PQR - 2017

COMPUTER SCIENCE ENGINEERING

Time Allowed : 3 Hours] [Maximum Marks : 190

DO NOT OPEN THE SEAL GIVEN ON THE RIGHT HAND SIDE UNLESS INSTRUCTED BY THE INVIGILATOR

The Question Paper will contain 150 questions and will have 3 Sections as below :

Section		No. of Questions	Marks
(a)	Part A	100	100
(b)	Part B	40	80
(c)	Part C - General Knowledge (Common Part of all Subjects)	10	10
Total		150 Questions	190 Marks

INSTRUCTIONS TO THE CANDIDATES

1. Read carefully and comply.
2. Fill the details including Name of the Candidate, Register Number, Question Paper Booklet Series in the OMR Answer Sheet. If you fail to fill the details and sign as instructed correctly, you will be personally responsible for the consequences arising during the scanning of your Answer Sheet.
3. All the 150 questions are of MCQ (ıs) type. For each Question you will find 4 possible answers marked by the letters A, B, C and D. You are to select only one correct answer and mark in OMR Answer Sheet as per the instructions given therein. In any case, choose only one answer for each question. There will be no negative marking for wrong answers.
4. In the OMR Answer Sheet for each and every question shade only one answer. If more than one answers are shaded that question will be rejected for valuation.
5. Indicate your answer by darkening the appropriate circle as per the instructions given in the OMR Answer Sheet otherwise his/her Answer Sheet is liable to be rejected. For marking answers use Blue or Black Ball Point Pen only. Ensure that you darken only one circle. Darken it completely and don't overlap with any other circle.
6. Don't mark anything (including marking like ✓, ⊙, ☐) in the question paper booklet other than space provided for this purpose. If you fail to follow this, you will be disqualified.
7. In any event of any mistake in any Questions, candidates will not be penalized. However, no corrections will be made in Questions during the Examination.
8. Use of Mobile Phone, Pager, Digital Diary or any other Electronic Instrument etc., is not allowed. Their use will result in disqualification.
9. No candidate should leave the Examination Hall before the final bell. The OMR Answer Sheet should be handed over to the invigilator before leaving the Examination Hall. **The candidate is allowed to take the Question Booklet and Carbon copy of the OMR Answer Sheet with Him/ Her after the examination.**

1. The primary objective of formal technical reviews is to :

(A) fix errors (B) find errors (C) clear errors (D) modify errors

2. _____ testing method enables the test case designer to derive a logical complexity measure.

(A) Control structure testing (B) Basic path testing

(C) Orthogonal array testing (D) Scenario - based testing

3. _____ is a class which implement lower level business abstractions required to fully manage the business domain class :

(A) User interface class (B) System class

(C) Business domain class (D) Process class

4. The use of 4GT without _____ will cause the difficulties in quality, maintainability and customer acceptance.

(A) data structure (B) testing

(C) design (D) information gathering

5. How should we initiate communication between the developer and the customer ?

(A) Technical questions (B) Content - free - questions

(C) Problematic questions (D) Feed back

6. Which of the following is not specified in Abstract data type ?

(A) Type (B) Set of operations on that type

(C) How the type is implemented (D) (A) and (B)

7. How many binary trees are possible with 10 nodes ?

(A) 10 (B) 1000 (C) 1014 (D) 1024

8. Which of the following are correct statements regarding splay trees ?

(a) Every single operation is guaranteed to be efficient

(b) Avoids worst case linear time behaviour of BST operations

(c) Guaranteed that a series of m operations will take O (m log n) time for a tree of m nodes

(A) (a), (b) and (c) (B) (a) and (c) (C) (b) and (c) (D) (b) only

9. Backtracking uses _____ node generation _____ bounding functions :

(A) Breadth first, with (B) Breadth first, without

(C) Depth-first, with (D) Depth-first, without

10. A problem L is NP - complete if and only if L is _____ and L ϵ _____.

(A) Solvable by polynomial time algorithm, P

(B) NP - hard, P

(C) NP, P

(D) NP - hard, NP

11. If p and q are two statements and they take truth values p = 1 and q = 1, then their conjunction p and q written as $p \wedge q$ takes truth value :

(A) 0 (B) 1 (C) -1 (D) None

12. The conditional probability of event A given event B is defined as :

(A) $P(A/B) = \frac{P(A \cap B)}{P(B)}$ (B) $P(A/B) = \frac{P(A \cap B)}{P(A)}$

(C) $P(B/A) = \frac{P(A \cap B)}{P(A)}$ (D) $P(B/A) = \frac{P(A \cap B)}{P(B)}$

13. In a statistical data, the size of item 'x' and its frequency 'f' given mean of distribution $\bar{x}$, then the standard deviation is defined as :

(A) $\sqrt{\frac{\Sigma f\,(x-\bar{x})^2}{\Sigma f}}$ (B) $\frac{\Sigma f\,(x-\bar{x})}{\Sigma f}$ (C) $\frac{\Sigma f\,(x-\bar{x})^2}{\Sigma f}$ (D) $\frac{\Sigma f x}{\Sigma f}$

14. $(A \cap B') \cup (A' \cap B) \cup (A' \cap B')$ is equal to :

(A) $A \cup B$ (B) $A' \cup B'$ (C) $A' \cap B'$ (D) $A \cup B'$

15. The value of integral $\int_0^{\frac{\pi}{2}} \sec x \, dx$ is :

(A) Convergent (B) Divergent (C) 3 (D) 0

16. $Ax^2 + By^2 + Cxy + Dx + Ey + F = 0$ represents a :

(A) Line (B) Conic section

(C) Circle (D) None of the above

17. The standard graphics objects are :

(A) Line (B) Point

(C) Polygon (D) None of the above

18. A blobby object can be generated using :

(A) Metaball model (B) Soft object model

(C) Both (A) and (B) (D) DDA algorithm

19. The wavelength of visible spectrum falls in :

(A) 400 nm to 500 nm (B) 500 nm to 700 nm

(C) 600 nm to 700 nm (D) 400 nm to 700 nm

20. JPEG is a :

(A) Image compression standard (B) Image file format

(C) Both (A) and (B) (D) Video file format

21. _____ is a small program that switches the processor from one process to another.

(A) Schedular (B) Dispatcher (C) Swapper (D) Lazy swapper

22. Which one of the following is not a consumable resources ?

(A) Interrupts (B) Signals (C) I/O devices (D) Messages

23. The size of a page is typically a :

(A) Multiple of 8

(B) Power of 2

(C) Any size depending on operating system

(D) Any size depending on user program

24. _____ Algorithm is sometimes called the elevator algorithm.

(A) FCFS Scheduling (B) SCAN Scheduling

(C) C - SCAN Scheduling (D) Look Scheduling

25. The vi editor of Unix Supports which of the following editor.

(A) Line Editor (B) String Editor (C) Screen Editor (D) All of the above

26. Which of the following quality factor is not related to FURPS ?

(A) Functionality (B) Portability (C) Reliability (D) Performance

27. An Independently deliverable piece of functionality providing access to its services through interface is called :

(A) Software measurement (B) Software composition

(C) Software maintanance (D) Software component

28. Which one of the following is not a non - functional requirement ?

(A) efficiency (B) reliability (C) product features (D) stability

29. As per the distribution of maintanance effort, which type of maintanance has consumed maximum share ?

(A) Adaptive (B) Corrective (C) Perfective (D) Preventive

30. Which one of the following is not a infrastructure software ?

(A) Operating System (B) Database Management System

(C) Compilers (D) Result Management System

31. The value of the expression $(a + b)\ (a + b')\ (a + a'b)$ is :

(A) b' (B) a' (C) a (D) b

32. Address decoding in large sized memory chips is by means of row and column decoding rather than flat decoding because :

(A) decoders decode the input address

(B) decoders have priorities built-in

(C) the size of the flat decoder becomes very large

(D) row and column decoders enable faster decay of dynamic data

33. The disadvantage of write back strategy in cache is that :

(A) it generates repeated memory traffic

(B) it creates a write mechanism whenever there is a write operation to cache

(C) portions of main memory may be invalid

(D) it requires local cache memory attached to every CPU in a multi processor environment

34. Which of the following possibilities for saving the return address of a sub - routine, supports sub - routine recursion ?

(A) In a processor register

(B) In a memory location associated with the call

(C) On a stack

(D) All of the above

35. The unit responsible for tracking the next instruction to be executed in :

(A) ALU (B) Memory Address Register

(C) Program counter (D) Instruction memory

36. Which of the following level of storage is not managed by operating system ?

(A) Main memory (B) Solid state disk (C) Cache (D) Magnetic disk

37. Which of the following is a Pass 1 task in a typical assembler ?

(A) Generate data (B) Generate instructions

(C) Look up value of symbols (D) Determine length of machine instructions

38. Using a larger block size in a fixed block size file system leads to :

(A) better disk throughput but poor disk space utilization

(B) better disk throughput and better disk space utilization

(C) poor disk throughput but better disk space utilization

(D) poor disk throughput and poor disk space utilization

39. Which of the following are macroprocessor pseudo - OPS used for conditional macro expansion ?

(I) .DC (II) .AIF (III) AGO (IV) .ST

(A) (I), (II), (III) (B) (I), (IV) (C) (II), (III), (IV) (D) (II), (III)

40. Suppose that a process spends a fraction p of its time waiting for I/O to complete. With n processes in memory at once, the probability that all n processes are waiting for I/O is p^n. What is the CPU utilization ?

(A) $1-p^n$ (B) $1-n^p$ (C) $1/p^n$ (D) $1/n^p$

41. A _____ can forward packets across different networks that may also use different protocols :

(A) repeater (B) bridge (C) router (D) gate way

42. Java script is contained inside the _____ tags.

(A) < font > ..... (B) < script > ..... </script >

(C) < head > ..... </head > (D) < body > ..... </body >

43. _____ refers to whether a payment can be carried out without the involvement of a third party such as a bank.

(A) Anonymity (B) Divisibility (C) Acceptability (D) Transferability

44. A maximum of _____ Cookies are allowed at each domain.

(A) 21 (B) 22 (C) 20 (D) 23

45. Choices in DTD can be specified by using the _____ symbol.

(A) | (B) OR (C) || (D) ALTERNATIVE

46. If there are 'n' number of states in NFA, then its equivalent DFA may contain atmost _____ number of states.

(A) 2^n (B) n (C) n^2 (D) 2^{n+1}

47. To get the PDA, the CFG should be in the form of :

(A) CFG (B) GNF (C) RE (D) CNF

48. One of the uses of CNF is to turn parse tree into :

(A) AVL trees (B) Binary search trees

(C) Binary trees (D) None of the above

49. In shift - Reduce parsing, if there are two (or) more productions that apply to the same sequence of input is called :

(A) Handle prunning (B) Shift - reduce conflict

(C) Reduce - reduce conflict (D) Handles

50. The grammar $A \rightarrow AA \mid (A) \mid \epsilon$ is not suitable for predictive parsing because the grammar is :

(A) Ambiguous (B) Left - Recursive

(C) Right Recursive (D) An operator grammar

51. An SD RAM has 8K rows, with an access time of 4 clock cycles for each row, and a refresh period of 64 ms. If the clock rate is 133 MHz, the refresh overhead will be :

(A) 0.0038 (B) 0.246 (C) 0.68 (D) 4.35

52. Suppose a counter has three states namely Q_0, Q_1 and Q_3. Their levels may be 0 to 1, 0 to 1 and 1 to 0 respectively. If a positive edge will change the state of Q_0 from 1 to 0, which will force Q_1 from 1 to 0 and Q_3 from 0 to 1. Determine what type of counter have this effect.

(A) Johnson Counters (B) Ripple Counters

(C) UP Counters (D) Down Counters

53. The slave ready signal allows the duration of a bus transfer to change from one device to another. If the addressed device does not respond at all, the master waits for some predefined maximum number of clock cycles, then _____ the operation.

(A) Loop (B) Hold (C) Suspend (D) Abort

54. The Booth technique for recording multiply of +13 and −6 [01101 and 11010] is :

(A) 1110 0011 01 (B) 1110 1100 10 (C) 1110 1010 10 (D) 1110 0011 00

55. MFLOPS can be abbreviated as :

(A) Millions of Floating - Point operations performed per second.

(B) Millions of Fixed - Length operations performed per second.

(C) Millions of Floating - Limited operations performed per second.

(D) Millions of Fixed - Limited operations performed per second.

56. Which of the following are not valid IPV4 addresses ?

(A) 192.10.14.3 (B) 200.172.287.33

(C) 65.92.11.00 (D) 10.34.110.77

57. In which kind of communication, the destination address in each packet is the same for all duplicates ?

(A) Unicasting (B) Multi casting

(C) Multiple unicasting (D) Broad casting

58. In IPV4, using the classful addressing scheme, the whole address space is divided into how many classes :

(A) 8 (B) 16 (C) 24 (D) 5

59. The block size in 56 - bit DES and 128 - bit DES are respectively :

(A) 64 and 64 bits (B) 64 and 128 bits

(C) 128 and 128 bits (D) 128 and 256 bits

60. The time complexities of RSA encryption and decryption (as a function of key size) are respectively :

(A) $O(K^3)$ and $O(K^2)$ (B) $O(K)$ and $O(K^2)$

(C) $O(K^4)$ and $O(K^3)$ (D) $O(K^2)$ and $O(K^3)$

61. A router must have atleast _____ NICs.

(A) 3 (B) 4 (C) 2 (D) 5

62. If an IP address starts with a bit sequence of 11110, it is a class _____ address.

(A) B (B) C (C) D (D) E

63. The Data Adapter object has a method called as _____ which queries a database and initializes a Data set with the results.

(A) Bind () (B) Update () (C) Select () (D) Fill ()

64. An XML document can have a DTD declaration by using the _____ keyword.

(A) DTD (B) DOCUMENT (C) DESIGN (D) DOCTYPE

65. The gateway that stands between the mobile network and the Internet in GPRS is called as _____.

(A) CCSN (B) SGGN (C) SGSN (D) GGSN

66. The major functions of the presentation layer in OSI stack are :

(A) dialog presentation and control

(B) dealing with differences in data representation, encryption and compression

(C) presenting the full and half duplex services to the user

(D) enabling end to end error control presentation

67. A code with a Hamming distance d can :

(A) detect d bit errors and correct $(d-1)$ bit errors.

(B) detect $(d-1)$ bit errors only with no error correction.

(C) detect $(d-1)$ bit errors and correct $(d-1)/2$ bit errors.

(D) detect and correct all d bit errors.

68. In a stop and wait protocol used across a link of bandwidth of 1Mbps, data packets of 1000 bits are transmitted. The round trip time for a bit is 20ms. The link utilisation is :

(A) 0.5 (B) 0.05 (C) 0.005 (D) 5.0

69. A cryptographic system that uses only symmetric key cryptography cannot provide digital signature because :

(A) Symmetric key cryptography is computationally infeasible.

(B) Symmetric key cryptography involves key distribution.

(C) Symmetric key cryptography is unreliable.

(D) digital signature requires a pair of private - public keys.

70. If a message "CONGRATS" is encoded as "AMLEPYRQ", the encryption key is :

(A) +3 (B) +2 (C) −3 (D) −2

71. A circle, if scaled only in one direction becomes a :

(A) Ellipse

(B) Parabola

(C) Hyperbola

(D) Remains as a circle

72. The Point at which a set of projected parallel lines appear to converge is called :

(A) Convergence point
(B) Vanishing point
(C) Point of illusion
(D) Point of delusion

73. Gray scale is used in :

(A) Monitor that have color capability
(B) Random scan display
(C) Monitor that have no color capability
(D) Animation capability

74. The ISO standard for computer graphics is :

(A) Graphics kernel system
(B) Graphics standard system
(C) Computer graphics standard
(D) None of the above

75. A Image compression technique that determines the most frequently occurring pairs of bytes is called :

(A) Run length encoding
(B) Diatonic encoding
(C) Huffman encoding
(D) Arithmatic encoding

76. What is the best case running time of binary search ?

(A) $\theta(n)$ (B) $\theta(1)$ (C) $\theta(\log n)$ (D) $\theta(n \log n)$

77. How many binary trees are possible with three nodes ?

(A) 5 (B) 4 (C) 6 (D) 3

78. Which Sorting method is an external Sort ?

(A) Heap Sort
(B) Quick Sort
(C) Insertion Sort
(D) None of the above

79. Between any two vertices, there exists a path, then the graph is said to be :

(A) Strongly Connected (B) Connected

(C) Weakly Connected (D) All the above

80. What is the asymptotic value for the recurrence equation $T(n) = 2T(n/2) + n$?

(A) $O(n)$ (B) $O(n^2)$ (C) $O(n^2 \log n)$ (D) $O(n \log n)$

81. C (5, 2) is not equal to :

(A) C (5, 3) (B) 20 (C) 10 (D) $\frac{5!}{3!\,2!}$

82. The value of $a' + a' \cdot b' + b' + a + 0$ is :

(A) $a' + b'$ (B) $b' + a$ (C) 1 (D) 0

83. If $\lambda_1 = 1$, $\lambda_2 = 1$, $\lambda_3 = -2$ are eigenvalue of a square matrix A, then its Nature of quadratic form is _____.

(A) Positive definite (B) Negative definite

(C) Positive semidefinite (D) Indefinite

84. The value of 'C' of the Cauchy's mean value theorem for $f(x) = e^x$ and $g(x) = e^{-x}$ in [2, 3] is _____.

(A) 2 (B) 2.5 (C) 3 (D) 1.5

85. $f(x)$ is given by :

x	:	0	0.5	1
$f(x)$	:	1	0.8	0.5

then using Trapezoidal rule, the value of $\int_0^1 f(x)\,dx$ is :

(A) 0.775 (B) 0.675 (C) 0.677 (D) 0.767

86. A functional dependency is a relationship between :

(A) tables (B) attributes (C) rows (D) relations

87. _____ operator is used to retain the unmatched rows of relations when they joined.

(A) Outer join (B) Inner join (C) Natural join (D) Self join

88. Relationships among relationships can be represented in E - R model using :

(A) Aggregation (B) Specialization

(C) Association (D) Weak relationship sets

89. The physical location of a record is determined by a mathematical formula that transforms a file key into a record location is :

(A) B - Tree File (B) Hashed File (C) Indexed File (D) Sequential File

90. Which one of the following statements is FALSE ?

(A) A relation with two attributes is in BCNF

(B) Lossless, dependency preserving decomposition into BCNF is always possible

(C) BCNF is stricter than 3NF

(D) Lossless, dependency preserving decomposition into 3NF is always possible

91. Which entries must be retained by the relocatable machine code file for each data location or instruction label that is referred to externally.

(A) flow graph (B) intermediate - code tree

(C) basic block (D) symbol table

92. The tokens and associated attribute values for the FORTRAN statement E = M*C** 2 is :

(A) < assign_op > (B) < mult_op >

(C) < exp_op > (D) all of above

93. Comments will appear in a special font in which of the following ?

(A) Structure editor (B) Interpreter (C) Static checker (D) Pretty printer

94. For the grammar

$S \rightarrow S_1 \$$

$S_1 \rightarrow S_1T \mid ab$

$T \rightarrow a\ Tbb \mid a$

the grammar obtained by factoring and eliminating left recursion would not be.

(A) regular (B) Context - free (C) LL(1) (D) LR

95. If there is a Turing machine that enumerates L in canonical order, L is :

(A) ambiguous (B) right - recursive (C) left - recursive (D) recursive

96. The overall logical structure of a database can be expressed graphically by :

(A) Entity relationship model (B) Relational model

(C) Object based model (D) Semi structured model

97. The relation schema describes :

(A) Set of tuples (Records) (B) Set of fields (Column heads/ Attributes)

(C) Set of associated values (D) Domain of each field

98. "X is not a proper subset of any Key" is a 3NF violation called as :

(A) Partial dependency (B) Total dependency

(C) Transitive dependency (D) None of the above

99. ALL or NONE refers :

(A) Consistency (B) Isolation (C) Durability (D) Atomicity

100. Inheritance achieved by the keyword in SQL is :

(A) of (B) sub (C) under (D) from

101. Match the terms with the definition .

(a)	Masquerading	(i)	session is intercepted
(b)	Phishing	(ii)	one pretends to be someone else
(c)	Hijacking	(iii)	a email misleads a user into entering confidential information

Codes :

	(a)	(b)	(c)
(A)	(i)	(ii)	(iii)
(B)	(i)	(iii)	(ii)
(C)	(iii)	(ii)	(i)
(D)	(ii)	(iii)	(i)

102. Consider the following dependencies :

$AB \rightarrow CD$, $AF \rightarrow D$, $DE \rightarrow F$, $C \rightarrow G$, $F \rightarrow E$, $G \rightarrow A$

Which one of the following options is false ?

(A) $BG^+ = \{ABCDG\}$ (B) $CF^+ = \{ACDEFG\}$

(C) $AB^+ = \{ABCDG\}$ (D) $AF^+ = \{ACDEFG\}$

103. Consider the following transactions with data items X and Y initialized to zero :

T_1 : read (x) ;
read (y) ;
if $x=0$ then $y := y+1$;
write (y) ;

T_2 : read (y) ;
write (x) ;
if $y=0$ then $x := x+1$
write (x) ;

The concurrent execution of T_1 and T_2 leads to

(A) Serializable schedule

(B) A schedule that is not conflict serializable

(C) A conflict serializable schedule

(D) A schedule for which a precedence graph cannot be drawn

104. Consider the expression $t \in$ instructor $\wedge \exists s \in$ department (t [dept_name] = s [dept_name])

The variables t and s are _____ respectively.

(A) free variable and bound variable

(B) bound variable and free variable

(C) free variable and free variable

(D) bound variable and bound variable

105. The materialization approach of query evaluation includes (from root to leaf) :

(A) π, ∞, σ (B) π, σ, ∞ (C) σ, π, ∞ (D) σ, ∞, π

106. Which of the following make(s) filtering decisions based on application payload ?

(A) packet filter (B) deep inspection firewall

(C) reverse proxy (D) stateful packet inspection firewall

107. If the data frame is 1101011011 and the divisor is 10011 in a CRC error detection process, a burst error 0000010011 occurs in transmission. Justify whether it will be detected :

(A) With a high probability, it will be detected.

(B) It will not be detected, as the burst error is exactly identical to the divisor.

(C) With a very small probability, it will be detected.

(D) It depends on the data rate in the channel. So it may or may not be detected.

108. Four nos of 256 - byte messages are generated by a sending application and transmitted to a receiving application using TCP. The receiving application will receive :

(A) 4 messages of size 256 bytes always

(B) a total of 1024 bytes, either as 4 messages of size 256 bytes or as 2 messages of size 512 bytes etc.

(C) the messages with their boundaries preserved exactly.

(D) a maximum of half the total size only.

109. Calculate the entropy of the source symbol with their probability of occurrance as A and B=0.25, C and D=0.14 E, F, G, and H=0.055 :

(A) 3.52 (B) 2.17 (C) 4.22 (D) 4.05

110. Why encoded frame sequences of 1, P, and B frames are re - ordered before sending to the decoder ?

(A) For error protection

(B) Reduce bit rate for transmission

(C) Reduce encoding/decoding complexities

(D) For seamless decoding of video

111. Consider a large scale project for which the manpower requirement is 600 PY and the development time is 3 years 6 months. What is the peak manning ?

(A) 104 (B) 110 (C) 121 (D) 106

112. _____ is used to obtain the IP address of a host based on its physical address.

(A) RARP (B) IPV6 (C) TFTP (D) TELNET

113. A _____ screen of the application can be used for presenting marketing information and legal information, such as copyright information, third party logo and so on.

(A) Policy (B) Splash (C) Application (D) Document

114. Additional event types that are specific to swing GUI components are declared in package _____.

(A) Javax. awt. Font (B) Javax. awt. event

(C) Javax. swing. event (D) Javax. swing. Font

115. Credit card payment and E - cash are very suitable for _____ e-commerce because the payer and the payee may not have a preestablished relationship, and the payment amount is relatively small.

(A) B2B (B) C2C (C) C2B (D) B2C

116. If X is uniformly distributed in $(-2, 3)$, then its variance is _____.

(A) $\frac{15}{12}$ (B) $\frac{35}{12}$ (C) $\frac{25}{12}$ (D) $\frac{17}{12}$

117. Using Simpson's $\frac{1}{3}^{rd}$ rule the value of $\int_0^6 \frac{e^x}{1+x}\,dx$ = _____.

(A) 70.16 (B) 66.12 (C) 74.15 (D) 60.15

118. The lifetime (in years) of a radio has an exponential distribution with parameter $\lambda = 1/10$. If we buy a five - year - old radio, what is the probability that it will work for less than 10 additional years ?

(A) e^{-1} (B) e^{-2} (C) $1-e^{-1}$ (D) $1-e^{-2}$

119. Taking initial approximations $x_0 = 2$ and $x_1 = 3$, by secant method, to find a root of the equation $x^3 - 2x - 5 = 0$, we get the second approximation is :

(A) $x_2 = 2.5032$ (B) $x_2 = 2.0588$ (C) $x_2 = 2.7543$ (D) $x_2 = 2.9583$

120. The Product of Sums form of the expression $a \cdot b + a' \cdot c$ is :

(A) $(a+b)\cdot(a+c')$ (B) $(a+c)\cdot(a'+b)$ (C) $(a'+b')\cdot(a+c')$ (D) $(a'+b)\cdot(a'+c)$

121. If T_1 and T_2 are average access times of upper level memory M1 and lower level memory M2 in a 2 - level memory hierarchy and H is the hit rate in M1, then the overall average access time is given by _____, assuming that in case of a miss in M1, a block is first copied from M2 to M1 and then accessed from M1 :

(A) $T_1 + (1-H) \times T_2$ (B) $(1-H) \times T_1 + T_2$

(C) $(T_1 + T_2)\ (1-H)$ (D) $T_1 + T_2\ (1+H)$

122. Let A = 69, and B = 90. If A and B are unsigned decimal 8 - bit integers, then A – B will result in _____, and if A and B are sign and magnitude 8 - bit integers, then A + B will result in _____.

(A) overflow, overflow (B) overflow, correct result

(C) correct result, underflow (D) underflow, overflow

123. Construct the state table of a mod - 4 up/down counter that detects the count of 2 :

(A)

Present state	Next state		Output z	
	$x=0$	$x=1$	$x=0$	$x=1$
S_0	S_1	S_2	0	0
S_1	S_2	S_1	0	0
S_2	S_3	S_0	1	1
S_3	S_0	S_3	0	0

(B)

Present state	Next state		Output z	
	$x=0$	$x=1$	$x=0$	$x=1$
S_0	S_0	S_3	0	0
S_1	S_3	S_0	1	0
S_2	S_2	S_1	0	1
S_3	S_1	S_2	0	0

(C)

Present state	Next state		Output z	
	$x=0$	$x=1$	$x=0$	$x=1$
S_0	S_1	S_3	0	0
S_1	S_2	S_0	0	0
S_2	S_3	S_1	1	1
S_3	S_0	S_2	0	0

(D)

Present state	Next state		Output z	
	$x=0$	$x=1$	$x=0$	$x=1$
S_0	S_1	S_1	0	1
S_1	S_3	S_2	0	0
S_2	S_2	S_0	1	1
S_3	S_0	S_3	0	1

124. Which of the following is the recurrence relation for binary search ?

(A) $T(n) = T(n/2) + 1$

(B) $T(n) = T(n/2) + n$

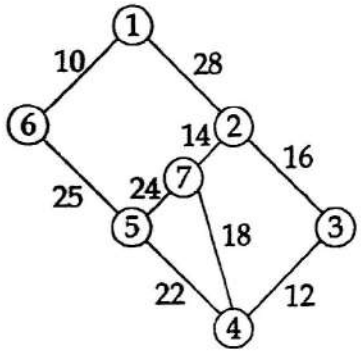
(C) $T(n) = 2T(n-1) + 1$

(D) $T(n) = T(n-1) + 1$

125. Which one of the following is a Meldable priority queue ?

(A) Leftist Heap (B) Binary Heap (C) AVL trees (D) Red - Black trees

126. In which order the edges of the given graph are chosen while constructing the minimum spanning tree using prim's algorithm ?



(A) (1, 6), (6, 5), (5, 4), (4, 3), (3, 2), (2, 7)

(B) (1, 6), (3, 4), (2, 7), (2, 3), (7, 4), (5, 4)

(C) (1, 6), (3, 4), (2, 7), (4, 5), (1, 2), (5, 6)

(D) (1, 6), (6, 5), (5, 4), (4, 3), (3, 2), (4, 7)

127. Dijkstra's algorithm follows _____ method of algorithm design. The complexity of the algorithm to find the shortest path from a vertex to all other vertices in a graph is _____.

(A) Dynamic programming, O (n^2)

(B) Dynamic programming, O (log n)

(C) Greedy, O (n^2)

(D) Greedy, O (log n)

128. Cornell program synthesizer contains :

(A) Syntax directed editor

(B) Compilation - and - interpretation schematic

(C) Collection of debugging tools

(D) All of the above

129. If there are 64 pages, and the page size is 4096 words, the length of the logical address is _____.

(A) 16 bits (B) 18 bits (C) 20 bits (D) 22 bits

130. Consider a paging system with page table stored in memory and with additional associative registers. If 75 percent of all page table references are found in the associative registers, what is the effective memory reference time ? Assume the time taken to find a page in associative register is 0.

(A) 400 nanoseconds (B) 300 nanoseconds

(C) 250 nanoseconds (D) 200 nanoseconds

131. An example for a pattern - scanning language is :

(A) lex (B) awk (C) bison (D) yacc

132. Consider the following grammar :

$S \rightarrow (L) \mid a$

$L \rightarrow L, S \mid S$

After the elimination of left - recursion, we get the following :

(A) $S \rightarrow (L) \mid a$
$L \rightarrow SA$
$A \rightarrow SA \mid \epsilon$

(B) $S \rightarrow (L) \mid A$
$A \rightarrow SAL$
$L \rightarrow a\,SL \mid \epsilon$

(C) $S \rightarrow (L) \mid \epsilon$
$L \rightarrow SA$
$A \rightarrow SA \mid \epsilon$

(D) $S \rightarrow (L) \mid a$
$A \rightarrow a\,SA \mid \epsilon$
$L \rightarrow a\,SA$

133. The Language $L = \{ a^p / p \text{ is prime} \}$ is :

(A) regular (B) not regular

(C) accepted by NFA with ϵ (D) none

134. Consider the grammar

$S \rightarrow AS / b$

$A \rightarrow SA / a$ then

Closure $(S' \rightarrow . S, \$)$ is :

(A) $S' \rightarrow . S, \$$

$S \rightarrow . AS, \$ / a / b$

$S \rightarrow . b, \$ / a / b$

$A \rightarrow . SA, a / b$

$A \rightarrow . a, a / b$

(B) $S' \rightarrow . S, \$$

$S \rightarrow . AS, \$ / b$

$S \rightarrow . b, \$ / b$

(C) $S' \rightarrow . S, \$$

$S \rightarrow . AS, \$ / a / b$

$S \rightarrow . b, \$ / a / b$

(D) $S' \rightarrow . S, \$$

$S \rightarrow . AS, \$$

$S \rightarrow . b, \$$

135. How many host interfaces may be addressed in the subnet 123.224.00.00/11 ?

(A) 2048 (B) 2,097,150 (C) 1,000,192 (D) 2,097,152

136. The phenomenon of having a continuous glow of a beam on the screen even after it is removed is called as :

(A) Fluorescence (B) Persistence

(C) Phosphorescence (D) Incadescence

137. $x = at^2 ; y = 2at$ is the parametric equation of :

(A) Circle (B) Parabola

(C) Rectangular hyperbola (D) Ellipse

138. Which of the following is not good test characteristics ?

(A) A good test has a high probability of finding an error.

(B) A good test is redundant.

(C) A good test should be best ot breed.

(D) A good test should be neither too simple nor too complex.

139. The value of _____ provides an indication of the impact of inheritance on the object oriented software.

(A) Method inheritance factor

(B) Coupling factor

(C) Cohensive factor

(D) Complexity metrics

140. Consider a project with the following functional units UI = 50, UO = 40, UE = 35, UF = 06, EI = 04.

What is the function point of the project ?

(A) 642 (B) 632 (C) 672 (D) 622

141. Who wrote the novel - 'KavalKottam' ?

(A) Vannadasan (B) S. Venkatesan (C) Joe D Cruz (D) Puviarasan

142. What temperature are Fahrenheit and Celsius equal ?

(A) $-40°$ (B) 574.59 (C) 40 (D) -574.59

143. Quit India Movement was launched in response to :

(A) Cabinet Mission plan (B) Cripps proposals

(C) Simon Commission Report (D) Wavell plan

144. First state to fix minimum education qualification for cooperative body poll :

(A) Rajasthan (B) West Bengal (C) Tamil Nadu (D) Karnataka

145. The parliament can make any law for whole or any part of India for implementing international treaties :

(A) with the consent of all the states

(B) with the consent of the majority of states

(C) with the consent of the states concerned

(D) without the consent of any state

146. Article 21-A and the RTE Act came into effect :

(A) On 1st April 2010
(B) On 1st April 2009
(C) On 1st April 2017
(D) On 1st April 2005

147. Consider the following rivers :

(a) Narmada
(b) Brahmaputra
(c) Godavari
(d) Tapti

Which of the above is/are flowing into the Bay of Bengal ?

(A) (a), (b) and (c) only
(B) (b) and (c) only
(C) (a) and (b) only
(D) (a) and (c) only

148. In a class of 45 students, a boy is ranked 20th. When two boys joined, his rank was dropped by one. What is his new rank from the end ?

(A) 25th (B) 26th (C) 27th (D) 28th

149. In which of the following temple, the front Mandapam is in the form of a huge chariot drawn by horses ?

(A) Patteswaram temple
(B) Darasuram temple
(C) Thanjavur Brihadeeswarar temple
(D) Thiruvarur Thyagaraja temple

150. Who won the gold both in the 5,000 and 10,000 metres event in 2017 Asian Athletics Championship ?

(A) Lakshmanan
(B) Gopi Thonkanal
(C) Jinson Johnson
(D) Neeraj Chopra

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