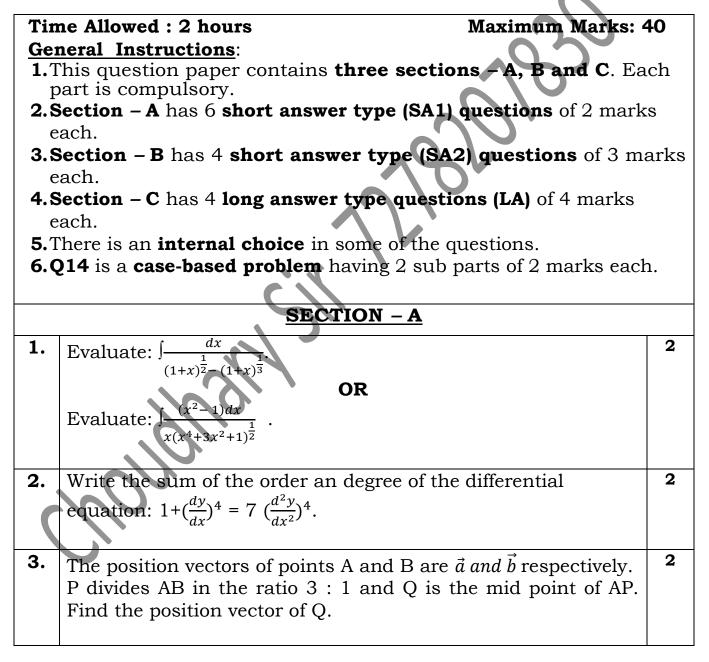


Mathematics (Code-041) Term – 2 <u>SET NO. - 1 / 2022</u>

## CHOUDHARY'S Question Paper CLASS: XII

Session: 2021-22



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4.	The equations of a line are $5x - 3 = 15y + 7 = 3 - 10z$ .	2
	Write the direction cosines of the line.	
5.	Probabilities of solving a specific problem independently by A	2
	and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem	
	independently, find that	
	(i) the problem is solved	
	(ii) exactly one of them solves the problem.	
6.	A die marked 1, 2, 3 in <b>red</b> and 4, 5, 6 in green is tossed. Let	2
	A be the event, "number is even" and B be the event, "number is red". Are A and B independent?	
	is red". Are A and B independent?	
<u>SECTION - B</u>		
7.	Evaluate: $\int \frac{1}{\sqrt{\sin^3 x \cdot \sin(x+\alpha)}} dx.$	3
8.	Solve the differential equation:	3
	$\frac{dy}{dx} = (3x + y + 4)^2$	
	OR	
	Find the particular solution of the differential equation	
	$(x^2+y^2)\frac{dy}{dx} = xy$ , given that y =1 when x = 0.	
9.	If $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = \hat{j} - \hat{k}$ , then find a vector $\vec{c}$ such that	3
	$\vec{a} \times \vec{c} = \vec{b}$ and $\vec{a} \cdot \vec{c} = 3$ .	
10.	Find the direction ratios of the normal to the plane, which	3
	passes through the points $(1, 0, 0)$ and $(0,1,0)$ and makes	
	angle $\frac{11}{4}$ with the plane x + y = 3. Also, find the equation of the	
	plane. <b>OR</b>	
	Show that the lines:	
L		

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	$\vec{r} = \hat{\imath} + \hat{\jmath} + \hat{k} + \lambda (\hat{\imath} - \hat{\jmath} + \hat{k})$ and	
	$\vec{r} = 4\hat{j} + 2\hat{k} + \mu(2\hat{\imath} - \hat{j} + 3\hat{k})$ are coplanar	
<u>SECTION – C</u>		
11.	сП х с	4
11.	$\int_0^{\prod} \frac{x}{a^2 \cos^2 x + b^2 \sin^2 x}  \mathrm{d}x.$	-
12.	Using integration, find the area of the triangle formed by	4
	positive x-axis and tangent and normal to the circle	
	$x^2 + y^2 = 4$ at $(1,\sqrt{3})$ .	
	OR	
	Indicate the region bounded by the curves $x^2 = y$ , $y = x + 2$	
	and x-axis and obtain the area enclosed by them.	
13.	A plane which is perpendicular to two planes $2x - 2y + z = 0$	4
	and $x - y - 2z = 4$ , passes through $(1, -2, 1)$ . Find the distance	
	of the plane from the point $(1, 2, 2)$ .	
14.		
	CASE STUDY BASED / DATA- BASED	
	The second s	
	In a family there are four children. All of them have to work	
	in fields to earn their livelihood at the age of 15.	
	Based on the above information, answer the following	

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questions:			
i) Find the Probability that all children working in fields are boys if it is given that elder child working in fields			
is a boy.			
<b>ii)</b> Find the probability that two middle child working in fields are boys if it is given that first child working in			
fields is a girl.			
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