Activities

Q1. The plan of a cylinder is shown in Fig. 4.38. A and B are points on its surface. Project an elevation of the cylinder and locate points A and B.
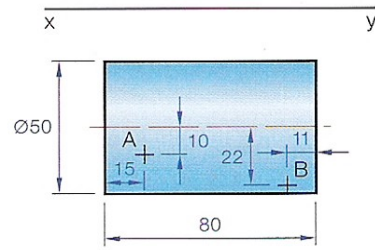

Fig. 4.38

Q2. The elevation of a cone is shown in Fig. 4.39. Two points C and D are shown on the surface. Project a plan showing clearly how the two points are located.
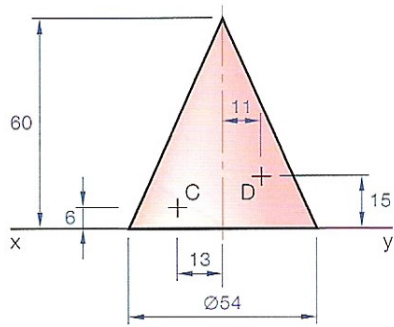

Fig. 4.39

Q3. The plan of a sphere with two points on its surface, E and F, is shown in Fig. 4.40. Project the elevation of the sphere and the two points.
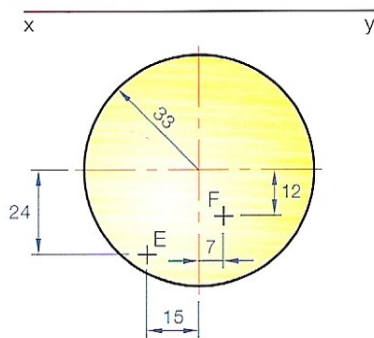

Fig. 4.40

Q4. The elevation of a sphere and cone are shown in Fig. 4.41. The two solids are in contact. Draw the given view and project the plan. Show the point of contact in both views.
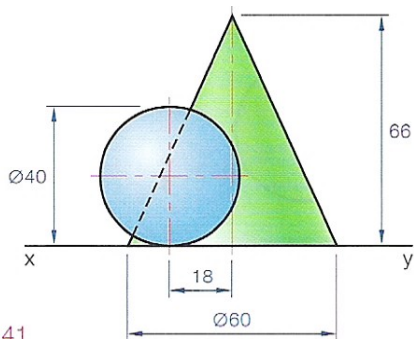

Fig. 4.41

Q5. The plan of a cone A and a sphere B are shown in Fig. 4.42. The two solids are in contact and rest on the horizontal plane. Draw the plan and elevation of the solids and show the point of contact in both views. The cone has an altitude of 60 mm.
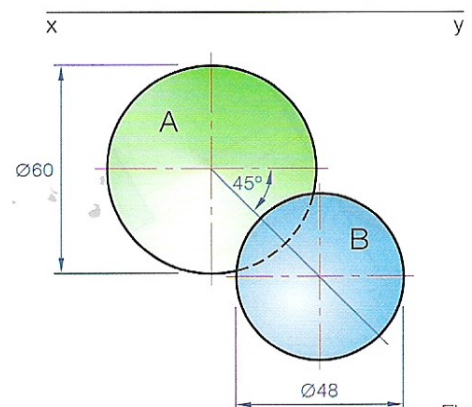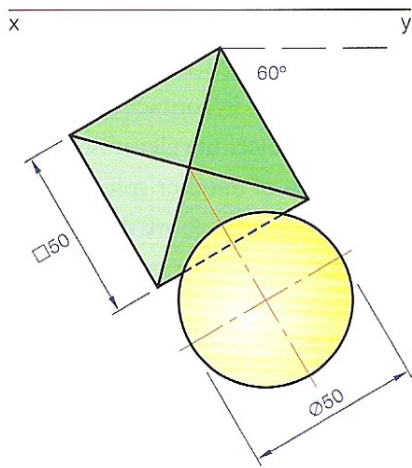

Fig. 4.42

Fig. 4.43

Q6. Fig. 4.43 shows the plan of a square-based pyramid of altitude 70 mm. Also shown is a sphere which is in contact with the pyramid. Both solids rest on the horizontal plane. Draw the given plan and project the elevation. The point of contact should be clearly shown in both views.

Q7. The elevation of a hemisphere is shown in Fig. 4.44. A sphere S is in contact with the hemisphere. Draw the plan and elevation of the two solids showing the point of contact clearly in both views.
Also shown is a point P on the surface of the hemisphere. Draw the plan and elevation of point P.
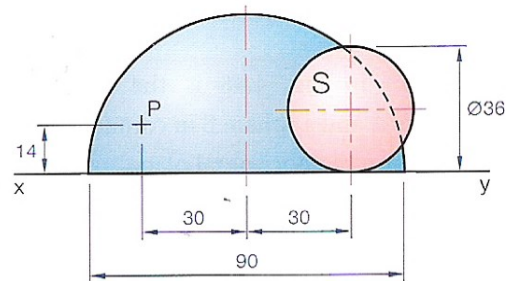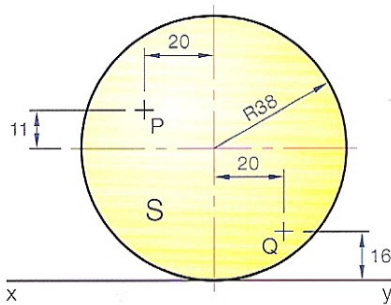

Fig. 4.44

Q8. The elevation of a sphere S is shown in Fig. 4.45 with two points on its surface, points P and Q.
(i) Draw the plan and elevation of the sphere and points.
(ii) Draw the plan and elevation of a sphere of radius 25 mm that has point P as its point of contact with sphere S.
(iii) Draw the plan and elevation of a sphere of radius 8 mm that has point Q as its point of contact with sphere S.

Fig. 4.45

Q9. The plan of a cylinder A and a cone B are shown in Fig. 4.46. Both solids rest on the horizontal plane and are in mutual contact.
(i) Draw the plan and elevation of the two solids and show the point of contact.
(ii) A sphere C rests on the horizontal plane and is in contact with the cone B and the cylinder A. Sphere C has a radius of 12 mm. Project the views of this solid and show all points of contact.
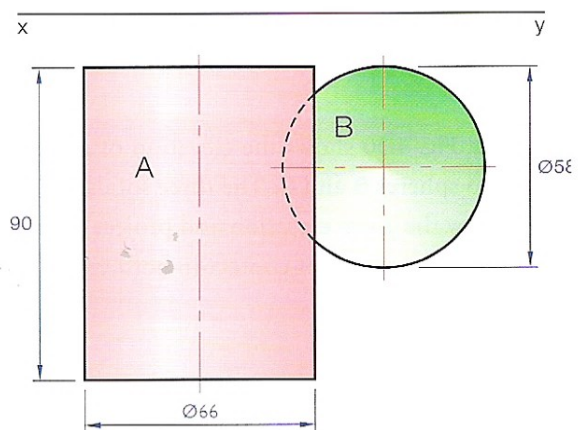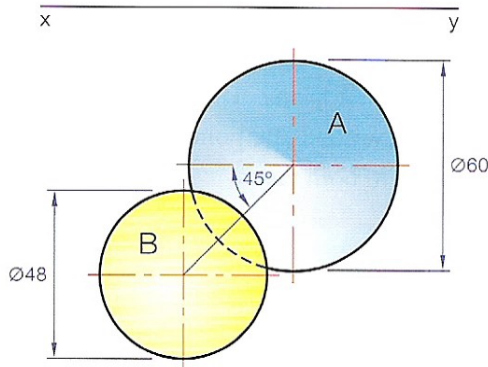

Fig. 4.46

Fig. 4.47

Q10. The plan of a cone A of 50 mm altitude and a sphere B are shown in Fig. 4.47. Both solids rest on the horizontal plane and are in contact with each other.
(i) Draw the plan and project the elevation of the solids.
(ii) Draw the projections of another sphere C diameter 30 mm, whose centre is 36 mm above the horizontal plane. The sphere C is to touch the cone A and the other sphere B.
(iii) Show the points of contact in all views.

Q11. Shown in Fig. 4.48 is the elevation of a hemisphere A and a sphere B in contact with each other and resting on the horizontal plane.
(i) Draw the elevation and project the plan of the solids.
(ii) Draw the projections of a diameter 40 mm sphere which rests on the horizontal plane and touches the hemisphere A and sphere B.
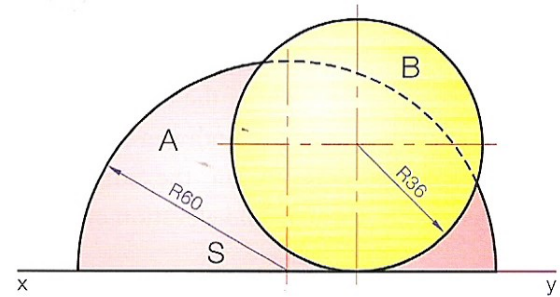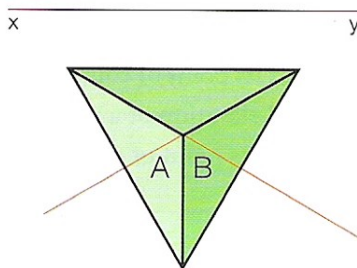(iii) Show all points of contact.

Fig. 4.48

Fig. 4.49

Q12. The diagram in Fig. 4.49 shows the plan of a tetrahedron of 66 mm side resting on the horizontal plane.
(i) Draw the given plan and project the elevation.
(ii) Draw the projection of a 40 mm diameter sphere that rests on the horizontal plane and is in contact with surface A.
(iii) Draw the projections of a 50 mm diameter sphere that rests on the horizontal plane and is in contact with surface B. Show all points of contact.

Q13. Fig. 4.50 shows the elevation of a cone A and two spheres B and C. The three solids are in contact.
(i) Draw the given elevation and project a plan.
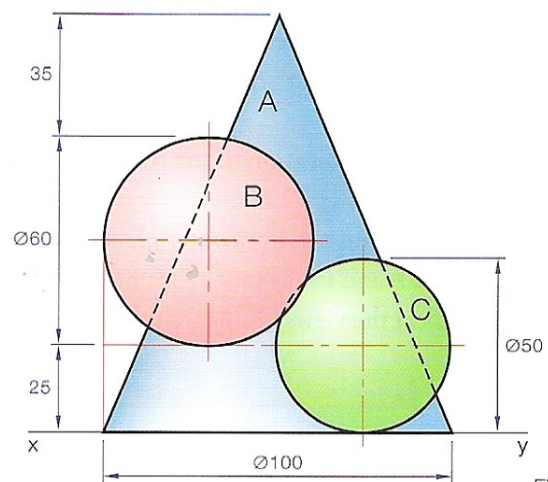(ii) Show the points of contact in both views.

Fig. 4.50