**Heights and Distances**

**Type – 1**

**Choose the most appropriate option (a, b, c or d).**

Q 1. A 6–ft tall man finds that the angle of elevation of the top of a 24-ft-high pillar and the angle of depression of its base are complementary angles.

(a)  (b)  (C)  (d) none of these

Q 2. A rocket of height h metres is fired vertically upwards. Its velocity at time t seconds is (2t + 3) metres/second. If the angle of elevation of the top of the rocket from a point on the ground after 1 second of firing is π/6 and after 3 seconds it is π/3 then the distance of the point from the rocket is

(a)  (b) 

(c)  (d) cannot be found without the value of h

Q 3. Three vertical poles of heights h1, h2 and h3 at the vertices A, B and of a ΔABC subtend angles α,β and γ respectively at the circumcentre of the triangle. If cot α, cot β and cot and cot γ are in AP then h1, h2, h3 are in

(a) AP (b) GP (c) HP (d) none of these

Q 4. The angle of elevation of the top of a hill from each of the vertices A, B, C of a horizontal triangle is α. The height of the hill is

(a) btan α. Cosec B (b) atan α. Cosec A (c) ctan α. Cosec C (d) none of these

Q 5. A piece of paper in the shape of a sector of a circle of radius 10 cm and of angle 216° just covers the lateral surface of a right circular cone of vertical angle 2θ. Then sin θ is

(a)  (b)  (c)  (d) none of these

Q 6. The angle of elevation of the top of a vertical pole when observed from each vertex of a regular hexagon is π/3. If the area of the circle circumscribing the hexagon be A metre2 then the are of the hexagon is

(a)  (b)  (c)  (d) 

Q 7. A vertical pole PO is standing at the centre O of a square ABCD. If AC subtends an angle 90° at the top, P, of the pole then the angle subtended by a side of the square at P is

(a) 45° (b) 30° (c) 60° (d) none of these

Q 8. A vertical lamp–post of height 9 metres stands at the corner of a rectangular field. The angle of elevation of its from the farthest corner is 30°, while from another corner it is 45°. The area of the field is

(a)  (b)  (c)  (d) 

Q 9. A vertical lamp–post, 6 m high, stand at a distance of 2 m from a wall, 4 m high. A 1.5–m–tall man starts to walk away from= the wall on the other side of the wall, in line with the lamp–post. The maximum distance to which the man can walk remaining in the shadow is

(a)  (b)  (c) 4m (d) none of these

Q 10. A circular of radius 3 cm is suspended horizontally from a point 4 cm vertically above the centre by 4 strings attached at equal intervals to its circumference. If the angle between two consecutive stings be θ then cos θ is

(a)  (b)  (c)  (d) none of these

**Type 2**

**Choose the correct options. One or more options may be correct.**

Q 11. A man standing between two vertical posts finds that the angle subtended at his eyes by the tops of the post is a right angle. If the heights of the two posts are two times and four times the height of the man, and the distance between them is equal to the length of the longer post, then the ratio of the distance of the man from the shorter and the longer post is

(a) 3 : 1 (b) 2 : 3 (c) 3 : 2 (d) 1 : 3

Q 12. A flagstaff stands vertically on a pillar, the height of the flagstaff being double the height of the pillar. A man on the ground at a distance finds that both the pillar and the flagstaff subtend equal angles at his eyes. The ratio of the height of the pillar and the distance of the man from the pillar, is

(a)  (b) 1 : 3 (c)  (d) 

**Answers**

1c 2b 3c 4b 5a 6d 7c 8a 9a 10c

11a,d 12c