Class 11 Mathematics · Chapter 11: Introduction to Three Dimensional Geometry

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. The coordinate planes XOY and YOZ intersect along the [1]

(a) x-axis (b) z-axis
(c) origin only (d) y-axis

2. A point lies in octant IV. The signs of its x, y and z coordinates are, respectively, [1]

(a) −, −, + (b) +, +, −
(c) +, −, + (d) +, −, −

3. In how many of the eight octants is the z-coordinate of every point positive? [1]

(a) 2 (b) 4
(c) 6 (d) 8

4. The foot of the perpendicular drawn from P(4, −3, 6) to the XY-plane is [1]

(a) (4, −3, 0) (b) (0, 0, 6)
(c) (4, 0, 6) (d) (0, −3, 6)

5. Which of the following points lies on the y-axis? [1]

(a) (0, −4, 0) (b) (−4, 0, 0)
(c) (0, 0, −4) (d) (0, −4, 1)

6. Find the point on the z-axis that is equidistant from A(1, 5, 7) and B(5, 1, −4). [2]

7. A point P(x, y, z) is such that $xy > 0$ and $z < 0$. Using the signs of the coordinates in the eight octants, name the octants in which P can lie. [2]

8. The distance of the point (a, 2a, 2a) from the origin is 12 units. Find the possible values of a. [2]

9. Find the point that is equidistant from the origin O and from the points A(4, 0, 0), B(0, 6, 0) and C(0, 0, 2). [3]

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10. The vertices of a triangle are A(4, 1, −2), B(−1, 5, 3) and C(3, 0, 5). Find its centroid G and the distance of G from the origin. [3]

11. Through a point P, planes parallel to the coordinate planes form the box OADBCFPE of Fig. 11.3, with A, B, C on the x, y and z axes, D in the XY-plane, F above A and E above B. If D is (4, 3, 0) and C is (0, 0, 6), write the coordinates of P, E and F, and find the length of the diagonal OP. [3]

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