

Test Booklet Code & Serial No.

प्रश्नपत्रिका कोड व क्रमांक

**Paper-II**

**A**

## COMPUTER SCIENCE AND APPLICATION

**Signature and Name of Invigilator**

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No.

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(In figures as in Admit Card)

Seat No. ....

(In words)

OMR Sheet No.

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(To be filled by the Candidate)

**APR - 37217**

**Time Allowed : 1¼ Hours]**

**[Maximum Marks : 100**

**Number of Pages in this Booklet : 16**

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

### Instructions for the Candidates

- Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
- This paper consists of **50** objective type questions. Each question will carry **two** marks. All questions of Paper-II will be compulsory, covering entire syllabus (including all electives, without options).
- 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 :
  - 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.
  - 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.**
  - After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
- 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)    (C)    (D)
- 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.
- Read instructions given inside carefully.
- Rough Work is to be done at the end of this booklet.
- 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.
- 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.
- Use only Blue/Black Ball point pen.**
- Use of any calculator or log table, etc., is prohibited.**
- There is no negative marking for incorrect answers.**

### विद्यार्थ्यांसाठी महत्वाच्या सूचना

- परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठवरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
- सदर प्रश्नपत्रिकेत **50** बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
- परीक्षा सुरु झाल्यावर विद्यार्थ्यांला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
  - प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
  - पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून पहावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चुकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळी वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.**
  - वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
- प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळ/निळ्या करावा.

**उदा. :** जर (C) हे योग्य उत्तर असेल तर.

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

**APR - 37217/II—A**

## Computer Science and Application Paper II

**Time Allowed : 75 Minutes]**

**[Maximum Marks : 100**

**Note :** This Paper contains **Fifty (50)** multiple choice questions, each question carrying **Two (2)** marks. Attempt *All* questions.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. A planar graph has <math>V</math> vertices, <math>E</math> edges and <math>F</math> faces. Then :</p> <p>(A) <math>V + E = F + 2</math></p> <p>(B) <math>V + F = E + 2</math></p> <p>(C) <math>V - E + F + 2 = 0</math></p> <p>(D) There is no relation between <math>V</math>, <math>E</math> and <math>F</math></p> <p>2. <math>G_{m,n}</math> is a bipartite graph. Then which of the following is <i>true</i> ?</p> <p>(A) <math>G_{m,n}</math> is two-colourable</p> <p>(B) <math>G_{m,n}</math> is <math>m</math>-colourable if <math>m &gt; n</math></p> <p>(C) <math>G_{m,n}</math> is <math>m</math>-colourable if <math>m &lt; n</math></p> <p>(D) <math>G_{m,n}</math> is two-colourable if it is a complete bipartite graph.</p> | <p>3. In how many ways can a four digit number with distinct digits be formed ?</p> <p>(A) 2187</p> <p>(B) 6561</p> <p>(C) 5040</p> <p>(D) 4536</p> <p>4. A pair of fair dice is thrown and the sum is noted. The probability that it equals 10 is given by :</p> <p>(A) <math>\left(\frac{1}{6}\right)^3</math></p> <p>(B) <math>\frac{1}{12}</math></p> <p>(C) <math>\frac{1}{36}</math></p> <p>(D) <math>\frac{1}{15}</math></p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

5. Consider the following CFG :

$$S \rightarrow AbA$$

$$A \rightarrow Aa \mid \epsilon$$

- (A) It is in Kleen's normal form.
- (B) It is not in Chomsky normal form.
- (C) It is not in Kleen's normal form.
- (D) It is in Chomsky normal form.

6. A saturated logic circuit have the inherent property of :

- (A) Short saturation delay time
- (B) Low switching speed
- (C) Low noise immunity
- (D) High power dissipation

7. A circuit which is used for parallel to serial converter is :

- (A) Multiplexer
- (B) De-multiplexer
- (C) Decoder
- (D) Digital Counter

8. A toggling can be done using a single logic circuit is :

- (A) AND gate
- (B) X-OR gate
- (C) X NOR gate
- (D) NOR gate

9. Using 8 bits, how many binary numbers can be created ?

- (A) 64 numbers
- (B) 128 numbers
- (C) 256 numbers
- (D) 8 numbers

10. Which is *not* a “positional notation system” ?

- (A) Binary number system
- (B) Hexadecimal number system
- (C) Roman number system
- (D) Decimal number system

11. The storage class specification in ‘C’ programming language is :

- (A) Automatic
- (B) Static
- (C) External
- (D) All of these

12. After function has returned, the values stored in its local variables are copied into variables in the main function with the same name.

- (A) True
- (B) False
- (C) Can't say
- (D) Error

13. If the variable of double type is converted into float, then :

- (A) Truncation takes place
- (B) The lower order bits are dropped
- (C) Rounding takes place
- (D) None of the above

14. The programming language which has the capability to produce new data types, it is said to be :

- (A) Extensible
- (B) Encapsulated
- (C) Reprehensible
- (D) None of these

15. A virtual function allows you to :

- (A) Create a function that have no body.
- (B) Create an array of type pointer to base calls that can hold pointers to derived class
- (C) Group objects of different classes so, they can all be accessed by the same function code.
- (D) Use the same function call to execute member function of objects from different classes.

16. To perform look up operation using form, you have to :

- (A) Search each form sequentially, until get the required.
- (B) Type the key in entry line, and correct form is displayed.
- (C) Enter the search value into form.
- (D) Put the key and correct form is displayed.

17. Consider the case that, a primary key is combined with foreign key, it will create :
- (A) Many to many relationship between the table that connects them.
  - (B) Parent child relationship between the table that connects them.
  - (C) Network model between the tables.
  - (D) Hierarchical model between the tables.
18. One of the following situations represents true network structure, which :
- (A) allows many to many relationship
  - (B) indicates physical representation of data
  - (C) is conceptually simple
  - (D) is dominant database
19. The third normal is adequate if the relation is having :
- (A) non-composite and non-overlapped candidate keys
  - (B) non-composite candidate keys
  - (C) non-overlapped candidate keys
  - (D) multiple candidate keys
20. An audit trial can be used for :
- (A) recorded history of operations performed on file
  - (B) making back up copies
  - (C) making record copies
  - (D) restoring lost information

21. A mathematical model with a collection of operations defined on the model is called :
- (A) Data structure
  - (B) Abstract data type
  - (C) Primitive data type
  - (D) Algorithm
22. The data structure required for breadth first traversal on a graph is :
- (A) Queue
  - (B) Stack
  - (C) Array
  - (D) Tree
23. How many nodes in a tree have no ancestors ?
- (A) 0
  - (B) 1
  - (C) 2
  - (D)  $n$
24. If  $h$  is any hashing function and is used to hash  $n$  keys into a table of size  $m$ , where  $n \leq m$ , the expected number of collisions involving a particular key  $x$  is :
- (A) less than 1
  - (B) less than  $n$
  - (C) less than  $m$
  - (D) less than  $n/2$



25. Merging 4 sorted files containing 50, 10, 25 and 15 records will take .....time.

- (A) 0 (100)
- (B) 0 (200)
- (C) 0 (175)
- (D) 0 (125)

26. IEEE 802.3 standard uses Bi-phase Manchester encoding due to :

- (A) Self-clocking nature of code
- (B) High-band rate of code
- (C) High-bit rate of code
- (D) Options (B) and (C) only

27. The main enhancement to fast ethernet from earlier ethernet is done for :

- (A) Higher data rate
- (B) Decreased collision domain
- (C) Reduced minimum frame length
- (D) Option (a) and (b) only

28. Sliding window protocol is used by :

- (A) Connectionless protocols
- (B) Connection oriented protocols
- (C) Datagram oriented protocols
- (D) Circuit switching protocols

29. The modeling of computer networks is normally represented as set of layers due to :
- (A) Dividing the complex task into manageable subtask.
  - (B) Modularity and clear interface of the components.
  - (C) To ensure independence of each other layer implementation without disturbing the other layer.
  - (D) All of the above
30. Which protocol is connection oriented asynchronous protocol ?
- (A) FTP
  - (B) SMTP
  - (C) HTTP
  - (D) DNS
31. Which of the following is *not* an assembler directive ?
- (A) RESB
  - (B) WLOOP
  - (C) RESW
  - (D) WORD
32. Which is a permanent database in the general model of compiler ?
- (A) Literal table
  - (B) terminal table
  - (C) Identifier table
  - (D) Source code
33. What are the functions of linking loader ?
- (A) Relocation operation
  - (B) Automatic library search
  - (C) Loading of linked program into memory
  - (D) All of the above

34. LISP is a/an :

- (A) Compiler
- (B) Interpreter
- (C) Pre-processor
- (D) Pre-sorting

35. Which is the post-fix notation of the following ?

$$(1 + 5) + (3 - 2)$$

- (A)  $32 + 15 - +$
- (B)  $15 - 32 - +$
- (C)  $15 + 32 - +$
- (D)  $32 - 15 + -$

36. In paging with  $2^{24}$  bytes of physical memory, 256 bytes of logical address space and a page size of  $2^{10}$  bytes. How many entries are in the page table ?

- (A) 1024
- (B) 256
- (C) 4096
- (D) 512

37. Banker's algorithm is used for :

- (A) Deadlock detection
- (B) Livelock detection
- (C) Deadlock avoidance
- (D) Resource allocation

38. What is a special file in Unix file system ?

- (A) A file assigned to a device attached to a system.
- (B) A file used to exchange data among processes.
- (C) A file containing the list of filenames and their unique identifiers.
- (D) A file containing pathname of file to which it is linked.

39. Which attribute of the file will be affected by writing on the file ?
- (A) Identifier
  - (B) Time and date
  - (C) Creator
  - (D) Type
40. The editor and compiler pair in Unix is :
- (A) ed, cp
  - (B) edit, comp
  - (C) tedit, tcc
  - (D) vi, gcc
41. In dealing with complex software building problems, one of the solutions is to use concept of incremental development process and methodology. This involves the important aspect of :
- (A) Team based development
  - (B) subgroup based development
  - (C) Separate group development
  - (D) Distinct group development
42. As per the principles of software engineering, among many software products quality attributes, the following *two* are mostly included :
- (A) modifiability and client operability
  - (B) Client operability and public interest consistency
  - (C) Interoperability and modifiability
  - (D) Modifiability and client operability
43. CMMI's purpose is to provide guidance for improving the process of organisation and its ability. It involves the following *three* major factors :
- (A) Develop, manage and support
  - (B) Develop, manage and assess
  - (C) Develop, validate and assess
  - (D) Manage, validate and assess

44. In case of usability, evaluation and testing, the analysis of application interface (UI) is done, which includes one of the most important criteria of :
- (A) No. of times the design dialogs involved for UI
  - (B) No. of tasks completed within some predefined time interval
  - (C) No. of reversal of actions done
  - (D) No. of informative feedback involved.
45. The term 'Refactoring' can not refer to :
- (A) altering code behaviour
  - (B) improving code style
  - (C) dealing with 'Bad Smells'
  - (D) dealing with inappropriate intimacy
46. The practice of forging a return address on an email so that recipient is fooled into revealing private information is termed as :
- (A) Hacking
  - (B) Tampering
  - (C) Spoofing
  - (D) Cracking
47. What are the truth values of the *two* following statements ?
- (i) In GSM only TDMA is used.
  - (ii) The cells or subdivisions of a geographical area in a cellular network are always hexagonal.
- (A) False, True
  - (B) True, False
  - (C) True, True
  - (D) False, False

48. In web mining, a word that appears frequently but still loses its importance, belongs to the set of words known as :

- (A) Word stem
- (B) Stop list
- (C) Word net
- (D) Frequency list

49. In Win 32- windows programming, one can place a message in application queue by calling :

- (A) Send Message ( )
- (B) Paste Message ( )
- (C) Save Message ( )
- (D) Post Message ( )

50. Which of the following is *not* true for SIMD (Single Instruction, Multiple Data Stream) parallel computing architecture ?

- (A) SIMD computer requires more memory than MIMD computer.
- (B) SIMD computer requires less hardware than MIMD computer.
- (C) SIMD computers require extensive design effort.
- (D) SIMD computers require 'Activity Mask' to support selective execution.

**APR - 37217/II—A**

**ROUGH WORK**

**APR - 37217/II—A**

**ROUGH WORK**