



PhD ENTRANCE EXAM RESULT , VMSBUTU

Answer Key for Computer Science Engineering / Computer Science Branch

Question	Options
1 : If AIRLINE is written as ENILRIA7, then RAILWAY will be written as	1) YAWILAR8 2) YAWLIAR7 3) YAWILAR7 4) YAWLIAR8
2 : Which number is wrong in the series 2, 6, 15, 31, 56, 93?	1) 31 2) 56 3) 93 4) 6
3 : If PINK is coded as 1691411, then RED will be coded as	1) 1963 2) 1853 3) 1954 4) 1854
4 : Statement 1: A is bigger than B but shorter than C; Statement 2: D is smaller than C and bigger than A; Statement 3: B is greater than D; If statement 1 and statement 2 are true, statement 3 will be	1) "TRUE" 2) "FALSE" 3) uncertain 4) none
5 : Arrange the following words in a meaningful sequence : 1-sun, 2- rain, 3-child, 4-rainbow,5-happy	1) 2, 1, 4, 3, 5 2) 3, 2, 1, 4, 5 3) 2, 1, 3, 4, 5 4) 4, 5, 1, 3, 2
6 : What is the probability of getting two tails when two coins are tossed?	1) 0.3333333333333333 2) 0.1666666666666667 3) 0.5 4) 0.25

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7 : A man covers a distance of 110 km between two cities in 10 hours. He travelled partly on foot at 9 km/hr and partly on a bicycle at 15 km/hr. Find the distance travelled on foot.	1) 92 2) 94 3) 60 4) 80
8 : Vikas and Mohan working together can complete a work in 6 days. If Vikas alone completes the same work in 10 days, in how many days Mohan alone can complete the same work?	1) 13 2) 14 3) 15 4) 16
9 : The HCF of $\frac{2}{3}$, $\frac{8}{9}$, $\frac{64}{81}$ and $\frac{10}{27}$ is	1) 0.666666666666667 2) $\frac{160}{3}$ 3) $\frac{2}{81}$ 4) $\frac{160}{81}$
10 : A 60 liter mixture of milk and water contains 10% water. How much water must be added to make water 20% in the mixture?	1) 8 liters 2) 7.5 liters 3) 7 liters 4) 6.5 liters
11 : Who Invented the 3-D printer?	1) Nick Holonyak 2) Elias Howe 3) Chuck Hull 4) Christiaan Huygens
12 : Which Veda depicts the information about the most ancient Vedic age culture?	1) Atharvaveda 2) Samaveda 3) Yajurveda 4) Rig Veda
13 : The first pico satellite of India is-	1) GSAT-4 2) ANUSAT 3) INSAT 4) STUDSAT
14 : Which of the following is known as the Diamond City of India?	1) Aurangabad 2) Jaipur 3) Panna 4) Jhiria

Question	Options
15 : In which year Forest Conservation Act was passed?	<p>1) 1980</p> <p>2) 1988</p> <p>3) 1986</p> <p>4) 1990</p>
16 : What is a hypothesis in research?	<p>1) A conclusion drawn from data analysis</p> <p>2) A summary of research findings</p> <p>3) A measurement of data accuracy</p> <p>4) A statement of predicted relationship between variables</p>
17 : What is the purpose of a literature review in research?	<p>1) To analyze data</p> <p>2) To summarize research findings</p> <p>3) To collect primary data</p> <p>4) To identify the research gaps</p>
18 : What is a dependent variable in research?	<p>1) The variable that is manipulated by the researcher</p> <p>2) The variable that remains constant throughout the research</p> <p>3) The variable that is measured and observed</p> <p>4) The variable that is not relevant to the research question</p>
19 : What is a research design?	<p>1) A plan for data analysis</p> <p>2) A method for data collection</p> <p>3) A framework for conducting research</p> <p>4) A statistical technique</p>
20 : What is the appropriate statistical analysis for comparing means between two groups?	<p>1) T-test</p> <p>2) Chi-squared test</p> <p>3) Analysis of variance (ANOVA)</p> <p>4) Regression analysis</p>

Question	Options
<p>21 : What is the output by the following program?</p> <pre>#include<stdio.h> int f(int n, int k) { if (n == 0) return 0; else if (n %2) return (f(n/2, 2*k)+k; else return (f(n/2, 2*k)-k; } int main() { printf("%d", f(20, 1)); return 0; }</pre>	<p>1) 20 2) 5 3) 8 4) 9</p>
<p>22 : Consider the following C function void swap (int a, int b) { int temp; temp = a; a = b; b = temp; } In order to exchange the values of two variables x and y.</p>	<p>1) call swap (&x,& y) 2) call swap (x, y) 3) swap (x, y) can not be used as the parameters are passed by value 4) swap (x, y) can not be used as it does not return any value</p>
<p>23 : The result evaluating the postfix expression 10 5 + 60 6 / * 8 - is</p>	<p>1) 81 2) 142 3) 284 4) 213</p>
<p>24 : In worst case, the number of comparisons needed to search singly linked list of length n for a given element is</p>	<p>1) n 2) n/2 3) log₂ n 4) log₂ n-1</p>
<p>25 : A binary tree in which every non-leaf node has non-empty left and right subtrees is called a strictly binary tree. Such a tree with 10 leaves.</p>	<p>1) cannot have more than 17 nodes 2) has exactly 17 nodes 3) has exactly 19 nodes 4) maximum 19 nodes</p>
<p>26 : Which of the following need not be binary tree?</p>	<p>1) Heap 2) AVL-Tree 3) B-Tree 4) None of these</p>
<p>27 : Arrange the following functions in increasing asymptotic order: (A: $n^{1/3}$) ; (B: en); (C: $n^{7/4}$) ; (D: $n \log_9 n$); and (E: $1.0000001n$)</p>	<p>1) A, D, C, E, B 2) D, A, C, E, B 3) A, C, D, E, B 4) A, C, D, B, E</p>

Question	Options
28 : The recurrence relation capturing the optimal execution time of the Towers of Hanoi problem with n dics is	1) $T(n) = 2T(n-2) + 2$ 2) $T(n) = 2T(n-1) + n$ 3) $T(n) = 2T(n/2) + 1$ 4) $T(n) = 2T(n-1) + 1$
29 : The Floyd-Warshall algorithm for all-pair shortest paths computation is based on	1) Divide and Conquer paradigm 2) Greedy paradigm 3) Dynamic Programming paradigm 4) Neither Divide and Conquer nor Greedy nor Dynamic Programming paradigm
30 : Assume that the algorithms considered here sort the input sequences in ascending order. If the input is already in ascending order, which of the following is TRUE? [(I. Quicksort runs in $O(n^2)$ time); (II. Bubblesort runs in $O(n^2)$ time); (III. Mergesort runs in $O(n)$ time) (IV. Insertionsort runs in $O(n)$ time)]	1) I and II only 2) I and III only 3) I and IV only 4) II and IV only
31 : Consider the following array of elements (89, 19, 50, 17, 12, 15, 2, 5, 7, 11, 6, 9, 100) The minimum number of interchanges needed to convert it into a max-heap is	1) 2 2) 3 3) 4 4) 5
32 : Let G be any connected, weighted, undirected graph: I. G has a unique minimum spanning tree if no two edges of G have the same weight. II. G has a unique minimum spanning tree if, for every cut G, there is a unique minimum weight edge crossing the cut. Which of above two statements is/are TRUE?	1) I only 2) II only 3) Both I and II 4) Neither I nor II
33 : Consider the following statements: P: Good books are not cheap Q: Cheap books are not good L: P implies Q M: Q implies P N: P is equivalent to Q Which one of the following about L, M, and N is CORRECT?	1) Only L is TRUE 2) Only M is TRUE 3) Only N is TRUE 4) L, M, and N are TRUE

Question	Options
34 : Which one of the following is NOT necessarily a property of a Group?	<p>1) Commutativity</p> <p>2) Associativity</p> <p>3) Existence of inverse for every element</p> <p>4) Existence of identity</p>
35 : A relation R is defined on the set of integers as xRy if and only if $(x+y)$ is even. Which of the following statement is TRUE?	<p>1) R is an equivalence relation having one equivalence classes</p> <p>2) R is an equivalence relation having two equivalence classes</p> <p>3) R is an equivalence relation having three equivalence classes</p> <p>4) R is not an equivalence relation.</p>
36 : The set $\{1, 2, 4, 7, 8, 11, 13, 14\}$ is a group under multiplication modulo 15. The inverse of 4 and 7 are respectively	<p>1) 2 and 11</p> <p>2) 8 and 14</p> <p>3) 3 and 13</p> <p>4) 4 and 13</p>
37 : The exponent of 11 in the prime factorization of $300!$ is	<p>1) 27</p> <p>2) 28</p> <p>3) 29</p> <p>4) 30</p>
38 : Suppose a fair six-sided die is rolled once. If the value on the die is 1, 2, or 3, the die is rolled a second time. What is the probability that the sum total of values that turn up is at least 6?	<p>1) 45265</p> <p>2) 44470</p> <p>3) 44987</p> <p>4) 45078</p>
39 : If a random variable X has a Poisson distribution with mean 5, then the expectation $E[(X + 2)^2]$ equals	<p>1) 52</p> <p>2) 53</p> <p>3) 54</p> <p>4) 55</p>

Question	Options
40 : The 2's complement representation of the decimal number -15 is	1) 1111 2) 11111 3) 111111 4) 10001
41 : What is the minimum size of ROM required to store the complete truth table of an 8-bit x 8-bit multiplier?	1) 32 K x 16 bits 2) 64 K x 16 bits 3) 16 K x 32 bits 4) 64 K x 32 bits
42 : Consider the regular expression $(0 + 1)^n$. The minimum state finite automation that recognizes the language represented by this regular expression contains	1) n states 2) n+1 states 3) n+3 states 4) none of these
43 : Which of the following statement about regular languages is NOT true?	1) Every language has a regular superset 2) Every language has a regular subset 3) Every subset of a regular language is regular 4) Every subset of a finite language is regular
44 : Let R (A, B, C, D) be a relational schema with the following functional dependencies: $A \twoheadrightarrow B$, $B \twoheadrightarrow C$, $C \twoheadrightarrow D$ and $D \twoheadrightarrow B$. The decomposition of R into (A, B), (B, C), (B, D)	1) gives a lossless join, and is dependency preserving 2) does not give a lossless join, but is dependency preserving 3) gives a lossless join, but is not dependency preserving 4) does not give a lossless join and is not dependency preserving
45 : A prime attribute of a relation scheme R is an attribute that appears	1) in all candidates keys of R 2) in some candidates key of R 3) only in the primary key of R 4) in a foreign key of R

Question	Options
46 : A process executes the code <code>fork (); fork (); fork ();</code> ; The total number of child processes created is	1) 3 2) 4 3) 6 4) 7
47 : The essential content(s) in each entry of a page table is/are:	1) Virtual page number 2) Page frame number 3) Both virtual page number and page frame number 4) Access the right information
48 : Which of the following is/are example(s) of stateful application layer protocols? (A) HTTP (B) FTP (C) TCP (D) POP3	1) A only 2) D only 3) B and C only 4) B and D only
49 : In an Ethernet local area network, which one of the following statements is TRUE?	1) The exponential backoff mechanism reduces the probability of collision on retransmissions. 2) A station continues to transmit the packet even after the collision is detected 3) The purpose of the jamming signal is to pad the frames that are smaller than the minimum frame size. 4) A station stops to sense the channel once it starts transmitting a frame.
50 : Consider a CSMA/CD network that transmits data at a rate of 100 Mbps (10 ⁸ bits per second) over a 1 km (kilometre) cable with no repeaters. If the minimum frame size required for this network is 1250 bytes, what is the signal speed (km/sec) in the cable?	1) 20000 2) 16000 3) 10000 4) 8000

Best of luck for the future!