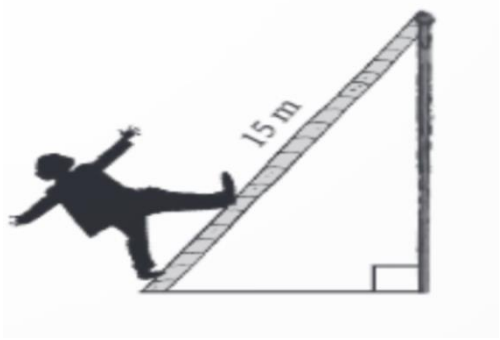
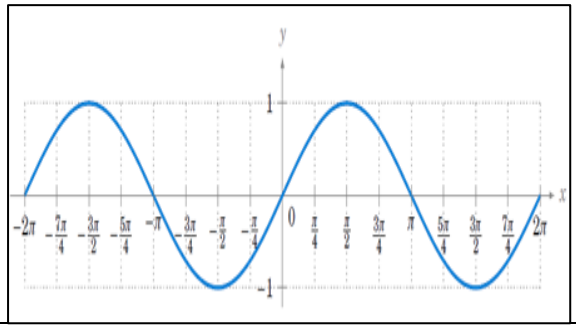
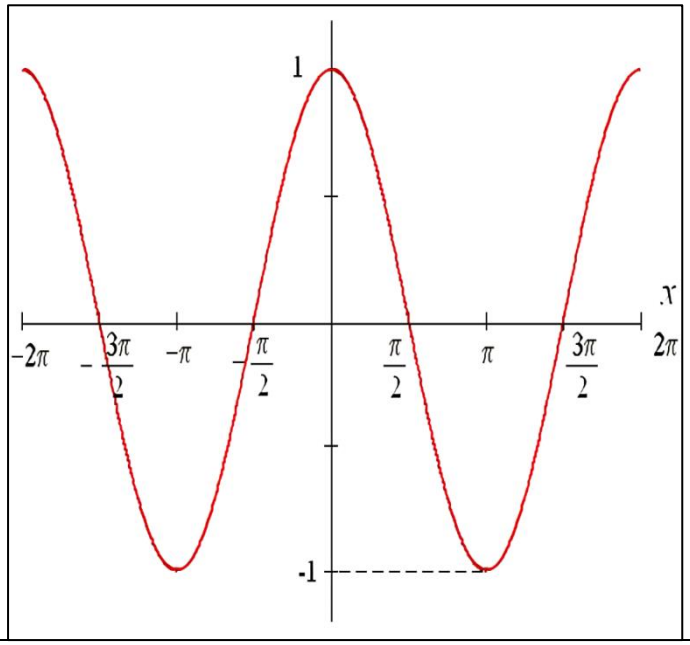
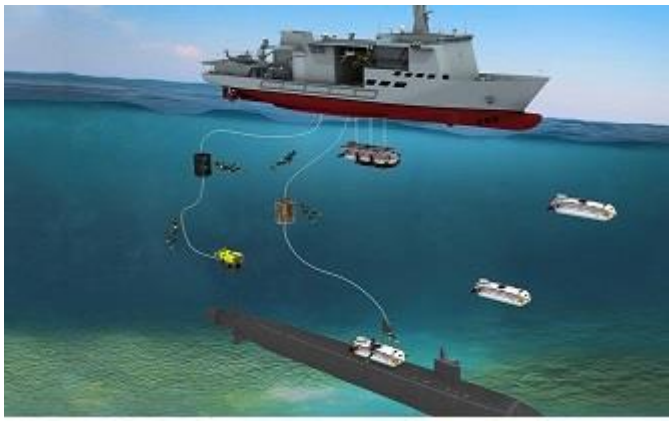
CHAPTER-3

TRIGONOMETRIC FUNCTIONS

04 MARK TYPE QUESTIONS

Q. NO	QUESTION	MARK
1.	In a class test of XI a teacher asked to students to consider A+$B = \frac{\pi}{4}$, where A and B are acute angles. Based on the above information, answer the following questions. i) Find the value of $(1 + tan\, tan\, A)(1 + tan\, tan\, B)$? ii) Find the value of $(cot\, cot\, A - 1)(cot\, cot\, B - 1)$? iii) Find the value of $sin\, sin\,(A+B) - cos\, cos\,(A+B) + tan\, tan\,(A+B)$.	4
2.	A circus artist is climbing through a 15m long rope which is highly stretched and tied from the top of a vertical pole to the ground as shown below. Answer the following question:  i) Find the height of the pole, if angle made by rope to the ground level is 45° a) 15m b) $15\sqrt{2}$ c) $\frac{15}{\sqrt{3}}$ d) $\frac{15}{\sqrt{2}}$ ii) Find the height of the pole if the angle made by the rope to the ground level is 30° a) 2.5m b) 5m c) 7.5m d) 10m iii) If the angle made by the rope to the ground level is 30° and 3m rope is broken, then find the height of the pole. a) 2m b) 4m c) 5m d) 6m iv) Which mathematical concept is used here? a) Similar triangles b) Pythagoras theorem	4

	c) Application of trigonometry d) None of these	
3.	 Answer the following questions based on the graph given below. 1. Identify the graph above. 2. Write its domain. 3. Write its range. 4. Write the sign of given function in the third quadrant.	4
4.	Answer the following questions based on the graph given below.  1. Identify the graph above. 2. Write its domain. 3. Write its range. 4. Write the sign of given function in the third quadrant.	4
5.	 A submarin is moving in such a way that at particular moment of time its angle of elevation for two ships situated at different position on the surface of water is α and β respectively. If cosecα=$\sqrt{3}$ and secβ $= 2$ then answer the following 1)What will be the value of secα	4

	i) $\frac{\sqrt{2}}{\sqrt{3}}$ ii) $\frac{\sqrt{3}}{\sqrt{2}}$ iii) $\frac{1}{\sqrt{3}}$iv)$\frac{1`}{\sqrt{6}}$ 2)What will be the measure of the angle β in radian a$\frac{\pi}{3}$ $b)\frac{\pi}{6}$ $c)\frac{\pi}{4}$ $d)\frac{\pi}{12}$. 3)What will be the value of tan$(\alpha+\beta)$ i)$\sqrt{3}-\sqrt{2}$ ii)$\sqrt{6}+1$ iii)$\sqrt{3}$ iv)$\sqrt{2}$	
6.	 A basketball hoop is the ring that players try to throw the ball into in order to score points for their team. A circular wire of radius 3cm is cut and bent so as to lie along the circumference of a hoop whose diameter is 48cm. Based on the above information answer the following. (i) What is the length of circular wire? (a) 3π cm (b) 4π cm (c) 6π cm (d) none of these. (ii) Angle subtended by the circular wire at the centre of hoop? (a) π (b) π/4 (c) π/6 (d) none of these (iii)Angle subtended by the circular wire at the centre of hoop in degree? (a) 45^o (b) 67.5^o (c) 22.5^0 (d)none of these OR (iv) If the radius of the hoop is halved then the angle subtended by the circular wire at the centre of hoop in degree is : (a) 45^o (b) 67.5^o (c) 22.5^0 (d)none of these	4

ANSWERS:

Q. NO	ANSWER	MARKS
1.	i)Solution: Given , A+$B = \frac{\pi}{4}$ $=> tan\, tan\,(A+B) = 1$ $=> \frac{tan\, tan\, A + tan\, tan\, B}{1 - tan\, tan\, A\, tan\, tan\, B} = 1$ $=> tan\, tan\, A + tan\, tan\, B + tan\, tan\, A\, tan\, tan\, B = 1$ $=> 1 + tan\, tan\, A + tan\, tan\, B + tan\, tan\, A\, tan\, tan\, B = 1+1$ $=> (1 + tan\, tan\, A)(1 + tan\, tan\, B) = 2$ ii) $cot\, cot\,(A+B) = cot\, cot\, \frac{\pi}{4}$ $=> \frac{cot\, cot\, A\, cot\, cot\, B - 1}{cot\, cot\, B + cot\, cot\, A} = 1$ $=> cot\, cot\, A\, cot\, cot\, B - cot\, cot\, A - cot\, cot\, B = 1$ $=> cot\, cot\, A\, cot\, cot\, B - cot\, cot\, A - cot\, cot\, B + 1 = 1+1$ $=> (cot\, cot\, B - 1)(cot\, cot\, A - 1) = 2$ iii) $sin\, sin\, \frac{\pi}{4} - cos\, cos\, \frac{\pi}{4} + tan\, tan\, \frac{\pi}{4} = \frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}} + 1 = 1$	4
2.	i) d) ii) a) iii) c) iv) d)	4
3.	i)y = sinx, ii)R, iii)[-1,1], iv)-ve	4
4.	i)y = cosx, ii)R, iii)[-1,1], iv)-ve	4
5.	1)b 2)a 3)c	4
6.	1)c 2)d 3) c 4) a	4