XII-MCQs
CH- 7,8,10 and 11

1. $\int \sin^{-1} x dx$ *is equal to*
   a) $\cos^{-1} x + c$
   b) $x \sin^{-1} x + \sqrt{1-x^2} + c$
   c) $\frac{1}{\sqrt{1-x^2}} + c$
   d) $x \sin^{-1} x - \sqrt{1-x^2} + c$

2. $\int \cos^{-1}\left(\frac{1}{x}\right) dx$ equals
   a) $x \sec^{-1} x + \log\left|x + \sqrt{x^2-1}\right| + c$
   b) $x \sec^{-1} x - \log\left|x + \sqrt{x^2-1}\right| + c$
   c) $-x \sec^{-1} x - \log\left|x + \sqrt{x^2-1}\right| + c$
   d) *None of these*

3. Area lying between the parabola $y^2 = 4ax$ and its latus rectum is
   a) $\frac{1}{3} a\ sq.units$ b) $\frac{1}{3} a^2 sq.units$
   c) $\frac{8}{3} a\ sq.units$ d) $\frac{8}{3} a^2.sq\ units$

4. Evaluate $\int \sec^2(7-4x)dx$
   a) $-\frac{1}{4}\tan(7-4x) + c$ b) $-\frac{1}{4}\tan(7+4x) + c$
   c) $\frac{1}{4}\tan(7+4x) + c$ d) $-\frac{1}{4}\tan(7x-4) + c$

5. Evaluate $\int 2^{2^{2^x}}\ 2^{2^x} 2^x dx$
   a) $\frac{1}{(\log 2)^3} 2^{2^{2^x}} + c$ b) $\frac{1}{(\log 2)^3} 2^{2^x} + c$
   c) $\frac{1}{(\log 2)^2} 2^{2^x} + c$ d) $\frac{1}{(\log 2)^4} 2^{2^{2^x}} + c$

6. If $A(3,5,-4)$ $B(-1,1,2)$ and $C(-5,-5,-2)$ are the vertices of a ΔABC, then
   a) Direction cosines of AB are $\frac{-2}{\sqrt{17}},\frac{-2}{\sqrt{17}},\frac{3}{\sqrt{17}}$
   b) Directions cosines of AC are $\frac{4}{\sqrt{42}},\frac{5}{\sqrt{42}},\frac{-1}{\sqrt{42}}$
   c) Directions cosines of BC are $\frac{-2}{\sqrt{17}},\frac{-3}{\sqrt{17}},\frac{-2}{\sqrt{17}}$
   d) All of the above

7. The equation of the line joining the points $(-3,4,11)$ and $(1,-2,7)$ is
   a) $\frac{x+3}{2}=\frac{y-4}{3}=\frac{z-11}{4}$
   b) $\frac{x+3}{-2}=\frac{y-4}{3}=\frac{z-11}{2}$
   c) $\frac{x+3}{-2}=\frac{y+4}{3}=\frac{z+11}{4}$
   d) $\frac{x+3}{2}=\frac{y+4}{-3}=\frac{z+11}{2}$

8. Evaluate $\int(2\tan x-3\cot x)^2\,dx$
   a) $-4\tan x-9\cot x-25x+c$
   b) $4\tan x-9\cot x-25x+c$
   c) $-4\tan x+9\cot x+25+c$
   d) $4\tan x+9\cot x+25x+c$

9. Evaluate : $\int e^{x\log a}+e^{a\log x}+e^{a\log a}dx$
   a) $\frac{a^x}{\log a}+\frac{x^{a+1}}{a+1}+a^a x+c$
   b) $\frac{a^x}{\log a}+\frac{x^{a+1}}{a-1}+ax^a+c$
   c) $\frac{a^x}{\log a}+\frac{x^a}{a+1}+ax^a+c$
   d) $\frac{a^x}{\log x}\frac{x^{a+1}}{a+1}+a^a+c$

10. Direction cosines of the line that makes equal angles with the three axes in space are
    a) $\pm\frac{1}{\sqrt{3}},\pm\frac{1}{3},\pm\frac{1}{3}$
    b) $\pm\frac{6}{7},\pm\frac{2}{7},\pm\frac{3}{7}$
    c) $\pm\frac{1}{\sqrt{3}},\pm\frac{1}{\sqrt{3}},\pm\frac{1}{\sqrt{3}}$
    d) $\sqrt{\frac{1}{7}},\pm\sqrt{\frac{3}{14}},\frac{1}{\sqrt{14}}$

11. In direction ratios of a line $-1, -3, 2$ then its direction cosines are
    a) $\frac{1}{\sqrt{14}}, \frac{-3}{\sqrt{14}}, \frac{2}{\sqrt{14}}$
    b) $\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}$
    c) $\frac{-1}{\sqrt{14}}, \frac{-3}{\sqrt{14}}, \frac{2}{\sqrt{14}}$
    d) $\frac{-1}{\sqrt{14}}, \frac{-2}{\sqrt{14}}, \frac{-3}{\sqrt{14}}$

12. Evaluate : $\int \frac{1}{\sqrt{9+8x-x^2}} dx$
    a) $-\sin^{-1}\left(\frac{x-4}{5}\right) + c$
    b) $\sin^{-1}\left(\frac{x-4}{5}\right) + c$
    c) $\sin^{-1}\left(\frac{x+4}{5}\right) + c$
    d) None of these

13. Evaluate: $\int_0^1 \left\{e^x + \sin\frac{\pi x}{4}\right\} dx$
    a) $1 - \frac{4}{\pi} + \frac{2\sqrt{2}}{\pi}$
    b) $1 - \frac{2}{\pi} + \frac{2\sqrt{2}}{\pi}$
    c) $1 + \frac{4}{\pi} - \frac{2\sqrt{2}}{\pi}$
    d) None of these

14. If $\vec{a} = 2\hat{\imath} + \hat{\jmath} + 2\hat{k}$ and $\vec{b} = 5\hat{\imath} - 3\hat{\jmath} + \hat{k}$, then the projection of $\vec{b}$ on $\vec{a}$ is
    a) 3 b) 4 c) 5 d) 6

15. The area of the ellipse $\frac{x^2}{4^2} + \frac{y^2}{9^2} = 1$ is
    a) $6\pi\ sq.units$
    b) $\frac{\pi(a^2+b^2)}{4}\ sq.units$
    c) $\pi(a+b) sq.units$
    d) None of these

16. The area bounded by the line $|x| + |y| = 1\ is$
    a) $1\ sq.units$
    b) $2\ sq.units$
    c) $2\sqrt{2}\ sq.units$
    d) $4\ sq.units$

17. The vectors $3\hat{\imath} + 5\hat{\jmath} + 2\hat{k}, 2\hat{\imath} - 3\hat{\jmath} - 5\hat{k}$ and $5\hat{\imath} + 2\hat{\jmath} - 3\hat{k}$ from the sides of
    a) Isosceles triangle
    b) Right triangle
    c) Scalene triangle
    d) Equilateral triangle

18. If $\left|\vec{a} \times \vec{b}\right| = 4$ and $\left|\vec{a}.\vec{b}\right| = 2$, then $|\vec{a}|^2\left|\vec{b}\right|^2$ is equal to
    a) 2 b)6 c)8 d)20

19. Evaluate : $\int_0^{\pi/4} \tan^3 x \ dx$
    a) $\frac{1}{2}(1 - \log 2)$ b)$1 - \log 2$
    c)$1 + \log 2$ d)$\frac{1}{2}(1 + \log 2)$

20. Find the equation of plane passing through the points $P(1,1,1), Q(3,-1,2), R(-3,5,-4)$
    a) $x + 2y = 2$ b)$x - y = 2$
    c)$-x + 2y = 2$ d)$x + y = 2$

21. The distance of the plane $2x - 3y + 4z - 6 = 0$ from the origin is A. Hear A refer to
    a) 6 b)-6 c)$-\frac{6}{\sqrt{29}}$ d)$\frac{6}{\sqrt{29}}$

22. If $\left(\frac{1}{2}, \frac{1}{3}, n\right)$ are the directions cosines of line, then the value of n is
    a) $\frac{\sqrt{23}}{6}$ b)$\frac{23}{6}$ c)$\frac{2}{3}$ d)$\frac{3}{2}$

23. The Cartesian equation of the line l when it passes through the point (x_1, y_1, z_1) and parallel to the vector $\vec{b} = a\hat{\imath} + b\hat{\jmath} + c\hat{k}$ is
    a) $x - x_1 = y - y_1 = z - z_1$
    b) $x + x_1 = y + y_1 = z - z_1$
    c) $\frac{x+x_1}{a} = \frac{y+y_1}{b} = \frac{z+z_1}{c}$
    d) $\frac{x-x_1}{a} = \frac{y+y_1}{b} = \frac{z-z_1}{c}$

24. Evaluate: $\int_1^2 \frac{dx}{x^2}$
    a) $\frac{1}{2}$ b)1 c)2 d)-1

25. Find the magnitude of vector $3\hat{\imath} + 2\hat{\jmath} + 12\hat{k}$
    a) $\sqrt{157}$ b) $4\sqrt{11}$ c) $\sqrt{213}$ d) $9\sqrt{3}$

26. Let $\vec{a}, \vec{b}\ and\ \vec{c}$ be vector with magnitude $3,4$ and 5 respectively and $\vec{a} + \vec{b} + \vec{c} = \vec{0}$, then the value of $\vec{a}.\vec{b} + \vec{b}.\vec{c} + \vec{c}.\vec{a}$ is

a) 47 b)25 c)50 d)-25

ANSWER KEY

1 (b)	2 (b)	3 (d)	4 (a)	5 (a)
6 (d)	7 (b)	8 (b)	9 (a)	10 (c)
11 (a)	12 (c)	13 (d)	14 (a)	15 (d)
16 (b)	17 (d)	18 (d)	19 (a)	20 (d)
21 (d)	22 (a)	23 (d)	24 (a)	25 (a)
26 (d)				