CONIC SECTIONS 5

5-1 INTRODUCTION

In engineering practice we come across a number of objects containing plane curves such as ellipse, parabola, hyperbola, etc. The curve, which is obtained by cutting a right circular cone with the help of a plane in different positions relative to the axis, is called a conic section. This chapter deals with a few common methods of construction of the conic sections and the field of their application.

MULTIPLE CHOICE QUESTIONS

Choose the most appropriate answer out of the given alternatives:

i) If a point moves in a plane in such a way that the sum of its distances from two fixed points is constant the curve so traced is called

(a) Ellipse (b) Parabola (c) Hyperbola (d) None of these

ii) Name the curve traced out by a point moving in a plane such that the difference between its distances from two fixed points is constant

(a) Ellipse (b) Parabola (c) Hyperbola (d) Any of these

iii) When a bullet is shot in air the path traversed by the bullet is called

(a) Cycloid (b) Semicircle (c) Parabola (d) Hyperbola

iv) A right circular cone when cut by a plane parallel to its generator, the curve obtained is a

(a) Ellipse (b) Parabola (c) Hyperbola (d) Circle

v) When a right circular cone is cut by a plane passing through its apex, the curve obtained is

(a) Ellipse (b) Parabola (c) Hyperbola (d) Triangle

vi) When a right circular cone is cut which meets its axis at an angle greater than the semi-apex angle, the curve obtained is

(a) Ellipse (b) Parabola (c) Hyperbola (d) Triangle

vii) When a right circular cone is cut which meets its axis at an angle less than the semi-apex angle, the curve obtained is

(a) Ellipse (b) Parabola (c) Hyperbola (d) Triangle

viii) The angle between the asymptotes of a rectangular hyperbola is

(a) 30^o (b) 45^o (c) 60^o (d) 90^o

ix) Name the curve which has zero eccentricity

(a) Ellipse (b) Parabola (c) Hyperbola (d) Circle

x) Which of the following curves obeys the Boyle's law?

(a) Ellipse (b) Parabola (c) Hyperbola (d) Circle

xi) Which of the following applications hyperbolic curve is used?

(a) Solar collector (b) Cooling tower (c) Lamp reflectors (d) Monuments

xii) The eccentricity of an ellipse can be determined by

(a) $\frac{\text{length of major axis}}{\text{distance between directrices}}$ (b) $\frac{\text{distance between the foci}}{\text{length of major axis}}$

(c) $\frac{\text{distance of a point of ellipse from the focus}}{\text{distance of the same point from the dirctrix}}$ (d) All of these

xiii) The major and minor axes of an ellipse are 100 mm and 60 mm respectively. What will be the distance of its foci from the end of the minor axis?

(a) 30 mm (b) 40 mm (c) 50 mm (d) 60 mm

Answer: (i) a (ii) c (iii) c (iv) b (v) d (vi) a (vii) c (viii) d (ix) d (x) d (xi) b (xii) d (xiii) c