dependent on :
(A) Number of errors present in software
(B) Documentation
(C) Testing suties
(D) Development Processes

**44.** In transform analysis, input portion is called :

(A) Afferent branch (B) Efferent branch

(C) Central Transform (D) None of the above

**45.** The Function Point (FP) metric is :

(A) Calculated from user requirements

(B) Calculated from Lines of code

(C) Calculated from software's complexity assessment

(D) None of the above

**46.** Data Mining can be used as _____ Tool.

(A) Software (B) Hardware

(C) Research (D) Process

**47.** The processing speeds of pipeline segments are usually :

(A) Equal (B) Unequal

(C) Greater (D) None of these

**48.** The cost of a parallel processing is primarily determined by :

(A) Time complexity (B) Switching complexity

(C) Circuit complexity (D) None of the above

**49.** A data warehouse is always _____.

(A) Subject oriented (B) Object oriented

(C) Program oriented (D) Compiler oriented

**50.** The term 'hacker' was originally associated with :

(A) A computer program

(B) Virus

(C) Computer professionals who solved complex computer problems.

(D) All of the above

- o O o -

**Space For Rough Work**