

Objective Questions

Introduction to EG

Q1. Is the shape of the section obtained, when a cone is cut by a plane perpendicular to the axis.

Ans-Circle

Q2. Is the shape of the section obtained, cut by a plane inclined to the axis.

Ans.-Ellipse

Q3. Is the shape of the section obtained, when a cone is cut by a plane passing through the apex and base.

Ans-Triangle

Q4. Is the shape of the section obtained, when a cone is cut by a plane parallel to a generator and cuts the base.

Ans- Parabola

Q5. Is the shape of the section obtained, when a cone is cut by a parallel to the axis and cuts the base.

Ans-Hyperbola.

Q6. When the diameter of the directing circle is twice the diameter of the rolling circle, the hypocycloid obtained is a.....

Ans. Straight Line

Q7. In Archimedean spiral, the point moves uniformly in a straight line while the line is rotating with Angular velocity.

Ans. Uniform

Q8. In logarithmic spiral, the of the lengths of any consecutive radius vectors is always a constant.

Ans- Ratio

Q9 Enlargement scales are used for drawing very small, objects, like parts of wrist watches (True/False)

Ans- True

Q10. Reduction scale should be used in the preparation of building drawing.

Ans-True

Q11. Plain scales are commonly used to measure linear dimensions in maps accurately.(True/False)

Ans-True.

Q12. Diagonal scales are commonly used to measure linear dimensions in maps accurately.(True/False)

Ans- True

Q13. Parabolic curve shape is used to construct arch and bridges (True/False)

Ans-True

➤ **Projections of Points and Lines**

Q1. When a point lies in the fourth quadrant, it will be below HP and behind VP.

Ans-False

Q2. When a point is in the third quadrant, its elevation and plan are always above and below XY.

Ans-False

Q3. The line joining the projection of a point intersects the line XY line at an angle 90°

Ans-True

Q4. Projector of a point is always to the reference beam

Ans-perpendicular

Q5. In first angle projection, the object placed between.....and of projection.

Ans.-Observer, plane

Q6. When the front view of a point is below XY and top view is above XY, then the point is HP andVP.

Q7. To represent projections on the paper, the planes must be rotated such that the..... quadrant always opens out.

Ans-first

Q8. When a line is perpendicular to VP, its front view will have its true length

Ans-False

Q9. A straight line cannot be placed perpendicular to both HP and VP.

Ans- True.

Q10. No traces are obtained when a line is kept parallel to both HP and VP.

Ans-True

Q11. When a line is parallel to HP and inclined to VP, the top view gives the true length.

Ans- True

Q12. When a point is above HP, its view from front is XY.

Ans-above

Q13. When a point is on..... And Its two views lie on XY.

Ans. HP.VP

Q14. VP and HP are always at to each other.

Ans. Right angles.

Q15. A straight line is generated as the of a moving point.

Ans. Locus

Q16. A straight line is defined as the distance between two points.

Ans. Shortest

Q17. The projection of a line onto a plane parallel to it appears in its true length. (True/False)

Ans. True

Q18. The trace of a straight line is always a

Ans. Point

Q19. If plan ab of a line AB is parallel to AY , elevation $a'b'$ will give and

Ans. True length, true inclination with HP.

Q20. If the front view of a line is in true length, the top view To AY and the line is to..... VP

Ans- parallel, parallel

Q21. When a line is perpendicular to one of the reference planes, it is..... To the other plane.

Ans-parallel

Q22. When a line is perpendicular to HP, its view from the front is..... to the XY.

Ans-perpendicular

Q23. When a line is parallel to the VP and perpendicular to HP its is a point

Ans-Top view

Q24. When a line is inclined to the VP and parallel to HP, the view from above represents.....

Ans. True length and true inclination with VP.

Q25. When a straight line is parallel to both HP & VP, its side view is a

Ans. Point

Q26. When a line is perpendicular to VP, its Trace will coincide with the of the line

Ans. Vertical, front view

Q27. The HT and VT of a line will always lie on a single projector.

Ans. False

Q28. True inclinations of a line are always greater than the apparent inclinations in projections.

Ans. False

Q29. When a line is inclined to and parallel to..... Its view from front represents the true length of the line.

Ans. HP, VP

Q30. When a line is inclined to VP and parallel to HP, its view from the front is..... to XY.

Ans. parallel

➤ Projection of Planes

Q1. After projecting the view, the auxiliary plane should be related about the plane to which it is

Ans. Perpendicular

Q2. The view from the front and the auxiliary view from the front of a point, lie on a single projector. (True/False)

Ans. false

Q3. There are.....possible positions at which the auxiliary view may be drawn.

Ans. four

Q4. The shortest distance from a point to a plane is seen in theview of the plane.

Ans. edge

Q5. Two planes are said to be parallel when their.....views are parallel.

Ans. edge

Q6. The parallelism of two lines lying in the PP may be revealed only inview.

Ans. Side

➤ Projection of Solids and Section of solids

Q1. The base of an oblique hexagonal prism is not a regular hexagon. (True/False)

Ans. false

Q2. The base of an oblique cylinder is not an ellipse (True/False)

Ans. False

Q3. When the axis of the solid perpendicular to VP, the front view shows the trueand

Ans. Shape, size of the base

Q4. The prism is named after the configuration of its base. (True/False)

Ans. True

Q5. An Octahedron hasfacesedges andcorners.

Ans. 8,12,6

Q6. When the axis of the solid is parallel to both HP and VP, view reveals the true shape of the base.

Ans. Side

Q7. A cube hasidenticalsurfaces.

Ans. 6, flat

Q8. When the solid is resting with its base on HP the top view shows theand

Ans. True shape, size of the base

Q9. When the axis of the solid perpendicular to the HP, its.....view reveals the true shape of the base.

Ans. top

Q10. A cylinder is obtained by revolving aabout one of its longer edges.

Ans. rectangle

Q11. A cone is obtained by revolving a

Ans. Right angle triangle.

Q12. A sphere is obtained by revolving a

Ans. semicircle

Q13. In an oblique prism, its ends are parallel to each other. (True/False)

Ans. True

Q14. True shape of section obtained when cutting a cube can be a regular hexagon. (True/False)

Ans. True

Q15. True shape of section obtained when cutting an octahedron can be a regular hexagon. (True/False)

Ans. False

Q16. The section lines are usually drawn at 30° or 60° to the horizontal. (True/False)

Ans. False

Q17. The true shape of section of a cylinder cut by an inclined plane is.....

Ans. An ellipse

Q18. The shape of the cross-section of a cone when it is cut by a vertical plane, parallel to VP and passing through the apex of the cone standing on the HP on its base will be.....

Ans. A triangle

Q19. If a sectional surface be viewed in a direction other than normal to it, the shape of the sectioned surface is of the object.

Ans. Apparent section

Q20. If a right circular cylinder is cut by a plane parallel to the axis of the cylinder the section obtained

Ans. a rectangle

Q21. If a sectional surface be viewed looking in a direction..... to it, that it is the true shape of the section.

Ans. Normal

Q22. The intersection between a cone and section plane passing through its base consists of..... And lines.

Ans. Curved, Straight

Q23. When a section plane cutting a solid is parallel to VP the true shape of the section is revealed in the View

Ans. Front

Q24. The true shape of section is obtained by viewing the section in a direction to the Plane.

Ans. Normal, cutting

Q25. Section planes are always represented by the traces.

Ans. True

➤ Development of Lateral Surfaces

Q1. In drawing development of objects, true lengths are used.

Ans. True

Q2. Development of a circle on a flat surface of a rectangular prism will appear as it is when the lateral surface of a prism is developed (True/False)

Ans-True

Q3. The surface of a sphere can be developed by usingor..... method.

Ans. Zone, Lune

Q4. Every line on a development must be equal to the true length of that line on the actual surface.

Ans. True

➤ Isometric projections

Q1. Photographic view of an object is isometric view.

Ans. False

Q2. Isometric projection is preferred for size objects and perspective is for size objects.

Ans. Small, large

Q3. The angle between isometric axes is

Ans. 120°

Q4. A sphere in isometric projection appears as.....

Ans. Circle

Q5. In isometric projection all the lengths measured parallel to the principal axes of the solid are shortened in the proportion of.....

Ans-0.82 approx

Q6. In Isometric projections, the three principal axes of the object will be equally foreshortened

Ans. True

Q7. The ratio between isometric and true lengths is.....

Ans. $\sqrt{2}/\sqrt{3}$

Q8. . In isometric projection, dimension lines are drawn parallel to.....

Ans. Isometric axes

Q9. A picture taken in a camera is a real isometric projection

Ans. False

Q10. Concentric circles appear as concentric ellipses in isometric projection

Ans. True

Q11. Two lines inclined at 90° in the orthographic view appear in isometric view, to be inclined at

Ans. 120°

Engineering Curves

Application of Curves

- Curves are very useful in engineering in deciding the path of a moving point, in manufacturing of various objects, in designing the mechanism etc.
- Some of the important engineering curves that are commonly used in practice are ellipse, parabola, hyperbola, involutes, cycloids, helix etc.
- These curves are obtained by tracing the locus of a point moving according to the mathematical relationship applicable to that particular curve.

➤ Definitions

- **Ellipse:** It is the locus of a point moving in a plane in such a way that the ratio of its distance from a fixed point to a fixed straight line is always a constant and is less than 1.
- **Parabola:** It is the locus of a point moving in a plane in such a way that the ratio of its distance from a fixed point to the straight line is a constant and is always equal to 1.
- **Hyperbola:** It is the locus of a point moving in a plane in such a way that the ratio of its distance from a fixed point to the fixed length is a constant and is greater than 1.

➤ Ellipse

- **Arches of bridges:** The arches of bridges are constructed with curves parallel to ellipse.
- **Pipes:** The ends of hollow pipes are connected by elliptical curves.
- **Elliptical gears:** For obtaining variable speed, some equipment are required to have elliptical gears.
- **Cylindrical tanks:** The ends of cylindrical tanks are elliptical in shape.
- **Path of earth:** Elliptical path is followed by path around the sun etc

➤ Parabola

- **Arches of bridges:** The arches of bridges are constructed with parabolic curves.
- **Light reflectors:** Reflectors for the parallel beams used in the head lamp of a vehicle are parabolic in shape.
- **Sound reflectors & detectors:** Sound reflectors are parabolic in shape.
- **Different Paths:** The projected missiles follow the parabolic path. Any object thrown up at any angle from earth follows the parabolic path.

➤ Hyperbola

- **Nature of graph of Boyle's law:** Graph of Boyle's law of gas; V = volume of the gas; C = constant.
- **Water tanks:** Shape of overhead water tanks is hyperbolic.
- **Cooling towers:** Shape of cooling tower is hyperbolic.

➤ Involute

- **Gear's profile** is having involute shape

➤ **Spiral**

- Clamping devices of jigs and fixtures
- Shape of springs of watch mechanism
- Profile of cams for automation.
- Scroll plate of lathe chuck.