RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah - 711 202

ADMISSION TEST – 2022

COMPUTER SCIENCE (Honours)

Date : 30-06-2022 Full Marks : 50 Time: $01\cdot00 \text{ p.m.} - 2\cdot00 \text{ p.m.}$

Instructions for the candidate

Answer all the questions given below. Each question carries 2 marks for correct answer and -1 mark for wrong answer. Tick (\checkmark) the correct option on the <u>OMR SHEET</u>. The Tick must be very clear — if it is smudgy or not clear, no marks will be awarded. Unanswered questions will not be awarded. Multiple answers will be considered as wrong answer. Calculator is not allowed.

ans	wers will be consi	dered as wrong a	nswer. Calcula	tor is not allowe	ed.	_	
1.	For what value of a, $f(x) = 2ax + 3$, $x \ne 2$ and $f(2) = 23$ is continuous at $x = 2$?						
	a) 2	b) 3	c) 4	d) 5			
2.	Given $\lim_{x\to 5} f$	$f(x) = 2$ and $\lim_{x \to a} f(x) = 2$	$_{x\to 5}g(x)=-1$	then determine	$\lim_{x\to 5} 3g[f(x)-2].$		
	a) 0	b) -1	c) -3	d) Not enou	gh information		
3.	Solve $\frac{d}{dx} \tan^{-1}$	$\frac{\cos x}{1+\sin x}$					
	a) ½		c) 0	d) -1			
4.	Evaluate the fol	llowing integral:	$\int_0^5 \frac{x+5}{x^2 + x - 20} \ dx$				
	a) – ln2	b) <i>ln2</i>	c)	ln4	d) – <i>ln</i> 4		
5.	time t is given	by $v = \frac{t^2 + 1}{(t^3 + 3t)^2}$			= 3 if the velocity v of th	e object at a	
	a) 0.0145	b) 1.045	c) 0.0014	d) 1.045			
6.	In a certain cooccode?	de, CONCEPT is	written as TQI	FDOPC. Then h	ow VICTORY is written	in the same	
	a) YROTCIV	b) RYOT	TCIV c)	IVCTORY	d) YSPUDJV		
7.	How many 8's are there in the following number series which are exactly divisible by its immediately preceding and also divisible by immediately succeeding numbers?						
	8 2 4 5 1 7 2 8 4 8 4 2 2 8 2 6 9 8 4 5 4 8 3 2 8 4 3 1 8 3						
	a) 5	b) 2	c) 3	d) 4			
8.	Which number will replace the question mark?						
		12 19	16				

6 3

 4
 3
 ?

 6
 3
 8

 8
 19
 4

a) 8 b

b) 16

c) 4

d) 2

	playing, all but 6 got destroyed. While Kiran playing, all but 3 got destroyed. Finally, how many to left with both of them?					
	a) 10	b) 18	c) 9	d) 8		
10.	A cube is painted blue on all of its surfaces. It is then cut in to 27 smaller cubes of equal size. Find how many smaller cubes have no color?					
	a) 0	b) 1	c) 2	d) 3		
11.	A family has 2 children. What will be the probability that both are boys, if it is known that one of the children is boy.					
	a) $\frac{1}{2}$	b) $\frac{2}{3}$	c) $\frac{1}{3}$	d) $\frac{1}{4}$		
12.	If 1.3 x = 0.8y, then the value of $(y^2-x^2)/(y^2+x^2)$ is					
	a) 10.5/23.3	b) 5/11	c) 6.1/6.9	d) 1.05/23.3		
13.	The value of $\lim_{x\to 0} \frac{e^{x^2}}{\sin^2 x}$	$\frac{1}{x}$ is				
	a) 0	b) -1	c) 1	d) none of these		
14.	4. If $y = \log(\sin^{-1}(6\sin(x/2)\cos(x/2) - 4\sin^3 x))$, then the value of $\frac{dy}{dx}$ is					
	a) $\frac{4}{x^2}$	b) $\frac{\sin 2x - \cos 2x}{\sec 2x}$	c) $\frac{2}{3x}$	d) $\frac{1}{x}$		
15.	If $y = \sqrt{x + \sqrt{x + \sqrt{x + \dots}}}$	$\frac{1}{2}$, then value of $\frac{dy}{dx}$	is			
	a) $\frac{1}{2y}$	b) $\frac{1}{2y-1}$	c) $\frac{2}{3y}$	$d)\frac{1}{2y^{s}}$		
16.	The power set of {{}} is					
	a) {{}}	b) {{},{}}	c) {{]	},{{}}} d) none of these		
17.	The value of $\int_0^{\pi} x \sin^2 x dx$	<i>lx</i> is				
	a) π	b) $\pi^2/4$	c)	$\pi^2/2$ d) 0		

Kiran, an eight years old boy has 27 toys. He gave 19 toys to his brother Gourav, while Gourav

9.

18.	The value of $\int_{-\pi}^{\pi} \frac{ds}{1+x^2}$ is					
	a) π	b) π ²	c) 2m	d) 0		
19.	If $A_i = [0,i], i \in \mathbb{Z}$, respective values of A			the following list contain the		
	a) $\{4\}$, $[5, 10]$, A_4		b) A_4 , [5,10] , [6,10]			
	c) A_4 , A_{10} , [7,10]		d) $[0,4],[0,10],A_4$			
20.	How many non empty subsets are there of a set consisting of n elements?					
	a) 2 ⁿ	b) n ²	c) 2 ⁿ⁻¹ d) 2 ⁿ -1		
21.	Let a, b, c, d be positive real numbers, which satisfy the two conditions that i) if $a > b$ then $c > d$ and ii) if $a > c$ then $b < d$. Then one of the statements given below is a valid conclusion. Which one is it?					
	a) If $a < b$ then $c < d$		b) if $a < c$ then $b > d$			
	c) if $a > b+c$ then $c < b$		d) if $a > b+c$ then $c > b$			
22.	The Indian Cricket team consists of 16 players. It includes 2 wicketkeepers and 5 bowlers. In homany ways can you select a cricket team of eleven players if you have to select 1 wicketkeeper and least 4 bowlers?					
	a) 1024	b) 1028	c) 1092	d) 1084		
23.	In how many ways can	how many ways can 4 girls and 5 boys be arranged in a row so that all the four girls are together?				
	a) 568	b) 16850	c) 17280	d) 19874		
24.	The value of n_{C_0} and n	c_n have a ratio of:				
	a) 1: 1	b) n :1	c) 1: n	d) 1:2		
25.	Q, R, S, and T are sitting on a bench. P is sitting next to Q, R is sitting next to S, S is not sitting with T who is on the left end of the bench. R is in the second position from the right. P is to the right of Q and T. P and R are sitting together. In which position P is sitting?					
	a) Between Q and S	b) Between Q and R	c) Between T and S	d) Between R and T		
			×			
			(3)			