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# PAPER-II

## COMPUTER SCIENCE AND APPLICATIONS

Signature and Name of Invigilator

1. (Signature) \_\_\_\_\_

(Name) \_\_\_\_\_

2. (Signature) \_\_\_\_\_

(Name) \_\_\_\_\_

OMR Sheet No. : .....

(To be filled by the Candidate)

Roll No.

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(In figures as per admission card)

Roll No.

(In words)

**D 8 7 1 0**

Time : 1 ¼ hours]

[Maximum Marks : 100

Number of Pages in this Booklet : 8

Number of Questions in this Booklet : 50

### Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of fifty multiple-choice type of questions.
- 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 :
  - 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.
  - 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.**
  - After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
- 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) (C) (D)

where (C) is the correct response.
- 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.
- Read instructions given inside carefully.
- Rough Work is to be done in the end of this booklet.
- 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.
- You have to return the test question booklet and OMR Answer sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table etc., is prohibited.
- There is no negative marks for incorrect answers.

### परीक्षार्थियों के लिए निर्देश

- पहले पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए ।
- इस प्रश्न-पत्र में पचास बहुविकल्पीय प्रश्न हैं ।
- 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 :
  - 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 ।
  - 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 ।
  - इस जाँच के बाद OMR पत्रक की क्रम संख्या इस प्रश्न-पुस्तिका पर अंकित कर दें ।
- 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) (C) (D)

जबकि (C) सही उत्तर है ।
- 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 चिह्नानंकित करते हैं, तो उसका मूल्यांकन नहीं होगा ।
- अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें ।
- कच्चा काम (Rough Work) इस पुस्तिका के अन्तिम पृष्ठ पर करें ।
- 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 ।
- आपको परीक्षा समाप्त होने पर प्रश्न-पुस्तिका एवं OMR उत्तर-पत्रक निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्ति के बाद उसे अपने साथ परीक्षा भवन से बाहर न लेकर जायें ।
- केवल नीले/काले बाल प्वाइंट पेन का ही इस्तेमाल करें ।
- किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।
- गलत उत्तरों के लिए कोई अंक काटे नहीं जाएँगे ।

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P.T.O.

## 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 number of integers between 1 and 250 that are divisible by 2, 5 and 7 is  
(A) 2                      (B) 3  
(C) 5                      (D) 8
2. An undirected graph possesses an eulerian circuit if and only if it is connected and its vertices are  
(A) all of even degree  
(B) all of odd degree  
(C) of any degree  
(D) even in number
3. A partially ordered set is said to be a lattice if every two elements in the set have  
(A) a unique least upper bound  
(B) a unique greatest lower bound  
(C) both (A) and (B)  
(D) none of the above
4. The minimum number of edges in a connected graph with 'n' vertices is equal to  
(A)  $n(n - 1)$   
(B)  $\frac{n(n - 1)}{2}$   
(C)  $n^2$   
(D)  $n - 1$
5. Consider the problem of connecting 19 lamps to a single electric outlet by using extension cords each of which has four outlets. The number of extension cords required is  
(A) 4  
(B) 5  
(C) 6  
(D) 7
6. The decimal number equivalent of  $(4057.06)_8$  is  
(A) 2095.75  
(B) 2095.075  
(C) 2095.937  
(D) 2095.0937
7.  $AB + (\overline{A + B})$  is equivalent to  
(A)  $A \oplus B$   
(B)  $A \odot B$   
(C)  $(A \oplus B) \odot A$   
(D)  $(A \odot B) \oplus A$
8. An astable multivibrator has  
(A) one stable state  
(B) two stable states  
(C) no stable states  
(D) none of these

9. 12-bit 2's complement of  $-73.75$  is
- (A) 01001001.1100  
 (B) 11001001.1100  
 (C) 10110110.0100  
 (D) 10110110.1100
10. Encoding of data bits 0011 into 7-bit even Parity Hamming Code is
- (A) 0011110  
 (B) 0101110  
 (C) 0010110  
 (D) 0011100
11. How many of the following declarations are correct ?
- ```
int z = 7.0;
double void = 0.000;
short array [2] = {0, 1, 2};
char c = "\n";
```
- (A) None  
 (B) One is correct  
 (C) Two are correct  
 (D) All four are correct
12. The value of the following expression  $(13 / 4 * 3) \% 5 + 1$  is
- (A) 5.75  
 (B) 2.95  
 (C) 1.4875  
 (D) 5
13. Which one of the following will set the value of  $y$  to 5 if  $x$  has the value 3, but not otherwise ?
- (A) if ( $x = 3$ )  $y = 5$   
 (B) if  $x == 3$  ( $y = 5$ )  
 (C) if ( $x == 3$ );  $y = 5$   
 (D) if ( $x == 3$ )  $y = 5$
14. Which one of the following sentences is true ?
- (A) The body of a while loop is executed at least once.  
 (B) The body of a do ... while loop is executed at least once.  
 (C) The body of a do ... while loop is executed zero or more times.  
 (D) A for loop can never be used in place of a while loop.
15. "Black" refers in the "Black-box" testing means
- (A) Characters of the movie "Black"  
 (B) I - O is hidden  
 (C) Design is hidden  
 (D) Users are hidden
16. In generalisation, the differences between members of an entity is
- (A) maximized  
 (B) minimized  
 (C) both (A) & (B)  
 (D) None of these

17. The dependency preservation decomposition is a property to decompose database schema  $D$ , in which each functional dependency  $X \rightarrow Y$  specified in  $F$ ,
- appeared directly in one of the relation schemas  $R_i$  in the decomposed  $D$ .
  - could be inferred from dependencies that appear in some  $R_i$ .
  - both (A) and (B)
  - None of these
18. Which of the following is an optimistic concurrency control method ?
- Validation based
  - Time stamp ordering
  - Lock-based
  - None of these
19. Optical storage is a
- high-speed direct access storage device.
  - low-speed direct access storage device.
  - medium-speed direct access storage device.
  - high-speed sequential access storage device.
20. Which of the following is the process by which a user's access to physical data in the application is limited, based on his privileges ?
- Authorization
  - Authentication
  - Access Control
  - All of these
21. What is the maximum number of nodes in a B-tree of order 10 of depth 3 (root at depth 0) ?
- 111
  - 999
  - 9999
  - None of the above
22. A binary tree with 27 nodes has \_\_\_\_\_ null branches.
- 54
  - 27
  - 26
  - None of the above
23. The time complexity to build a heap of  $n$  elements is
- $O(1)$
  - $O(\lg n)$
  - $O(n)$
  - $O(n \lg n)$
24. Linear probing suffers from a problem known as
- Secondary clustering
  - Primary clustering
  - Both (A) and (B)
  - None of these

25. Which of the following can be the sequence of nodes examined in binary search tree while searching for key 88 ?
- (A) 90, 40, 65, 50, 88  
 (B) 90, 110, 80, 85, 88  
 (C) 190, 60, 90, 85, 88  
 (D) 65, 140, 80, 70, 88
26. Frequency shift keying is used mostly in
- (A) Radio transmission  
 (B) Telegraphy  
 (C) Telephone  
 (D) None of the above
27. The baud rate is
- (A) always equal to the bit transfer rate  
 (B) equal to twice the bandwidth of an ideal channel  
 (C) not equal to the signalling rate  
 (D) equal to half of the bandwidth of an ideal channel
28. How much bandwidth is there in 1 micron of spectrum at a wavelength of 1 micron ?
- (A) 300 MHz  
 (B) 3 GHz  
 (C) 300 THz  
 (D) 30 KHz
29. Which of the following file transfer protocols use TCP and establishes two virtual circuits between the local and remote server ?
- (A) FTP  
 (B) TFTP  
 (C) TELNET  
 (D) NFS
30. The threshold effect in demodulator is
- (A) exhibited by all demodulator, when the input signal to noise ratio is low.  
 (B) the rapid fall on output signal to noise ratio when the input signal to noise ratio fall below a particular value.  
 (C) the property exhibited by all A.M. suppressed carrier coherent demodulator.  
 (D) the property exhibited by correlation receiver.
31. Object code is the output of \_\_\_\_\_.
- (A) Operating System  
 (B) Compiler or Assembler  
 (C) only Assembler  
 (D) only Compiler
32. 'Macro' in an assembly level program is \_\_\_\_\_.
- (A) sub program  
 (B) a complete program  
 (C) a hardware portion  
 (D) relative coding

33. Grammar of the programming is checked at \_\_\_\_\_ phase of compiler.
- (A) semantic analysis  
 (B) code generation  
 (C) syntax analysis  
 (D) code optimization
34. The register or main memory location which contains the effective address of the operand is known as
- (A) pointer  
 (B) special location  
 (C) indexed register  
 (D) None of the above
35. Macro-processors are \_\_\_\_\_.
- (A) Hardware  
 (B) Compiler  
 (C) Registers  
 (D) None of the above
36. The dynamic allocation of storage areas with VSAM files is accomplished by
- (A) Hashing  
 (B) Control splits  
 (C) Overflow areas  
 (D) Relative recoding
37. Which of the following command the file names in multiple columns ?
- (A) IS - X  
 (B) IS  
 (C) IS - 1  
 (D) IS - f - X
38. WINDOWS is a \_\_\_\_\_ operating.
- (A) Real time  
 (B) Multi-user  
 (C) Preemptive  
 (D) Non-preemptive
39. Page making process from main memory to disk is called
- (A) Interruption  
 (B) Termination  
 (C) Swapping  
 (D) None of the above
40. A Dead-lock in an Operating System is
- (A) Desirable process  
 (B) Undesirable process  
 (C) Definite waiting process  
 (D) All of the above
41. Prototyping is used to
- (A) test the software as an end product  
 (B) expand design details  
 (C) refine and establish requirements gathering  
 (D) None of the above
42. Which one of these are not software maintenance activity ?
- (A) Error correction  
 (B) Adaptation  
 (C) Implementation of Enhancement  
 (D) Establishing scope

43. The system specification is the first deliverable in the computer system engineering process which does not include
- (A) Functional Description
  - (B) Cost
  - (C) Schedule
  - (D) Technical Analysis
44. The COCOMO model was introduced in the book title "Software Engineering Economics" authored by
- (A) Abraham Silberschatz
  - (B) Barry Boehm
  - (C) C.J. Date
  - (D) D.E. Knuth
45. The Warnier diagram enables analyst
- (A) to represent information hierarchy in a compact manner
  - (B) to further identify requirement
  - (C) to estimate the total cost involved
  - (D) None of the above
46. A data mart may contain
- (A) summarised data
  - (B) de-normalized data
  - (C) aggregate departmental data
  - (D) All of the above
47. Data mining is
- (A) the process of extracting valid, previously unknown, comprehensible and actionable information from large databases and using it to make crucial business decisions.
  - (B) a tool that allows end users direct access and manipulation of data from within data-warehousing environment without the intervention of customised programming activity.
  - (C) a tool that helps end users extract useful business information from large database.
  - (D) All of the above
48. E-Choupal refers to
- (A) calling meeting of Surpanches electronically.
  - (B) conducting Panchayat meeting using latest electronic gadgets.
  - (C) providing window of information to villagers and farmers in NIC network.
  - (D) None of the above
49. The basic concepts of ethics in information society is/are
- (A) Responsibility
  - (B) Accountability
  - (C) Liability
  - (D) All of the above
50. One of the distinguished features of super-computer over other category of computer is
- (A) parallel processing
  - (B) highest accuracy level
  - (C) more speed
  - (D) more capacity





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