

SUBJECT CODE		SUBJECT		PAPER	
C-04-17		COMPUTER SCIENCE & APPLICATION		III	
HALL TICKET NUMBER			QUESTION BOOKLET NUMBER		
			303352		
OMR SHEET NUMBER					
DURATION		MAXIMUM MARKS	NUMBER OF PAGES	NUMBER OF QUESTIONS	
2 Hour 30 Minutes		150	16	75	

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INSTRUCTIONS FOR THE CANDIDATES

- Write your Hall Ticket Number in the space provided on the top of this page.
- This paper consists of seventy five 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 Test Booklet Number should be entered in the OMR Sheet and 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 circle 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 OMR Answer Sheet given to you. If you mark at any place other than in the circle in the OMR 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 OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
- The candidate must handover the OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. The candidate is allowed to take away the carbon copy of OMR Sheet and used Question Paper Booklet at the end of the examination.
- 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.

అభ్యర్థులకు సూచనలు

- ఈ పుట పై భాగంలో ఇవ్వబడిన స్థలంలో మీ హాల్ టికెట్ నంబరు రాయండి.
- ఈ ప్రశ్న పత్రము దెబ్బపడు బహుళైచ్ఛిక ప్రశ్నలను కలిగి ఉంది.
- పరీక్ష ప్రారంభమున ఈ ప్రశ్నాపత్రము మీకు ఇవ్వబడుతుంది. మొదటి ఐదు నిమిషములో ఈ ప్రశ్నాపత్రమును తెరిచి కింద తెలిపిన అంశాలను తప్పనిసరిగా సరిచూసుకోండి.
 - ఈ ప్రశ్న పత్రమును చూడడానికి కవర్ పేజీ అంచున ఉన్న కాగితపు సీలును చించండి. స్టికర్ సీలులేని మరియు ఇదివరకే తెరిచి ఉన్న ప్రశ్నాపత్రమును మీరు అంగీకరించవద్దు.
 - కవరు పేజీ పై ముద్రించిన సమాచారం ప్రకారం ఈ ప్రశ్నపత్రములోని పేజీల సంఖ్యను మరియు ప్రశ్నల సంఖ్యను సరిచూసుకోండి. పేజీల సంఖ్యకు సంబంధించి గానీ లేదా సూచించిన సంఖ్యలో ప్రశ్నలు లేకపోవుట లేదా నిజప్రతి కాకపోవుట లేదా ప్రశ్నలు క్రమపద్ధతిలో లేకపోవుట లేదా ఏదైనా తేడాలుండుట వంటి దోషపూరితమైన ప్రశ్న పత్రాన్ని వెంటనే మొదటి ఐదు నిమిషాల్లో పరీక్షా పర్యవేక్షకునికి తిరిగి ఇచ్చివేసి దానికి బదులుగా సరిగ్గా ఉన్న ప్రశ్నపత్రాన్ని తీసుకోండి. తదనంతరం ప్రశ్నపత్రము మార్చబడదు అదనపు సమయం ఇవ్వబడదు.
 - పై విధంగా సరిచూసుకొన్న తర్వాత ప్రశ్నాపత్రం సంఖ్యను OMR పత్రము పై అదేవిధంగా OMR పత్రము సంఖ్యను ఈ ప్రశ్నాపత్రము పై నిర్దిష్టస్థలంలో రాయవలెను.
- ప్రతి ప్రశ్నకు నాలుగు ప్రత్యామ్నాయ ప్రతిస్పందనలు (A), (B), (C) మరియు (D) లుగా ఇవ్వబడ్డాయి. ప్రతి ప్రశ్నకు సరైన ప్రతిస్పందనను ఎన్నుకొని కింద తెలిపిన విధంగా OMR పత్రములో ప్రతి ప్రశ్నా సంఖ్యకు ఇవ్వబడిన నాలుగు వృత్తాల్లో సరైన ప్రతిస్పందనను సూచించే వృత్తాన్ని బాల్ పాయింట్ పెన్ తో కింద తెలిపిన విధంగా పూరించాలి.
ఉదాహరణ : A B C D
(C) సరైన ప్రతిస్పందన అయితే
- ప్రశ్నలకు ప్రతిస్పందనలను ఈ ప్రశ్నపత్రముతో ఇవ్వబడిన OMR పత్రము పైన ఇవ్వబడిన వృత్తాల్లోనే పూరించి గుర్తించాలి. అలాకాక సమాధాన పత్రంపై వేరొక చోట గుర్తిస్తే మీ ప్రతిస్పందన మూల్యాంకనం చేయబడదు.
- ప్రశ్న పత్రము లోపల ఇచ్చిన సూచనలను జాగ్రత్తగా చదవండి.
- చిట్టచివరి ప్రశ్నపత్రము చివర ఇచ్చిన ఖాళీస్థలములో చేయాలి.
- OMR పత్రము పై నిర్ణీత స్థలంలో సూచించవలసిన వివరాలు తప్పించి ఇతర స్థలంలో మీ గుర్తింపును తెలిపే విధంగా మీ పేరు రాయడం గానీ లేదా ఇతర చిహ్నాలను పెట్టడం గానీ చేసినట్లయితే మీ అనర్హతకు మీరే బాధ్యులు.
- పరీక్ష పూర్తయిన తర్వాత మీ OMR పత్రాన్ని తప్పనిసరిగా పరీక్ష పర్యవేక్షకునికి ఇవ్వాలి. చాలానే పరీక్ష గది బయటకు తీసుకువెళ్లకూడదు. పరీక్ష పూర్తయిన తరువాత అభ్యర్థులు ప్రశ్న పత్రాన్ని, OMR పత్రం యొక్క కార్బన్ కాపీని తీసుకువెళ్లవచ్చు.
- నిర్దిష్ట రంగు బాల్ పాయింట్ పెన్ మాత్రమే ఉపయోగించాలి.
- లాగరిథమ్ బేజుల్స్, క్యాలిక్యులేటర్లు, ఎలక్ట్రానిక్ పరికరాలు మొదలగునవి పరీక్షగదిలో ఉపయోగించడం నిషేధం.
- తప్ప సమాధానాలకు మార్కులు తగ్గింపు లేదు.

SEAL



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COMPUTER SCIENCE & APPLICATION

Paper - III

1. Sorting algorithm can be characterized as :
 - (A) Simple algorithm which requires the $O(n^2)$ comparisons to sort 'n' items.
 - (B) Sophisticated algorithms that require the $O(n \log n_2)$ comparisons to sort 'n' items.
 - (C) Both (A) and (B)
 - (D) None of the above
2. Which of the following is True ?
 - (A) P is subset of NP
 - (B) NP is subset of P
 - (C) P and NP are equal
 - (D) NP is subset of NP hard
3. The knapsack problem where the objective function is to minimize the profit is :
 - (A) Greedy
 - (B) Dynamic 0/1
 - (C) Backtracking
 - (D) Branch and Bound 0/1
4. Which of the following algorithms solves the all pair shortest path problem ?
 - (A) Dijkstras algorithm
 - (B) Floyds algorithm
 - (C) Prims algorithm
 - (D) Warshalls algorithm
5. Which of the following is True about NP-complete and NP-Hard problems ?
 - (A) If we want to prove that X is NP-Hard, we take a known NP-Hard Problem Y and reduce Y to X.
 - (B) The first problem that was proved as NP-complete was the circuit satisfiability problem.
 - (C) NP-Complete is a subset of NP-Hard.
 - (D) All of the above
6. Regular expressions are :
 - (A) Type 0 language
 - (B) Type 1 language
 - (C) Type 2 language
 - (D) Type 3 language



7. Which of the following is True ?
- (A) $(01)^*0 = 0(10)^*$
 - (B) $(0+1)^*0(0+1)^*1(0+1)^*$
 $= (0+1)^*01(0+1)^*$
 - (C) $(0+1)^*0(0+1)^* + 1^*0^* = (0+1)^*$
 - (D) All of the above mentioned
8. A PDA is different than finite automata by :
- (A) Its memory (stack)
 - (B) Number of states
 - (C) Both (A) and (B)
 - (D) . None of the above
9. The PDA indicates the acceptance of input string in terms of :
- (A) Final state
 - (B) Empty store
10. In multi head turing machine, there are :
- (A) More than one heads of the turing machine.
 - (B) More than one input tapes of turing machine.
 - (C) Similar to the basic model of turing machine.
 - (D) All of the above
11. Assignment problem is a :
- (A) Special type of nonlinear programming problem.
 - (B) Special case of the transportation problem.
 - (C) Special case of the shortest path problem.
 - (D) Special case of Network flow problem.
12. Kuhn-Tucker conditions are used in :
- (A) Linear Programming Problem



13. Generate and test is a :
- (A) Testing tool in software engineering
 - (B) Heuristic search technique used in Artificial Intelligence.
 - (C) A clause in LISP language.
 - (D) A software tool for generating test cases.
14. MYCIN is :
- (A) An Expert System
 - (B) A Function used in MYSQL
 - (C) An identifier in C language
 - (D) A clause in PROLOG
15. Forward reasoning is a technique used for :
- (A) Converting a recursive version to non-recursive version.
 - (B) Searching from goal state to start state.
 - (C) Clipping and windowing.
 - (D) Searching from start state to goal state.
16. Which of the following statement is True ?
- (A) A PROLOG program comprises a description of the problem using a number of facts and rules.
 - (B) A PROLOG program will have the same structure as that of a C language program.
 - (C) A PROLOG programs used for providing templates to identify logical errors.
 - (D) PROLOG is used for developing UNIX operating system.
17. The most appropriate repository used for taking well informed decisions by a DS analyst is :
- (A) MIS
 - (B) Data warehouse
 - (C) Database
 - (D) File structures
18. Process diagrams used in designing an MIS are known as :
- (A) Context diagram
 - (B) E-R diagram
 - (C) Flow charts
 - (D) UML diagrams



19. Why reference is **not** same as pointer ?
- (A) A reference can never be null.
 - (B) A reference once established can't be changed.
 - (C) Reference doesn't need an explicit de-referencing mechanism.
 - (D) All of the above
20. "Change in specification of one thing reflects the other". This property is realized in UML using :
- (A) Association relationship
 - (B) Realization relationship
 - (C) Aggregation relationship
 - (D) Dependency relationship
21. Which of the statements are True ?
- (a) Function overloading is done at compile time.
 - (b) Protected members are accessible to the member of derived class.
 - (c) A derived class inherits constructors and destructors.
 - (d) A friend function can be called like a normal function.
 - (e) Nested class is a derived class.
- Codes :**
- (A) (a), (b), (c)
 - (B) (b), (c), (e)
 - (C) (c), (d), (e)
22. If the window has child windows, how will the browsing histories be affected ?
- (A) Numerically interleaved
 - (B) Chronologically interleaved
 - (C) Both (A) and (B)
 - (D) None of the above
23. Which of the following is the default positioning elements with CSS ?
- (A) Relative
 - (B) Absolute
 - (C) Static
 - (D) Both (A) and (B)
24. Which of the following property allows you to specify an element position with respect to the browse window ?
- (A) Relative
 - (B) Static
 - (C) Fixed



25. In a vectored interrupt :
- (A) The branch address is assigned to a fixed location in memory.
 - (B) The interrupting source supplies the branch information to the process through the interrupt vector.
 - (C) The branch address is obtained from a register in the process.
 - (D) The branch address is not needed
26. The main memory can store 32K words of 12 bits each. If the direct cache mapping is used with a cache capability of 512 words, what is the size of each location of cache ?
- (A) 18 bits
 - (B) 36 bits
 - (C) 9 bits
 - (D) 27 bits
27. An interface that provides I/O transfer of data directly to and from the memory unit and peripherals is termed as :
- (A) DDA
 - (B) Serial interface
 - (C) Three way handshaking
 - (D) DMA
28. The first microprocessor built by the Intel corporation was called :
- (A) 8008
 - (B) 8080
 - (C) 4004
 - (D) 8800
29. What are level triggering interrupts ?
- (A) INTR and TRAP
 - (B) RST 6.5 and RST 5.5
 - (C) RST 7.5 and RST 6.5
 - (D) None of the above
30. In one of the following software development models, cross cutting concerns are defined that have impact across the system architecture :
- (A) Spiral model
 - (B) Incremental model
 - (C) Prototype model
 - (D) Aspect Oriented model
31. One of the following is **not** a software validation activity :
- (A) Conduct a code walkthrough when appropriate.
 - (B) Perform unit test and correct errors you have uncovered.
 - (C) Refactor the code
 - (D) Select a programming environment



32. One of the following artifacts captures the interactions that occur between producers and consumers of information and the system itself :
- (A) Use case diagram
 - (B) Component diagram
 - (C) Class diagram
 - (D) Deployment diagram
33. During refactoring process, the existing system is not examined for :
- (A) Unused design elements
 - (B) Inappropriate data structures
 - (C) Inconsistent requirements
 - (D) Redundancy
34. One of the following is an integration testing approach that is commonly used when software products are being developed by allowing software teams to assess the projects on frequent basis :
- (A) Regression testing
 - (B) Smoke testing
 - (C) Big-bang integration
 - (D) System testing
35. One of the following expression is used to compute cyclomatic complexity for recursive programs where 'm' is the number of edges and 'n' is the number of vertices :
- (A) $m - n + 2$
 - (B) $n - m + 2$
 - (C) $m - n + 1$
 - (D) $n - m + 1$
36. Which of the following set of dependencies is suitable for putting a relation $R(A, B, C, D)$ into 3NF but not in BCNF ?
- (A) $\{AB \rightarrow CD, A \rightarrow C, D \rightarrow B\}$
 - (B) $\{AB \rightarrow CD, C \rightarrow DA\}$
 - (C) $\{AB \rightarrow CD, C \rightarrow A, D \rightarrow B\}$
 - (D) $\{A \rightarrow BCD, B \rightarrow CD, C \rightarrow D\}$
37. In the relation instance given below, which of the following functional dependencies are satisfied ?
- | A | B | C |
|---|---|---|
| 1 | 4 | 2 |
| 1 | 5 | 3 |
| 1 | 6 | 3 |
| 3 | 2 | 2 |
- (A) $AB \rightarrow C$ and $C \rightarrow A$
 - (B) $BC \rightarrow A$ and $B \rightarrow C$
 - (C) $BC \rightarrow A$ and $A \rightarrow C$
 - (D) $AC \rightarrow B$ and $B \rightarrow A$



38. A "Case SQL" statement is used for :
- (A) Simulating a loop in SQL.
 - (B) Simulating IF-THEN-ELSE in SQL.
 - (C) Establishing for defining data in SQL.
 - (D) Establishing data manipulation process in SQL.
39. Which of the following represent the relationship of a single subclass entity set with a relation that involves more than one distinct super class ?
- (A) Categorization
 - (B) Aggregation
 - (C) Composition
 - (D) Specialization
40. Consider the relation R1 (Roll no., Name, Grade) and R2(Roll no., Subject_id, Grade). Which of the following operations can't be performed on relations R1 and R2 ?
- (A) Select
 - (B) Union
 - (C) Join
 - (D) Project
41. _____ is used to remember about history of grants and revocation to keep track of who has what privilege and from whom they obtained those privileges.
- (A) Serializability graph
 - (B) Grant diagram
 - (C) Transact diagram
 - (D) View serializable graph
42. Which of the following is **not** a compiler construction tool ?
- (A) Parser generator
 - (B) Scanner generator
 - (C) Automatic code generator
 - (D) Interpreter
43. Consider the following syntax directed translations scheme (SDTS) with non terminals {S, A} and terminals {a, b}
- $S \rightarrow aA$ {print 1}
- $S \rightarrow a$ {print 2}
- $A \rightarrow Sb$ {print 3}
- Using the above SDTS the output printed by a bottom up parser for the input aab is :
- (A) 1 3 2
 - (B) 2 2 3
 - (C) 2 3 1
 - (D) Syntax error



44. An IP datagram of size 1200 bytes arrives at a router. The router has to forward the packet on a link whose MTU (Maximum Transfer Unit) is 80 bytes. Assume that the size of IP header is 20 bytes. The number of fragments that the IP datagram will be divided into for transmission is :
- (A) 12 (B) 15
(C) 20 (D) 25
45. In one of the pair of protocols given below, both protocols can use multiple TCP connections between the same client and the server. Which one is that ?
- (A) HTTP, FTP
(B) HTTP, TELNET
(C) FTP, SMTP
(D) HTTP, SMTP
46. In a linear block code, exclusive OR(XOR) of any two valid code words creates another :
- (A) Invalid code word
(B) Valid code word
(C) Valid data word
(D) Invalid data word
47. In a cyclic code, generator polynomial is normally called the :
- (A) Multiplier
(B) Divisor
(C) Adder
(D) Subtractor
48. In synchronous transmission, we send bits one after another without :
- (A) Start bit
(B) Stop bit
(C) Gap bit
(D) All of the above
49. Term that refers to generation of code to detect error that occurred during transmission is called :
- (A) Baseline wandering
(B) Built in error detection
(C) Self synchronization
(D) Complexity

50. The state of signals are :

- (A) Preserved across a fork call
- (B) Not preserved across an exec call
- (C) Preserved across an exec call
- (D) Both (A) and (B)

51. Which one of the following is not a filter program ?

- (A) date (B) sort
- (C) cat (D) grep

52. If 7 terminals are currently logged on, then the command `date; who | wc-l` displays :

- (A) Date followed by 7
- (B) Date followed by 8
- (C) Date followed by 1
- (D) An Error Message

53. The default permission bits of a file when it is created for the first time is controlled by :

- (A) `chmod` value
- (B) `tmask` value
- (C) `umask` value
- (D) user permission

54. Which of the parameters is not passed for `create ()` function ?

- (A) `LPCTSTR lpsz Class Name`
- (B) `LPCTSTR lpsz Window Name`
- (C) `LPSZ Menu Name`
- (D) `lParams`

55. The arguments of the `Winmain ()` function are mandatory and it is required that they communicate with :

- (A) Hardware
- (B) Kernel
- (C) Operating System
- (D) Compiler



56. The graph that shows basic blocks and their successor relationship is called :
- (A) DAG
 - (B) Flow graph
 - (C) Control graph
 - (D) Hamiltonian graph
57. To recover from an error, the operator precedence parser may :
- (A) Insert symbols onto the stack and onto the input.
 - (B) Delete symbols from the stack
 - (C) Delete symbols from the input
 - (D) Ignore the input
58. If pixels cannot be reconstructed without error mapping is said to be :
- (A) Reversible
 - (B) Irreversible
 - (C) Temporal
 - (D) Facsimile
59. Which classes are included by Cwnd Class ?
- (A) CFrameWnd
 - (B) CMDIFrameWnd
 - (C) CMDIChildWnd
 - (D) All of the above
60. Which type of fragmentation occurs with paging ?
- (A) External
 - (B) Internal
 - (C) Compaction
 - (D) Leakage
61. Time taken in memory access through page table buffer is :
- (A) Extended by a factor of 3
 - (B) Extended by a factor of 2
 - (C) Slowed by a factor of 3
 - (D) Slowed by a factor of 2



62. IP address is known as :
- (A) Physical address
 - (B) Logical address
 - (C) Incorrect address
 - (D) Virtual address
63. The correct syntax of WinMain function is :
- (A) WINAPI WinMain(HINSTANCE hInstance, HINSTANCE hPrevInstance, LPSTR lpCmdLine, intnCmdShow)
 - (B) INT WINAPI WinMain(HINSTANCE hInstance, HINSTANCE hPrevInstance, LPSTR lpCmdLine, intnCmdShow)
 - (C) WINAPI WinMain(HINSTANCE hInstance, HINSTANCE hPrevInstance, LPSTR lpCmdLine, real nCmdShow)
 - (D) All of the above
64. An intermediate code form is :
- (A) Postfix notation
 - (B) Syntax trees
 - (C) Three address code
 - (D) All of the above
65. Advantage of a panic mode of error recovery is that :
- (A) It is simple to implement
 - (B) It never gets into an infinite loop
 - (C) Both (A) and (B)
 - (D) It is hard to implement.
66. What is the search complexity of finding the nearest neighbours in a huge data set of size n ?
- (A) $O(n^2)$
 - (B) $O(n \log n)$
 - (C) $O(n)$
 - (D) $O(1)$
67. To find the duplicate in a list of numbers whose range is small, which is the suitable data structure ?
- (A) Hash
 - (B) Binary search tree
 - (C) Linear queue
 - (D) Linked list



68. Router is used in which layer ?
- (A) Datalink layer
 - (B) Network layer
 - (C) Physical layer
 - (D) Transport layer
69. There are 8, 15, 13, 14 nodes in four different trees. Which of them could have formed a full binary tree ?
- (A) The binary tree with 8 nodes
 - (B) The binary tree with 14 nodes
 - (C) The binary tree with 15 nodes
 - (D) The binary tree with 13 nodes
70. In a AVL tree balancing is to be done when "pivotal value" is :
- (A) >1
 - (B) >0 and <1
 - (C) >1 or <-1
 - (D) <-1
71. In a heap tree :
- (A) Values in a node is greater than every value in the left subtree and smaller than the right subtree.
 - (B) Values in a node is greater than every value in the children of it.
 - (C) Both of the above conditions apply
 - (D) None of the above conditions apply
72. The number of binary trees possible with 3 nodes is :
- (A) 5
 - (B) 14
 - (C) 9
 - (D) 2
73. The prefix equivalent of the postfix expression $AB+C*EF-+$ is :
- (A) $+++ABC-EF$
 - (B) $*+++ABC-EF$
 - (C) $+*-+ABCDE F$
 - (D) $+++ABC-F E$
74. Parity bits are used for :
- (A) Overloading
 - (B) Mobile transmission
 - (C) Error detection and correction
 - (D) Pattern matching
75. Convert the following arithmetic expression from postfix form to infix form $ABCDE+*- /$
- (A) $A/[B-(D+E)*C]$
 - (B) $(A+B*C-D)/E$
 - (C) $A/B-C*D+E$
 - (D) $A+B-C*E$

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