

RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2018

COMPUTER SCIENCE (Honours)

Date : 20-06-2018

Full Marks : 50

Time: 01·00 p.m – 2·00 p.m.

Instructions for the candidate

Answer all the questions given below. Tick (✓) the correct option on the **OMR SHEET**. Each correct answer carries **2 marks**. For every wrong answer **1 mark** will be deducted. **Calculator is not allowed**.

- $\frac{(243)^{\frac{n}{5}} \times 3^{2n+1}}{9^n \times 3^{n-1}} = ?$
a) 1 b) 2 c) 9 d) 3^n
- The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Rs. 1. The sum (in Rs.) is :
a) 625 b) 630 c) 640 d) 650
- How many 3-digit numbers are completely divisible by 6?
a) 149 b) 150 c) 151 d) 166
- The least perfect square, which is divisible by each of 21, 36 and 66 is :
a) 213444 b) 214344 c) 214434 d) 231444
- From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?
a) 564 b) 645 c) 735 d) 756
- A problem is given is given to three students whose chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ respectively. What is the probability that the problem will be solved?
a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) $\frac{3}{4}$ d) $\frac{7}{12}$
- In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 60 questions and secures 130 marks, the no of questions he attempts correctly is :
a) 35 b) 38 c) 40 d) 42
- Two cards are drawn at random from a pack of 52 cards. What is the probability that either both are black or both are queen?
a) $\frac{52}{221}$ b) $\frac{55}{190}$ c) $\frac{55}{221}$ d) $\frac{19}{221}$
- Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?
a) 25200 b) 52000 c) 120 d) 24400
- If $\log 2 = 0.3010$ and $\log 3 = 0.4771$, the values of $\log_5 512$ is—
a) 2.875 b) 3.875 c) 4.875 d) 5.875

11. $\lim_{x \rightarrow \pi} \frac{\sin 3x}{\sin 2x} = ?$

- a) 0 b) 1 c) -1 d) -1.5

12. Find $\frac{dy}{dx}$, if $y = \tan^{-1} \frac{\sqrt{1+\sin x} - \sqrt{1-\sin x}}{\sqrt{1+\sin x} + \sqrt{1-\sin x}}$.

- a) $\frac{1}{2}$ b) $-\frac{1}{2}$ c) 2 d) None of these

13. If $y = a \cos(\log x) + b \sin(\log x)$, then find $\left(x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + y \right)$.

- a) $a+b$ b) $b-a$ c) 0 d) None of these

14. Find the maximum and minimum values of $a \sin x + b \cos x$.

- a) $(a + b), (a - b)$ b) $\sqrt{a^2 + b^2}, \sqrt{a^2 - b^2}$ c) $\sqrt{a^2 + b^2}, -\sqrt{a^2 + b^2}$ d) None of these

15. Evaluate $\int_0^a \frac{dx}{a^2 + x^2}$.

- a) $\frac{\pi}{a}$ b) $\frac{\pi}{2a}$ c) $\frac{\pi}{4a}$ d) None of these

16. $\int_0^{\pi/2} \log(\tan x) dx = ?$

- a) 0 b) 1 c) ∞ d) None of these

17. A value of θ for which $\frac{2 + 3i \sin \theta}{1 - 2i \sin \theta}$ is purely imaginary is

- a) $\sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{6}$ d) $\sin^{-1}\left(\frac{\sqrt{3}}{4}\right)$

18. A man X has 7 friends , 4 of them are ladies and 3 are men. His wife Y also has 7 friends, 3 of them are ladies and 4 are men. Assume X and Y have no common friends. Then the total number of ways in which X and Y together can throw a party inviting 3 ladies and 3 men, so that 3 friends of each of X and Y are in this party is :

- a) 484 b) 485 c) 468 d) 469

19. A, I, P, V, A, E, ?

- a) E b) F c) G d) H

20. If in a certain language, 943 is coded as BED and 12448 is coded as SWEET, how is 492311 coded in that language?

- a) EBWDSS b) TSWBDD c) DSWTEE d) None of these

21. Statements :
- Some potatoes are onions
 All onions are peanuts
 All peanuts are samosas
 Conclusion :
- I) Some potatoes are peanuts
 II) Some peanuts are potatoes
 III) All onions are samosas
- a) only II, III, follow b) only I, II follow c) only I, III follow d) All follow
22. Find the odd one out from the following options :
- a) 17 b) 12 c) 50 d) 37
23. If the letters of the word 'PROTECTION' which are at odd numbered position in the English alphabet are picked up and are arranged in alphabetical order from left and if they are now substituted by Z, Y, X and so on, beginning from left which letter will get substituted by X?
- a) E b) T c) I d) O
24. Study the following arrangement carefully and answer the question given below:
 W 1 R % 4 J E # 7 M T 2 I 9 B H 3 A \$ 9 F Q 5 D G 6 U S P
 If the order of the last fifteen elements is reversed, which of the following will be fifth to the right of twelfth from the left end?
- a) U b) \$ c) 3 d) 6
25. A,B,C,D,E and F are sitting around a circular table facing the centre. D is between C and F; B is to the left of A; B is diagonally opposite to D; and E is between C and B. How many people seated between E and F is counted anticlockwise?
- a) 0 b) 2 c) 1 d) 4

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