

Roll No 156172HSSC-(P-II)- A-2024
(For All Sessions)

Paper Code

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Mathematics (Objective)**(GROUP-II)**

Time: 30 Minutes Marks : 20

Note: Write Answers to the Questions on the objective answer sheet provided. Four possible answers A, B, C and D to each question are given. Which answer you consider correct, fill the corresponding circle A, B, C or D given in front of each question with Marker or Pen ink on the answer sheet provided.

1.1	If $r = 0$, the circle is called:	(A)	Unit circle	(B)	Circle	(C)	Ellipse	(D)	Point circle
2.	$[i \ i \ k] =$	(A)	i	(B)	$-i$	(C)	1	(D)	0
3.	If $\underline{u} = 2\underline{i} - \underline{j} + \underline{k}$, $\underline{v} = 4\underline{i} + 2\underline{j} - \underline{k}$ then $\underline{u} \times \underline{u} =$	(A)	u^2	(B)	0	(C)	1	(D)	2
4.	If $\underline{u}, \underline{v}$ are two non-zero vectors, then area of parallelogram =	(A)	$ \underline{u} \times \underline{v} $	(B)	$\frac{1}{2} \underline{u} \times \underline{v} $	(C)	$\frac{1}{6} \underline{u} \times \underline{v} $	(D)	$\frac{1}{2} (\underline{u} \times \underline{v})$
5.	If k is any real number, $\lim_{x \rightarrow a} [kf(x)] =$	(A)	$\lim_{x \rightarrow a} f(x)$	(B)	$\lim_{x \rightarrow a} k$	(C)	$k \lim_{x \rightarrow a} f(x)$	(D)	$f(x)$
6.	If $(f(x) = x + 3$ then: $\lim_{x \rightarrow 3} f(x) =$	(A)	6	(B)	0	(C)	-3	(D)	3
7.	If $y = e^{f(x)}$ then $\frac{dy}{dx} =$	(A)	$e^{f(x)}$	(B)	$f(x)e^{f(x)}$	(C)	$f(x)e^{f(x)}$	(D)	$f'(x)e^{f(x)}$
8.	Derivative of $x\sqrt{x^2 + 3}$ w.r. t x is:	(A)	$\frac{2x^2 + 3}{\sqrt{x^2 + 3}}$	(B)	$\frac{3x}{2\sqrt{x^2 + 3}}$	(C)	$\frac{3x^2 + 3}{x\sqrt{x^2 + 3}}$	(D)	$\frac{3x^2 + 3}{2x\sqrt{x^2 + 3}}$
9	Derivative of $\tanh(x^2)$ is:	(A)	$2x \operatorname{sech}^2 x$	(B)	$2 \operatorname{sech}^2 x^2$	(C)	$2x \operatorname{sech}^2 x^2$	(D)	$\operatorname{sech}^2 x^2$
10.	Derivative of " x " w.r. t " x " is:	(A)	x^2	(B)	2	(C)	0	(D)	1
11.	In integration, substitution of $\sqrt{4 - x^2}$ is:	(A)	$x = \sin \theta$	(B)	$x = 2 \sin \theta$	(C)	$x = \sin 2\theta$	(D)	$x = 2 \cos \theta$
12.	$\int \tan x \, dx =$	(A)	$\ln \cos x + c$	(B)	$\frac{1}{\ln \cos x} + c$	(C)	$-\ln \cos x + c$	(D)	$\sec^2 x + c$
13.	Solution of differential equation: $(e^x + e^{-x}) \frac{dy}{dx} = e^x - e^{-x}$ is:	(A)	$-\ln(e^x + e^{-x}) + c$	(B)	$\ln(e^x - e^{-x}) + c$	(C)	$\ln(e^x + e^{-x}) + c$	(D)	$\frac{(e^x + e^{-x})^2}{2}$
14.	$\int \sin x \cos x \, dx =$	(A)	$\frac{\sin^2 x}{2} + c$	(B)	$\frac{\cos^2 x}{2} + c$	(C)	$-\sin x + c$	(D)	$\cos x + c$
15.	The line: $ay + b = 0$ is	(A)	Parallel to y-axis	(B)	Parallel to x-axis	(C)	Passing through origin	(D)	Lies in Quad. I
16.	The slope of line joining the points $(-2, 4); (5, 11)$ is:	(A)	1	(B)	-1	(C)	45°	(D)	-45°
17.	The location of the plane of the point $P(x, y)$ for which $y = 0$ at:	(A)	Origin	(B)	y-axis	(C)	x-axis	(D)	Ist Quad
18.	The maximum and minimum values occur at:	(A)	Corner point	(B)	Any point	(C)	Convex region	(D)	Corner points of feasible region
19.	The line intersect the circle at:	(A)	One point	(B)	Two points	(C)	Infinite points	(D)	More than two points
20.	Diameter of circle: $x^2 + y^2 = 16$ is:	(A)	8	(B)	4	(C)	16	(D)	32