Test Booklet Code & Serial No.
प्रश्नपत्रिका कोड व क्रमांक

C

Paper-III

COMPUTER SCIENCE AND APPLICATION

Signature and Name of Invigilator

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No. | | | | | | |

(In figures as in Admit Card)

Seat No. .....

(In words)

OMR Sheet No. | | | | | | |

(To be filled by the Candidate)

JAN - 37318

Time Allowed : 2½ Hours] **[Maximum Marks : 150**

Number of Pages in this Booklet : **24** Number of Questions in this Booklet : **75**

Instructions for the Candidates

1. Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
2. This paper consists of **75** objective type questions. Each question will carry *two* marks. *All* questions of Paper-III will be compulsory, covering entire syllabus (including all electives, without options).
3. 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 :
   (*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 or 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 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.**
   (*iii*) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. 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) ● (D)

5. 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.
6. Read instructions given inside carefully.
7. Rough Work is to be done at the end of this booklet.
8. 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.
9. 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.
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 for incorrect answers.**

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
2. सदर प्रश्नपत्रिकेत **75** बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
   (*i*) प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
   (*ii*) **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 वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.**
   (*iii*) वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
4. प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.
   उदा. : जर (C) हे योग्य उत्तर असेल तर.

   (A) (B) ● (D)

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

Computer Science and Application
Paper III

Time Allowed : 2½ Hours] **[Maximum Marks : 150**

Note : This Paper contains **Seventy Five (75)** multiple choice questions, each question carrying **Two (2)** marks. Attempt *All* questions.

1. The..... inheritance supports the mechanism of deriving one base class with more than one derived classes.

   (A) Hierarchical

   (B) Multiple

   (C) Multilevel

   (D) Hybrid

2. For the following statements, a property which is false for classes is that they :

   (A) are removed from memory when not in use

   (B) permit data to be hidden from other classes

   (C) can closely model objects in the real world

   (D) bring together all aspects of an entity in one place

3. A static function :

   (A) should be called when an object is destroyed

   (B) can be called using the class name and function name

   (C) is used when a dummy object must be created

   (D) is closely connected with and individual object of a class.

4. The copy constructor must receive its arguments by :

   (A) Only pass by reference

   (B) Only pass by address

   (C) Only pass by value

   (D) either pass by value or pass by reference

5. If a base class destructor is *not* virtual then :

(A) it cannot be called

(B) it cannot be called when accessed from pointer

(C) destructor in derived class cannot be called when accessed through a pointer to the base class

(D) It cannot have a function body.

6. In software engineering, coding techniques consider many non-functional requirements. Following is one of the important non-functional aspect while writing a code :

(A) Input formats

(B) Quality

(C) Performance

(D) User interface

7. If we compare agile process with the traditional process, then one of the following is a significant advantage of agile process :

(A) Better suited for larger process

(B) Scopes easily with changes in requirements

(C) Can be used to mission critical system

(D) Better suited for larger companies

8. In object-oriented use-case methodology, following is one of the essential step for identifying the factors that serve as good requirement analysis methodology :

(A) stakeholders

(B) eliminating duplications

(C) viewpoints

(D) boundary conditions

9. The metric for measuring coupling between two units, is given by :

$c(x, y) = i + [n/(n + 1)]$

where, the coupling between two units means :

(A) class units

(B) object units

(C) software units

(D) method units

10. In above expression given in No. 39, which is for metric 'c' i & n respectively represents :

(A) highest level of coupling relationship, all coupling relationships

(B) lowest level of coupling relationships, all coupling relationships

(C) minimum level of coupling relationships, all coupling relationships

(D) maximum level of coupling relationships, all coupling relationships

11. In a distributed system, a link and site failed due to some reason, what is the mechanism for detectings the failure.

(A) Polling

(B) handshaking

(C) token passing

(D) backup multiplexing

12. Let P and Q be the two processes which are interlinked and by an indirect mode of communication. Which of the following mechanisms they will adopt ?

(A) There is another process R to handle and pass on the messages between P and Q

(B) There is a mailbox to help communication between P and Q

(C) There is another machine between the two processes to help communication.

(D) All of the above

13. The page table is maintained by operating system for :

(A) each thread

(B) each process

(C) each instruction

(D) each address

14. On termination which of the following system call does not return control to calling point :

(A) exec

(B) fork

(C) ioctl

(D) longjmp

15. In case of multiprogramming the degree is defined as :

(A) Per unit time execution of processes

(B) Number of processes in ready queue

(C) Nomber of processes in the I/O queue

(D) The number of processes in memory

16. 77a is equivalent to :

(A) 7a

(B) aa

(C) a

(D) 1 – a

17. ..... was the first program to support explanation and knowledge aquisition for expert systems.

(A) MYCIN

(B) TEIRESIAS

(C) EMYCIN

(D) MOLE

18. DENDRAL rules are used to determine :

(A) Pharmaceutical compound structures

(B) Biological structures

(C) Geological structures

(D) Complex chemical structures

19. "If..... then....." is defined in :

(A) Formal

(B) Conceptual dependency

(C) Predicate logic

(D) Scripts

20. Who is Domain expert ?

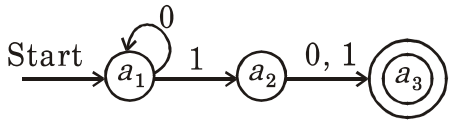
(A) Software Engineer

(B) Operator

(C) Doctor

(D) Programmer

21. The given FSM :



is equivalent to :

(A) 1*0 (0 + 1)

(B) 0*1 (0 + 1)

(C) 01* (0 + 1)

(D) 00* (0 + 1)

22. Write an Regular expression :

Starting with 0's or 1's ending with '01' is equivalent to :

(A) (0 + 1)* 11

(B) (0 + 1)* 00

(C) (0 + 1)* 01

(D) (0 + 1)* 10

23. The regular expression :

(R + S)* S is equivalent to :

(A) (R + S)*

(B) (S + R)*

(C) R^* S^*

(D) $(R + S)^*$

24. $P \rightarrow 1\ P\ 1\ |0| \in$ will give :

(A) 01*0

(B) 00*1

(C) 10*0

(D) 10*1

25. Travel salesman problem is :

(A) P

(B) NP

(C) NP-Hard

(D) NP-Complete

26. A..... is said to be strongly symmetric, if in the transmission matrix each row is a permutation of each column.

(A) Binary symmetric channel

(B) Discrete memoryless channel

(C) Binary assymmetric channel

(D) Burst channel

27. Hamming distance between the codes 1110100 and 1111001 is :

(A) 0

(B) 1

(C) 2

(D) 3

28. What is the dimension of the subspace spanned by 0111, 1010, 0011 and 1110 using generator matrix ?

(A) 0

(B) 1

(C) 2

(D) 3

29. Min filter is a..... filter :

(A) Order statistic

(B) Averaging

(C) Sharpening

(D) Noise reduction

30. Which of the following redundancy is *not* eliminated in the lossless compression :

(A) Psychovisual redundancy

(B) Coding redundancy

(C) Interpixel redundancy

(D) Both B and C

Q. Nos. 31 and 32 : Consider the following linear programming problem. The standard weight of a special purpose brick is 5 kg. It contains 2 ingredients B_1 and B_2. B_1 costs Rs. 5 per kilogram and B_2 costs Rs. 10 per kilogram. Strength consideration dictate that the brick cantains not more than 4 kg of B_1 and at least 2 kg of B_2. In what proportion B_1 and B_2 should be mixed to minimize the price of the brick ?

31. The standard simplex formulation of this problem will have :

(A) 1 slack, 1 surplus and 1 artificial variable.

(B) 2 surplus, 2 slack and 2 artificial variables

(C) 1 slack, 1 surplus and 2 artificial variables.

(D) 2 surplus and 2 slack variables.

32. The dual of this problem will become a :

(A) maximization problem with 4 variables and 2 inequality constraints.

(B) minimization problem with 4 variables and 2 inequality constraints.

(C) maximization problem with 3 variables and 2 inequality constraints

(D) maximization problem with 2 inequality and 1 equality constraint.

33. Consider the following tansportation problem :

Warehouse	Factory F_1	F_2	F_3	F_4	
W_1	19	30	30	10	7
W_2	70	30	40	60	9
W_3	40	8	70	30	18
	5	8	7	14	34

Let X_{ij} be the allocation in the $(i, j)^{th}$ cell. The solution

($x_{11} = 5$, $x_{14} = 2$, $x_{22} = 2$, $x_{23} = 7$, $x_{32} = 6$, $x_{34} = 12$) is :

(A) Initial solution by Vogel's method

(B) Optimal solution

(C) Initial solution by least cost method

(D) Suboptimal solution which can be improved

34. Consider the following assignment problem

Jobs	Machines A	B	C	D
I	10	25	15	20
II	15	30	5	15
III	35	20	12	24
IV	17	25	24	20

The solution to this problem is given by :

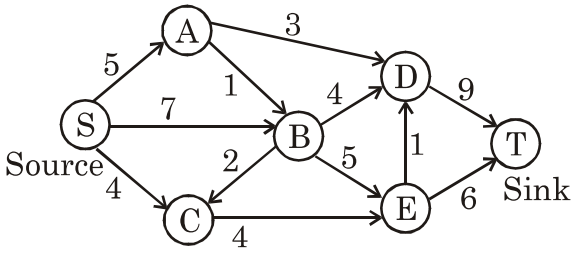
(A) I $\rightarrow$ A, II $\rightarrow$ C, III $\rightarrow$ B, IV $\rightarrow$ D

(B) I $\rightarrow$ A, II $\rightarrow$ B, III $\rightarrow$ C, IV $\rightarrow$ D

(C) I $\rightarrow$ B, II $\rightarrow$ A, III $\rightarrow$ C, IV $\rightarrow$ D

(D) I $\rightarrow$ B, II $\rightarrow$ C, III $\rightarrow$ A, IV $\rightarrow$ D

35. Consider the following network with source at S and sink at T :



The maximum flow through this network :

(A) is 16 and has 3 different paths

(B) is 14 and has 3 different paths

(C) is 14 and has 7 different paths from S to T

(D) is 15 and has 2 different paths

36. The output of two-input logical Exclusive OR function..... :

(A) is an example of linearly separable problem

(B) can be separated with a single line

(C) can be separated with two lines

(D) needs more than two lines for separation.

37. A four input neuron has weights 1, 3, 4, 5 and their inputs are 5, 10, 2, 8 respectively. The transfer function is linear with the constant of proportionality being 3. What is/ are its output ?

(A) 5, 30, 8, 40

(B) 83

(C) 249

(D) 860

38. Suppose two fuzzy sets A and B have the values

$\widetilde{A} = \{(x_1, 1), (x_2, 0.7), (x_3, -0.2)\}$

$B = \{(x_1, 0.3), (x_2, 0.6), (x_3, 0.5)\}$

Then the fuzzy intersection $\widetilde{A} \cap \widetilde{B}$ is..... .

(A) $\{(x_1, 0.7), (x_2, 0.1), (x_3, -0.3)\}$

(B) $\{(x_1, 0.7), (x_2, 0.1), (x_3, 0.3)\}$

(C) $\{(x_1, 1), (x_2, 0.7), (x_3, 0.5)\}$

(D) $\{(x_1, 0.3), (x_2, 0.6), (x_3, 0.2)\}$

39. Let X = $[x_1, x_2, x_3]$, Y = $[y_1, y_2]$ and $z = [z_1, z_2, z_3]$. Let $\tilde{R}$ be fuzzy relation

$$\begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \end{array} \begin{array}{c} \begin{array}{cc} y_1 & y_2 \end{array} \\ \begin{bmatrix} 0.5 & 0.1 \\ 0.2 & 0.9 \\ 0.8 & 0.6 \end{bmatrix} \end{array}$$

and $\tilde{S}$ be a fuzzy relation

$$\begin{array}{c} \\ y_1 \\ y_2 \end{array} \begin{array}{c} \begin{array}{ccc} z_1 & z_2 & z_3 \end{array} \\ \begin{bmatrix} 0.6 & 0.4 & 0.7 \\ 0.5 & 0.8 & 0.9 \end{bmatrix} \end{array}$$

then RoS, by max-min composition yields :

(A)
$$\begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \end{array} \begin{array}{c} \begin{array}{ccc} z_1 & z_2 & z_3 \end{array} \\ \begin{bmatrix} 0.5 & 0.5 & 0.5 \\ 0.6 & 0.8 & 0.9 \\ 0.5 & 0.8 & 0.8 \end{bmatrix} \end{array}$$

(B)
$$\begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \end{array} \begin{array}{c} \begin{array}{ccc} z_1 & z_2 & z_3 \end{array} \\ \begin{bmatrix} 0.6 & 0.8 & 0.9 \\ 0.9 & 0.9 & 0.9 \\ 0.9 & 0.9 & 0.9 \end{bmatrix} \end{array}$$

(C)
$$\begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \end{array} \begin{array}{c} \begin{array}{ccc} z_1 & z_2 & z_3 \end{array} \\ \begin{bmatrix} 0.5 & 0.4 & 0.5 \\ 0.5 & 0.8 & 0.9 \\ 0.6 & 0.6 & 0.7 \end{bmatrix} \end{array}$$

(D)
$$\begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \end{array} \begin{array}{c} \begin{array}{ccc} z_1 & z_2 & z_3 \end{array} \\ \begin{bmatrix} 0.1 & 0.1 & 0.1 \\ 0.2 & 0.2 & 0.2 \\ 0.5 & 0.4 & 0.6 \end{bmatrix} \end{array}$$

40. Which of the following statements is false for fuzzy expert systems ?

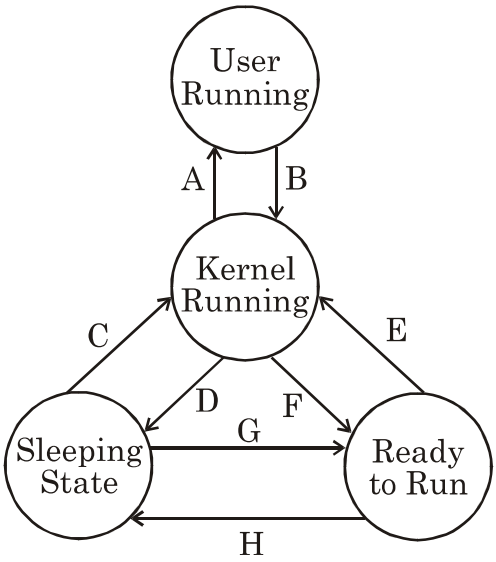
(A) First stage in building a fuzzy expert system is choosing suitable linguistic variables

(B) Fuzzy expert system is built by creating a set of fuzzy rules applying fuzzy inference

(C) Standard expert systems are always more appropriate than fuzzy expert systems.

(D) Fuzzy rules are generated based on expert's knowledge, using linguistic variables.

41. The process state transition diagram for a UNIX like uniprocessor system is given below :



Which transitions are *not* possible ?

(A) A, D, G, F

(B) C, H, F

(C) A, C, H, F

(D) C, G, E

42. The link system call in UNIX is called link (sfname tfname) :

Which of the following statements are *true* ?

(1) sfname and tfname have the same inode after the call.

(2) sfname and tfname have the same directory entry after the call.

(3) sfname is an existing file before the call.

(4) tfname is an existing file before the call.

(A) (1) and (3)

(B) (1), (2) and (3)

(C) (1), (3) and (4)

(D) All of the above

43. Which global variable in LEX points to matched string and which global variable contains the length of the matched string ?

(A) yylex, yylval

(B) lextext, lexval

(C) yytext, yyleng

(D) lexyy, yylex

44. Windows uses a HANDLE, which is simply a 32 bit number that refers to an object. Which amongst the following are windows HANDLES ?

(1) HDC

(2) HBRUSH

(3) HMENU

(4) HWND

(A) (1), (2) and (4)

(B) (1), (3) and (4)

(C) (1) and (4)

(D) (1), (2), (3) and (4)

45. P and Q are amongst the five synchronization objects supported by windows.

P blocks access to a resource until some other thread or process signals that it may be used. Q prevents a block of code being used by more than one thread at a time.

What is P and Q ?

(A) Event object, Waitable timer

(B) Event object, critical section object

(C) Semaphore, waitable timer

(D) Mutex, critical section object

46. If you have a staircase electric switch which logical operation represents the staircase switch :

(A) XNOR (Exclusive-NOR)

(B) OR

(C) NOR

(D) XOR (Exclusive-OR)

47. A circuit which is used to sent data from two or more sources through a single transmission line is known as :

(A) Decoder

(B) Multiplexer

(C) Encoder

(D) De-multiplexer

48. To store N-bit word the number of Flip-Flops required is :

(A) 2^n Flip-Flops

(B) 2n Flip-Flops

(C) n Flip-Flops

(D) 2^{n-1} Flip-Flops

49. After performing the addition of 47H and 51H the status of the zoro (Z), Carry (Cy), Sign (S), Parity (P), Auxiliary (AC) are :

(A) S = 1, Z = 0, AC = 0, P = 0, Cy = 0

(B) S = 0, Z = 1, AC = 1, P = 1, Cy = 1

(C) S = 1, Z = 1, AC = 1, P = 0, Cy = 0

(D) None of the above

50. An 8086 microprocessor can fatch and Pre-fetch upto..... bytes of instructions and stores them in the queue :

(A) 8

(B) 6

(C) 16

(D) 20

51. The client server application development is supported by one of the following RDBMS Software :

(A) Excell

(B) Access

(C) Ingress

(D) Oracle 9.0

52. Consider the following set of functional dipendencies of the schema (A, B, C) :

$A \rightarrow BC$, $B \rightarrow C$, $A \rightarrow B$, $AB \rightarrow C$

Then the canonical cover for this set is :

(A) $A \rightarrow BC$ & $AB \rightarrow C$

(B) $A \rightarrow BC$ & $A \rightarrow B$

(C) $A \rightarrow BC$ & $B \rightarrow C$

(D) $A \rightarrow B$ & $B \rightarrow C$

53. Given the following statement ALTER TABLE employee MOVE TABLESPACE data 1.

The action taken is :

(A) table space is renamed

(B) data is moved to new segment

(C) A copy of table is moved into new segment

(D) The table structure is moved in to new segment

54. In a railway reservation system, the entities are–date, train no, place of departure, destination, type of train, type of seats, seats available.

The primary key will be :

(A) train no. + date

(B) train no.+ destination

(C) train no.+ place of departure

(D) train no.

55. The command used to regain the space for an index containing deleted entries is :

(A) ALTER INDEX emp DEALLOCATE

(B) ALTER INDEX emp-idx COALESCE

(C) ALTER TABLE emp DROP INDEX

(D) ALTER INDEX emp-idx REBUILD

56. The ratio of vertical points to horizontal points required to produce equal length lines in both direction is called as :

(A) frame ratio

(B) aspect ratio

(C) scanline ratio

(D) display ratio

57. The aliasing effect is a phenomena that occurs when..... :

(A) a discrete singnal is sampled in a continuous manner with a constant rate

(B) a discrete signal is sampled in a discrete manner with a constant rate

(C) a continuous signal is sampled in a continuous manner with a constant rate

(D) a continuous signal is sampled in a discrete manner with a constant rate.

58. Key frame systems are specialized ..... languages designed simply to generate the in-between from used spicified key frames.

(A) Graphics

(B) modeling

(C) animation

(D) fractal generation

59. Which of the following is *not* a category of the graphics standards ?

(A) Basic graphics system

(B) Portable network graphics

(C) Open GL

(D) Open Raster

60. Which of the following is a 3D graphics package ?

(A) paint

(B) dream viewer

(C) AC3D

(D) Light room

61. Software that supports virtual machine is called as :

(A) Virtual machine monitor

(B) Hypervisor

(C) Kernel

(D) Both (A) and (B)

62. ..... is the MS-DOS command, counterpart to 'tar' of unix.

(A) dir

(B) backup

(C) copy

(D) edit

63. Which of the following conversions is *not* possible algorithmically ?

(A) regular grammar to context free grammar

(B) Non-deterministic TM to deterministic TM

(C) Non-deterministic FSA to deterministic FSA

(D) Non-deterministic PDA to deterministic PDA

64. The number of arguments a complex term in prolog is called as its :

(A) Arity

(B) Atom

(C) Numbers

(D) Constants

65. A data structure where elements can be added or removed at either end but not in the middle.

(A) Linked lists

(B) Stacks

(C) Queues

(D) deque

66. Consider the stop and wait protocol, if transmission time is 'a' at the source and propagation delay is 'b' then after what time the sender can send the second packet ?

Assume data packet and ACK packet of the same size with no pissy backing :

(A) 2a + 2b

(B) (a + b)/2

(C) 2b + a

(D) a + 2b

67. Assuming classbased addressing scheme, in an university has 35 (thirty five) departments and uses a class B address. If use 6 (six)-bit subnet number and 10-bit host number then how many Ethernet segments and maximum hosts in each Ethernet segment are possible ?

(A) 64, 256

(B) 64, 254

(C) 64, 1024

(D) 64, 1022

68. Advanced Encryption Standard (AES) is based on :

(A) Asymmetric key algorithm.

(B) Symmetric key algorithm

(C) Public key algorithm

(D) Key exchange

69. Suppose a channel has bandwidth B = 4 kHz, determine the channel capacity for each of the following signal to noise ratio.

(i) 20 dB (ii) 30dB (iii) 40 dB

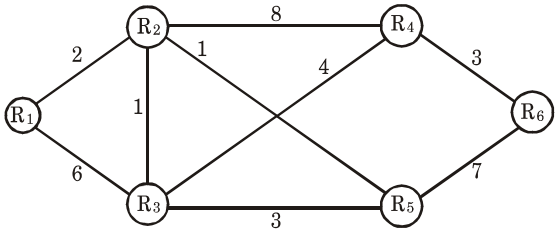
(A) 39.8 kbps, 53.1 kbps, 26.6 kbps

(B) 40.8 kbps, 56.1 kbps, 22.2 kbps

(C) 26.6 kbps, 39.8 kbps, 53.1 kbps

(D) 56 kbps, 29.1 kbps, 54.1 kbps

70. Consider the network shown below with six routers R_1 to R_6 connected with links having weights as shown in the following diagram.



What is the initial routines table of Router R_4 ?

(A)

R_1	10
R_2	8
R_3	4
R_4	0
R_5	∞
R_6	3

(B)

R_1	∞
R_2	8
R_3	4
R_4	0
R_5	7
R_6	3

(C)

R_1	10
R_2	8
R_3	4
R_4	10
R_5	7
R_6	3

(D)

R_1	∞
R_2	8
R_3	4
R_4	0
R_5	∞
R_6	3

71. The number of times swap function called for the selection sort on an array with N numbers is :

(A) N^2

(B) N log N

(C) log N

(D) N–1

72. For the following :

I. The 52 notation is anti-symmetric

II. The big Oh notation is semi-equivalence.

(A) Both (I) and (II) are true

(B) Both (I) and (II) are false

(C) (I) is true & (II) is false

(D) (I) is false & (II) is ture

73. The best/worst case time complexity of Bubble sort is :

(A) O(n)/ $O(n^2)$

(B) O(n)/ O(n log n)

(C) O(n log n)/O(n log n)

(D) O (n log n)/ $O(n^2 \log n)$

74. For Job sequence problem :

Item :	1	2	3	4	5
Profit :	20	15	10	5	1
Deadline :	2	2	3	3	3

Which of the following leads to optimal solution ?

(A) (1, 3, 4)

(B) (4, 2, 3)

(C) (1, 2, 4)

(D) (1, 5, 2)

75. For the following statements of problems :

(I) 3 COL : Given a graph G, can be painted with 3 colours.

(II) COLO : given a graph G, find the chromatic number of G.

Select the *correct* answer :

(A) Only (I) is NP-Complete

(B) Only (II) is polynomial time

(C) (I) is NP-complete & (II) is NP-hard

(D) Only (I) is polynomial time

ROUGH WORK

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