



Maratha Vidya Prasarak Samaj's

Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

***Subject: - Engineering Drawing
(22207)***



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SYLLABUS

Chapter No.	Name of chapter	Marks With Option
1	Projection of Straight line and plane	10
2	Projection of solids	10
3	Sections of Solids	10
4	Sectional Orthographic views	16
5	Missing and Auxiliary views	16
6	Free hand sketches/Conventional Representation	8
Total Marks: -		70



BOARD THEORY

PAPER PATTERN

FOR EDR (22207)

Q.1		Attempt any FIVE	2*5=10
	a)	Free hand sketches	
	b)	Free hand sketches	
	c)	Free hand sketches	
	d)	Free hand sketches	
	e)	Projection of Straight line	
	f)	Projection of Straight line	
Q.2		Attempt any THREE	4*3=12
	a)	Projection of Straight line	
	b)	Projection of Plane	
	c)	Projection of Solids	
	d)	Projection of Plane	
Q.3		Attempt any TWO	8*2=16
	a)	Projection of Plane	
	b)	Sections of Solid	



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	c)	Sections of Solid
Q.4		Attempt any TWO 8*2=16
	a)	Sectional Orthographic View
	b)	Sectional Orthographic View
	c)	Auxiliary View
Q.5		Attempt any TWO 8*2=16
	a)	Missing Views
	b)	Missing Views
	c)	Auxiliary View



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CLASS TEST - I

PAPER PATTERN

COURSE: - Engineering Drawing (22207)

PROGRAMME: - Mechanical Engineering

Syllabus: -

Unit No.	Name of the Unit	Course Outcome (CO)
1	Draw projections of 2D and 3D standard regular entities	CO-207.01
2	Draw sectional views of objects	CO-207.02
3	Draw orthographic sectional and missing views	CO-207.03

Q.1	Attempt any ONE 1*6=6Marks	Course Outcome (CO)
a)	Projection of straight line	CO-207.01
b)	Projection of straight Plane	CO-207.01
Q.2	Attempt any ONE 1*7=7 Marks	
a)	Projection of Solids	CO-207.02
b)	Projection of Solids	CO-207.02
Q.3	Attempt any ONE 1*7=7 Marks	
a)	Sections of Solids	CO-207.03
b)	Sections of Solids	CO-207.03



CLASS TEST - II

PAPER PATTERN

COURSE: - Automobile Engineering (22656)

PROGRAMME: - Mechanical Engineering

Syllabus: -

Unit No.	Name of the Unit	Course Outcome (CO)
4	Draw auxiliary views of objects	CO-207.04
5	Use various drawing codes ,conventions and symbol as per IS SP-46	CO-207.05
6	Draw free hand sketches of given engineering elements	CO-207.06

Q.1	Attempt any THREE	2*3=6Marks	Course Outcome (CO)
a)	Free hand sketches		CO-207.05
b)	Free hand sketches		CO-207.05
c)	Conventional Representation		CO-207.05
d)	Conventional Representation		CO-207.05
Q.2	Attempt any ONE	1*7=7 Marks	
a)	Sectional Orthographic Projection		CO-207.04
b)	Sectional Orthographic Projection		CO-207.04
Q.2	Attempt any ONE	1*7=7 Marks	
a)	Missing and Auxiliary views		CO-207.05
b)	Missing and Auxiliary views		CO-207.05



COURSE OUTCOME

(CO)

COURSE: - Engineering Drawing (22207)

PROGRAMME: - Mechanical Engineering

CO. NO.	Course Outcome
C207.1	Draw projections of 2D and 3D standard regular entities
C207.2	Draw sectional views of objects
C207.3	Draw orthographic sectional and missing views
C207.4	Draw auxiliary views of objects
C207.5	Use various drawing codes ,conventions and symbol as per IS SP-46
C207.6	Draw free hand sketches of given engineering elements



1. Projection of Straight line and plane

Position in Question Paper

Total Marks-10

Q.1. e) 2-Marks.

Q.2. a) 4-Marks.

Q.2. b) 4-Marks.

Descriptive Question

1. End A of a line AB is 15mm above HP & 20mm in front of VP while its end B is 50mm above HP and 75mm in front of VP. The distance between end projectors of the line is 50mm. Draw projections of the line and find its true length and true inclination with the principal planes. Also mark its traces. State the various types of automobile bodies.
2. A line AB, 70mm long, has its end a 15mm above HP and 20mm in front of VP. It is inclined at 30° to HP and 45° to VP. Draw its projections and mark its traces.
3. The top view of a 75mm long line AB measures 65mm, while its front view measures 50mm. Its one end A is in HP and 12mm in front of VP. Draw the projections of AB and determine its inclination with HP and VP. What are the major components mounted on vehicle chassis? State the purpose of each component.
4. A line AB, 65mm long has its end a 20mm above H.P. and 25mm in front of VP. The end B is 40mm above H.P. and 65mm in front of V.P. Draw the projections of AB and show its inclination with H.P. and V.P.
5. A line AB, 90mm long, is inclined at 45° to the H.P. and its top view makes an angle of 60° with the V.P. The end A is in the H.P. and 12mm in front of V.P. Draw its front view and find its true inclination with the V.P.
6. The end A of a line AB is 25 mm behind the V.P. and is below the H.P. The end B is 12 mm in front of the VP and is above the HP the distance between the projectors is 65mm. The line is inclined at 40° to the HP and its HT is 20 mm behind the VP. Draw the projections of the line and determine its true length and the VT.
7. A regular pentagon of 25mm side has one side on the ground. Its plane is inclined at 45° to the HP and perpendicular to the VP. Draw its projections and show its traces.
8. Draw the projections of a circle of 5 cm diameter having its plane vertical and inclined at 30° to the V.P. Its centre is 3cm above the H.P. and 2cm in front of the V.P. Show also its traces.



9. Draw the projections of a regular hexagon of 25mm sides, having one of its side in the H.P. and inclined at 60° to the V.P. and its surface making an angle of 45° with the H.P.
10. A square ABCD of 50 mm side has its corner A in the H.P., its diagonal AC inclined at 30° to the H.P. and the diagonal BD inclined at 45° to the V.P. and parallel to the H.P. Draw its projections.
11. Draw projections of a rhombus having diagonals 125 mm and 50 mm long, the smaller diagonal of which is parallel to both the principal planes, while the other is inclined at 30° to the H.P.
12. A regular hexagon of 40mm side has a corner in the HP. Its surface inclined at 45° to the HP and the top view of the diagonal through the corner which is in the HP makes an angle of 60° with the VP. Draw its projections.
13. A semi-circular plate of 80mm diameter has its straight edge in the VP and inclined at 45° to HP. The surface of the plate makes an angle of 30° with the VP. Draw its projections.

MCQ Question

(Total number of Question= Marks*3=10*3=30)

Note: Correct answer is marked with **bold**.

1. A line AB is on the vertical plane of projection planes, which view from the following gives the actual length of the line AB?
 - a) **Front view**
 - b) Top view
 - c) Side view
 - d) Isometric View
2. A line AB is on the horizontal plane inclined to a vertical plane at 45 degrees, which view from the following gives the actual length of the line AB?
 - a) Front view
 - b) Top view**
 - c) Side view
 - d) Isometric View
3. A line AB is on the profile plane inclined such that ends of line are 10, 12 cm away from horizontal plane, which view from the following gives the actual length of the line AB?
 - a) Front view
 - b) Top view
 - c) Side view**
 - d) Isometric View
4. A line PQ lie in both the vertical plane and profile plane the front and side views of that line coincides at vertical reference line.
 - a) True**
 - b) False
 - c) Incomplete statement
 - d) Can't say anything's



15. Projection of plane in two other planes due to inclination will not show shape.
- a) Inclination
b) Plane
c) **True**
d) Line
16. In the links of suspension chains _____
- a) a cotter joint is used
b) Both are used
c) **a knuckle joint is used**
d) None is used
17. The loose knuckle pin in the fork will be subjected to _____
- a) Shearing
b) Crushing
c) **Bending**
d) tearing
18. Trace on other Principal Plane will be _____ Line to xy Line.
- a) Perpendicular Plane
b) Projection line
c) **Perpendicular line**
d) Both b and c
19. When a plane is parallel to V.P and perpendicular to H.P and P.P always
- a) **SV**
b) BV
c) TV
d) FV
20. A viewing direction which is perpendicular to the surface in question gives a (n) view.
- a) inclined
b) oblique
c) **normal**
d) perspective
21. A viewing direction which is parallel to the surface in question gives a (n) view.
- a) inclined
b) oblique
c) **edge**
d) perspective
22. When a surface of an object is inclined to a plane of projection, it will appear in the view.
- a) in true size and shape
b) as a line
c) **foreshortened**
d) as a point
23. Depending on its relationship to the projection plane on which the view is projected, a line may project
- a) true length
b) foreshortened
c) as a point
d) **all of the above**
24. In which of the gearbox sun and planet gear set is used?
- a) Constant-mesh gearbox
b) Sliding mesh gearbox
c) Synchromesh gearbox
d) **Epicyclical gearbox**
25. Where is the overdrive located?
- a) Constant-mesh gearbox
b) Sliding mesh gearbox
c) Synchromesh gearbox
d) **Epicyclical gearbox**
26. If a surface on an object is parallel to one of the principal planes of projection, then the angular relationship of that surface to at least two other principal projection planes is:
- a) parallel
b) incline



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- c) Unknown **d) perpendicular**
27. Straight Line of projection Will Make an angle with xy Line to the angle of plane with other principal plane.
- a) Right angle b) zero
c) **equal** d) perpendicular
28. When a plane is parallel to H.P and perpendicular to V.P and P.P always first
- a) SV b) BV
c) **TV** d) FV
29. When a plane is parallel to V.P and perpendicular to H.P and P.P always first
- a) SV b) BV
c) TV **d) FV**
30. A square plate of negligible thickness is inclined to HP. The front view will appear as
- a) Line b) Rectangle
c) **Rhombus** d) Square



2. Projection of solids

Position in Question Paper

Total Marks-10

Q.1. c) 2-Marks.

Q.2. d) 4-Marks.

Q.2. a) 4-Marks.

DeScriptive Question

1. A square pyramid, 40 mm base sides and axis 60 mm long, has a triangular face on the ground and the vertical plane containing the axis makes an angle of 45° with the VP. Draw its projections. Take apex nearer to VP
2. Draw the projections of a pentagonal prism, base 25 mm side and axis 50 mm long, resting on one of its rectangular faces on the H.P. with the axis inclined at 45° to the V.P. As the axis is to be inclined with the VP, in the first view it must be kept perpendicular to the VP i.e. true shape of the base will be drawn in the FV with one side on XY line
3. A cone 40 mm diameter and 50 mm axis is resting on one generator on HP which makes 30° inclination with VP Draw it's projections
4. A cylinder 40 mm diameter and 50 mm axis is resting on one point of a base circle on VP while it's axis makes 45° with VP and FV of the axis 35° with HP. Draw projections.
5. A square pyramid 30 mm base side and 50 mm long axis is resting on it's apex on HP, such that it's one slant edge is vertical and a triangular face through it is perpendicular to VP. Draw it's projections.
6. A cube of 50 mm long edges is so placed on HP on one corner that a body diagonal is parallel to HP and perpendicular to VP Draw it's projections.
7. A tetrahedron of 50 mm long edges is resting on one edge on HP while one triangular face containing this edge is vertical and 45° inclined to VP. Draw projections.
8. A pentagonal pyramid 30 mm base sides & 60 mm long axis, is freely suspended from one corner of base so that a plane containing it's axis remains parallel to VP. Draw it's three views.



MCQ Question

(Total number of Question=Marks*3=10*3=30)

Note: Correct answer is marked with **bold**

1. A solid is an object having
 - a) one dimension
 - c) three dimension**
 - b) two dimension
 - d) No dimension
2. Axes of which of the following solids is perpendicular to their bases?
 - a) Oblique solid
 - c) Both (A) and (B)**
 - b) Right solid
 - d) None of these
3. Which of the following has equal faces?
 - a) Tetrahedron
 - d) All of these**
 - b) Octahedron
 - c) Cube
4. Following is (are) solids of revolution.
 - a) Sphere
 - d) All of these**
 - b) Cone
 - c) Cylinder
5. When the solid is cut by a plane parallel to its base then it is known as
 - a) Full solid
 - b) Frustum of solid**
 - c) Truncated solid
 - d) Half solid
6. When the solid is cut by a plane inclined to its base then it is known as
 - a) Full solid
 - c) Truncated solid**
 - b) Frustum of solid
 - d) Half solid
7. ___ is a kind of polyhedron having two parallel identical faces or bases.
 - a) Pyramid
 - c) Prism**
 - b) Solids of revolution
 - d) All of these
8. ___ is type of polyhedron having a base and an apex.
 - a) **Pyramid**
 - d) All of these**
 - b) Solids of revolution
 - c) Prism
9. The A sphere is a solid generated by the revolution of a
 - a) circle
 - c) semicircle**
 - b) arc
 - d) All of these
10. Which of the following position is not possible in solids
 - a) Axis of a solid parallel to HP, perpendicular to VP
 - b) Axis of a solid parallel to VP, perpendicular to HP
 - c) Axis of a solid parallel to both HP and VP
 - d) Axis of a solid perpendicular to both HP and VP**
11. Top view of a right cylinder, resting on HP on its base, is
 - a) **Circle**
 - b) Rectangle**



- c) Ellipse
d) Square
12. Front view of a cube resting on HP on one of its faces, and another face parallel of VP, is
- a) Rectangle
b) Parallelogram
c) **Square**
d) Rhombus
13. Projection lines are
- a) Continuous thick lines
b) **Continuous thin lines**
c) Chain thin lines having thick edges
d) Dashed lines
14. Plane is perpendicular to one of the principal planes the projection on that plane will be
- d) Line
e) **Straight line**
f) Curve
d) Perpendicular line
15. Projection of plane in two other planes due to inclination will not show shape.
- d) Inclination
e) Plane
f) **True**
d) Line
16. Side view of a cone resting on HP on its base rim and having axis parallel to both HP and VP, is
- a) point
b) ellipse
c) **circle**
d) triangle
17. If frustum of a cone is placed on HP on its base, its top view will consist of
- a) a point
b) **two circles**
c) a circle
d) an ellipse and a circle
18. This type of solid has two bases that are parallel equal polygons:
- a) pyramid
b) cone
c) **prism**
d) torus
19. When a plane is parallel to V.P and perpendicular to H.P and P.P always
- a) **SV**
b) BV
c) TV
d) FV
20. A viewing direction which is perpendicular to the surface in question gives a (n) view..
- a) inclined
b) oblique
c) **normal**
d) perspective
21. The solid having a polygon for a base and triangular lateral faces intersecting at a vertex
- a) **pyramid**
b) cone
c) prism
d) torus
22. Among the following solids, a regular polyhedron is



- a) Square pyramid
c) Square prism
- b) **Cube**
d) sphere
23. A solid having minimum number of faces is
- a) Square pyramid
c) triangular prism
- b) **tetrahedron**
d) sphere
24. The number of face in a dodecahedron are
- a) 4
c) **12**
- b) 8
d) 20
25. The number of stages that are necessary to get the orthographic views of a solid having its axis inclined to both reference planes is
- a) 1
c) **3**
- b) 2
d) 4
26. A tetrahedron is resting on its face on the H.P. with a side perpendicular to the V.P. Its front view will be
- a) equilateral triangle
c) scalene triangle
- b) **isosceles triangle**
d) right-angle triangle
27. A square pyramid is resting on a face in the V.P. The number of dotted lines which will appear in the front view is
- a) 1
c) **2**
- b) 3
d) 4
28. The solid, which will have two dotted lines in the top view when it is resting on its face in the H.P. is
- a) square pyramid
c) hexagonal pyramid
- b) pentagonal pyramid
d) **All of these**
29. A cube is resting on the H.P. with a solid diagonal perpendicular to it. The top view will appear as
- a) square
c) irregular hexagon
- b) rectangle
d) **regular hexagon**
30. A cutting plane cut the cone such a way that true shape of cutting portion is seen as triangle when cutting plane is cut the base and passed through
- a) midpoint of axis
c) **apex of cone**
- b) generator of cone
d) any point on axis

3. Sections of Solids

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Position in Question Paper

Total Marks-10

Q.1. d) 2-Marks.

Q.4. c) 8-Marks.

Descriptive Question

1. A square pyramid, base 40 mm side and axis 65 mm long, has its base on the HP and all the edges of the base equally inclined to the VP. It is cut by a section plane, perpendicular to the VP, inclined at 45° to the HP and bisecting the axis. Draw its sectional top view, sectional side view and true shape of the section.
2. A pentagonal pyramid, base 30mm side and axis 60 mm long is lying on one of its triangular faces on the HP with the axis parallel to the VP. A vertical section plane, who's HT bisects the top view of the axis and makes an angle of 30° with the reference line, cuts the pyramid removing its top part. Draw the top view, sectional front view and true shape of the section and development of the surface of the remaining portion of the pyramid.
3. A Hexagonal prism has a face on the H.P. and the axis parallel to the V.P. It is cut by a vertical section plane the H.T. of which makes an angle of 45 with XY and which cuts the axis at a point 20 mm from one of its ends. Draw its sectional front view and the true shape of the section. Side of base 25 mm long height 65mm.
4. A Cone base 75 mm diameter and axis 80 mm long is resting on its base on H.P. It is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35 mm from the apex. Draw the front view, sectional top view, sectional side view and true shape of the section.
5. A pentagonal prism, 30 mm base side & 50 mm axis is standing on HP on it's base whose one side is perpendicular to VP. It is cut by a section plane 45° inclined to HP, through mid-point of axis. Draw Fv, sec.Tv & sec. Side view. Also draw true shape of section and Development of surface of remaining solid.
6. A cone, 50 mm base diameter and 70 mm axis is standing on it's base on Hp. It cut by a section plane 45° inclined to HP through base end of end generator. Draw projections, sectional views, and true shape of section and development of surfaces of remaining solid.



MCQ Question

(Total number of Question=Marks*3=10*3=30)

Note: Correct answer is marked with **bold**

1. A right-circular cone resting on a point of its base circle in the H.P. has the axis inclined at 30° to the H.P. and 45° to the V.P. The angle between the reference line and top view of the axis will be
 - a) 30°
 - b) between 30° and 45°
 - c) 45°
 - d) **more than 45°**
2. The angle of camber is usually
 - a) Less than $\frac{1}{2}^\circ$
 - b) **Between $\frac{1}{2}^\circ$ and 2°**
 - c) 2° to 5°
 - d) 5° to 7°
3. The king pin inclination is usually
 - a) Less than $\frac{1}{2}^\circ$
 - b) Between $\frac{1}{2}^\circ$ and 2°
 - c) **2° to 5°**
 - d) 5° to 7°
4. A right-circular cone resting on a generator in the H.P. has the axis inclined at 30° to the H.P. and 45° to the V.P. The angle between the reference line and top view of the axis will be
 - a) 30°
 - b) 45°
 - c) less than 45°
 - d) **more than 45°**
5. A cylinder rests on a point of its base circle in the H.P., having the axis inclined at 30° to the H.P. and 60° to the V.P. The inclination of the top view of the axis with the reference line will be
 - a) 30°
 - b) **45°**
 - c) 60°
 - d) **90°**
6. The topic of Section of Solids is necessary for work of
 - a) **fabrication industry**
 - b) construction industry
 - c) agriculture industry
 - d) all of the above
7. The portion of the object between imaginary cutting plane and _____ is assumed to be removed.
 - a) vertical plane
 - b) profile plane
 - c) horizontal plane
 - d) **an observer**
8. To show the surface of section, hatching lines are drawn at
 - a) 30°
 - b) **45°**
 - c) 60°
 - d) 90°
9. Cutting plane is also known as
 - a) vertical plane
 - b) profile plane



- c) horizontal plane
d) **section plane**
10. There are ___ types of cutting planes.
a) two
b)) four
c) three
d) **five**
11. Following type of cutting plane does not exist
a) Cutting plane parallel to Horizontal plane
b) Cutting plane parallel to Vertical plane
c) Cutting plane parallel to Profile plane
d) **Cutting plane inclined to both Vertical and Horizontal plane**
12. An Auxiliary Inclined Plane (AIP) is
a) Parallel to Horizontal plane
b) Parallel to Vertical plane
c) **Inclined to Horizontal plane and perpendicular to Vertical plane**
d) Inclined to Vertical plane and perpendicular to Horizontal plane
13. An Auxiliary Vertical Plane (AVP) is
a) Parallel to Horizontal plane
b) Parallel to Vertical plane
c) Inclined to Horizontal plane and perpendicular to Vertical plane
d) **Inclined to Vertical plane and perpendicular to Horizontal plane**
14. Projection of section on the principal plane, to which it is ____ is known as apparent section.
a) **inclined**
b) parallel
c) perpendicular
d) any of the above
15. If the cutting plane or section plane is parallel to one of the principal planes then view of section on that particular plane will be
a) apparent section
b) both (A) and (B)
c) **true shape of section**
d) none of these
16. A right cylinder is placed on HP on its base. A cutting plane parallel to horizontal plane cuts the cylinder, the shape of sectional view is
a) an ellipse
b) a parabola
c) **a circle**
d) a hyperbola
17. To understand some of the hidden geometry of components an imaginary plane is used to cut the object which is called _____
a) auxiliary plane
b) **section plane**
c) picture plane
d) additional plane
18. Which of the following is not the purpose of using cutting (section) plane?
a) Interpretation of object
b) **Cutting the objects**
c) Visualizing of object
d) Invisible features



19. What is the role of recirculating balls in the integral power steering?
- Affect steering stability
 - Prevent control in event of hydraulic failure
 - Combine high mechanical efficiency with smooth operation**
 - Provide hard steering
20. To find the true shape of the section, it must be projected on a plane parallel to the
- Profile plane
 - Section plane**
 - Vertical plane
 - Auxiliary plane
21. A section plane is parallel to V.P the top view gives _____ which is _____ to xy line.
- true shape, parallel
 - straight line, parallel**
 - true shape, perpendicular
 - straight line, perpendicular
22. Angle of section lines with HP & VP is
- 30°
 - 60°
 - 90°
 - None of these**
23. The section plane is perpendicular to H.P and inclined to V.P the top view of section if section is a line. It _____ xy line.
- is perpendicular to
 - is parallel to
 - is inclined to V.P**
 - crosses
24. A section is perpendicular to both the reference planes the true shape and size is obtained by taking projection of section on to _____ plane.
- horizontal
 - vertical
 - profile**
 - auxiliary
25. A section is parallel to vertical plane the true shape and size is obtained by taking projection of section on to _____ plane.
- horizontal
 - vertical**
 - profile
 - auxiliary
26. Section of solids is to know the
- Visible edges
 - Invisible edges**
 - Outer boundary lines
 - None of these
27. Solid portion cut is represented by lines
- Parallel to HP
 - Parallel & perpendicular to HP
 - Perpendicular to HP
 - None of these**
28. What is the reason of steering wheel play excess?
- Parallel to VP
 - Parallel & perpendicular to VP
 - Perpendicular to VP
 - None of these**
29. Portion cut by a section plane is shown by lines
- Inclined to VP
 - Parallel & perpendicular to VP
 - Perpendicular to VP
 - None of these**
30. Portion cut by a section plane is shown by lines inclined to
- Inclined to VP
 - Parallel & perpendicular to VP
 - Perpendicular to VP
 - None of these**

4. Sectional Orthographic views

Position in Question Paper

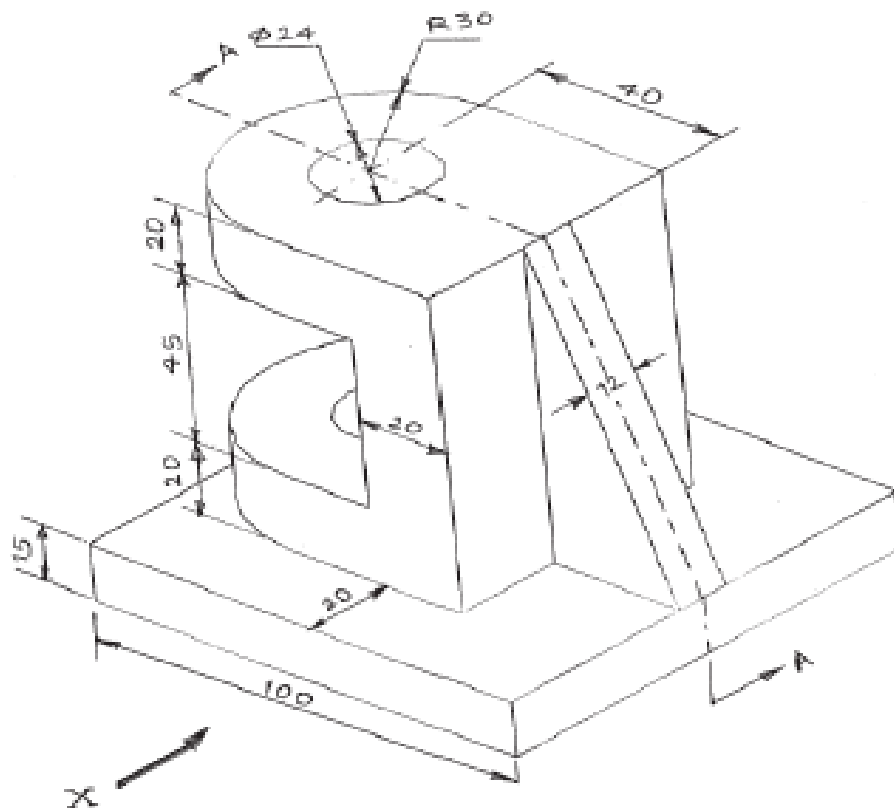
Total Marks-16

Q.3. a) 8-Marks.

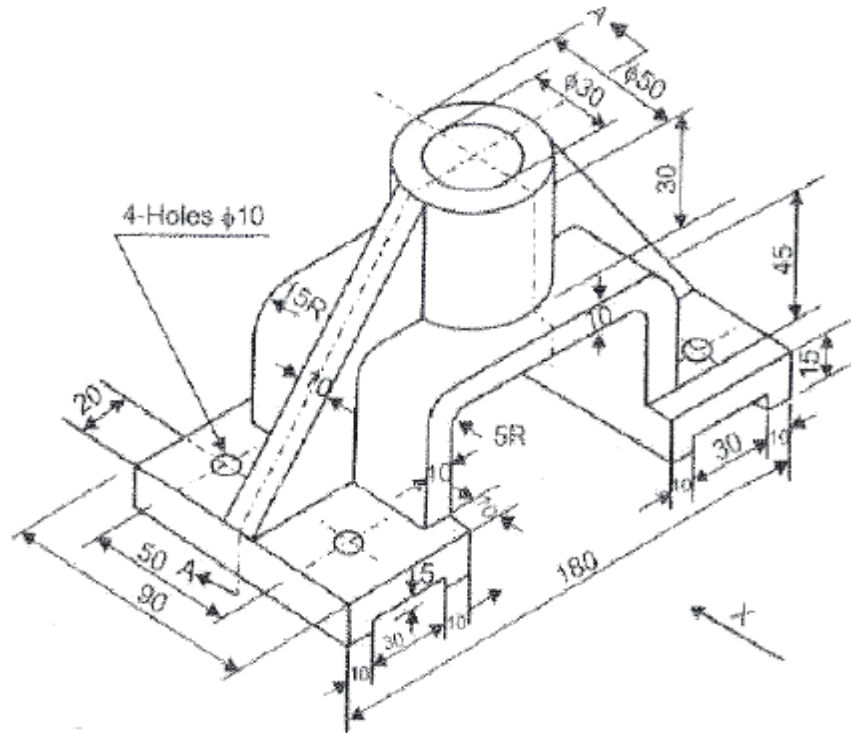
Q.4. c) 8-Marks.

Descriptive Question

1. A pictorial view of the object is shown in Figure. Draw the following views (Use First angle method) (i) Sectional front view along A - A. (ii) Top view



2. A pictorial view of the object is shown in Figure. Draw the following views (Use First angle method) (i) Sectional front view along A - A. (ii) Top view



- 3 A pictorial view of the object is shown in Figure. Draw the following views (Use First angle method) (i) Sectional front view along A - A. (ii) Top view

MCQ Question

(Total number of Question=Marks*3=16*3=48)

Note: Correct answer is marked with **bold**

- Orthographic projection represents three dimensional objects in
 - One dimension
 - Three dimension
 - Two dimension**
 - All of the above
- In orthographic projection, the projection lines are _____ to the projection plane.
 - Parallel
 - Inclined
 - Orthogonal**
 - Any of the above
- In the term ortho-graphic, 'orthos' means
 - Drawing
 - Projection
 - Straight**
 - View



4. The point, from which the observer is assumed to view the object, is called
- Center of projection
 - Point of observer
 - Point of projection
 - View point
5. In orthographic projection, the object is placed with one of its faces _____ to the picture plane.
- Inclined
 - Parallel
 - Perpendicular
 - Any of the above
6. Orthographic projection is also known as
- Single view projection
 - Multi view projection
 - Two view projection
 - All of the above
7. The two ways of drawing orthographic projection are
- First angle, second angle
 - Second angle, third angle
 - First angle, third angle
 - Second angle, fourth angle
8. In third angle projection method, the object is supposed to be in
- First quadrant
 - Third quadrant
 - Second quadrant
 - Fourth quadrant
9. Projection line is
- Continuous thick line
 - Chain thin line
 - Continuous thin line
 - Dashed line
10. Visible outline or edge is
- Continuous thick line
 - Chain thin line
 - Continuous thin line
 - Dashed line
11. Center line is
- Continuous thick line
 - Chain thin line
 - Continuous thin line
 - Dashed line
12. The orthographic projection, projection lines are _____ to each other.
- Parallel
 - Inclined
 - Perpendicular
 - Any of the above
13. The front view of a cube, when it resting on HP on one of its faces and one other face is parallel to VP, is
- Square
 - Parallelogram
 - Rectangle
 - Triangle
14. The numbers of principal views are
- 6
 - 1
 - 4
 - 3
15. The following is not a principal view.
- Bottom
 - Top
 - Side
 - Auxiliary



16. This type of section is limited by a break line:
- a) Removed section
 - b) Revolved section
 - c) **Broken-out section**
 - d) Half section
17. Drafters should use a _____ in a section view of a mechanical part that includes the cylindrical view of a threaded hole.
- a) **Center line**
 - b) Hatch line
 - c) Poly line
 - d) Dimension line
18. The section view drawing in which one fourth of an object has been marked for removal is known as a _____ section.
- a) full
 - b) **half**
 - c) quarter
 - d) none of the above
19. In offset sections, offsets or bends in the cutting plane are all:
- a) **90 degrees**
 - b) Either 90 or 180 degrees
 - c) 180 degrees
 - d) 30, 60, or 90 degrees
20. To avoid having to dimension to a hidden feature the drafter can utilize a _____ section.
- a) whole
 - b) broken out
 - c) half
 - d) all of the above
21. When filling an area with a hatch pattern in AutoCAD the drafter needs to be able to
- a) **see the entire bounding area to hatch**
 - b) set Ortho on
 - c) turn ISO grid off
 - d) set the layer to Defpoints
22. Objects that are symmetric can be shown effectively using this type of section:
- a) Quarter section
 - b) Full section
 - c) **Half section**
 - d) Symmetric section
23. This type of section is not in direct projection from the view containing the cutting plane
- a) Revolved section
 - b) Broken-out section
 - c) **Removed section**
 - d) Full section
24. By using a _____ section of a cylindrical mechanical part the drafter should be able to show only one view of the part.
- a) half
 - b) **revolved**
 - c) whole
 - d) broken out
25. In the section view, the areas that would have been in actual contact with the cutting plane are shown with:
- a) A cutting plane line
 - b) Visible lines
 - c) **Section lining**
 - d) Lines and arrows
26. These breaks are used to shorten the view of an object:
- a) Section breaks
 - b) **Conventional breaks**



- c) Aligned breaks
d) Full breaks
27. In architectural drawing _____ are often used to illustrate and detail structural components.
- a) Foundation beam detail sections
b) Building sections
c) Wall sections
d) **All of the above**
28. When only a small section of an interior area needs to be revealed the drafter can use a _____ section.
- a) whole
b) **broken out**
c) half
d) all of the above
29. In this type of section, one quarter of the object is removed:
- a) Revolved section
b) Quarter section
c) Removed section
d) **Half section**
30. A _____ section allows the drafter to create a Cutting Plane line which is not in a straight line across the part.
- a) **Offset**
b) broken out
c) half
d) all of the above
31. The _____ is a standard element of a section view in a technical drawing
- a) Cutting Plane line
b) Material hatch pattern
c) Section lines
d) **All of the above**
32. When creating a Cutting Plane line with AutoCAD it is customary to use a _____ to create the line.
- a) center line
b) dashed line
c) **polyline**
d) hatch line
33. The straight lines which are drawn from various points on the contour of an object to meet a plane are called as _____
- a) center line
b) dashed line
c) **polyline**
d) hatch line
34. Why the alternator spokes are screwed to slope forward and backward towards the rim in the wire wheel?
- a) connecting lines
b) perpendicular lines
c) **projectors**
d) hidden lines.
35. When the projectors are parallel to each other and also perpendicular to the plane, the projection is called _____
- a) Perspective projection
b) Oblique projection
c) Isometric projection
d) **Orthographic projection**
36. In the Oblique projection an object is represented by how many views?
- a) **one view**
b) 2 view
c) 3 view
d) 4 view

37. The object we see in our surrounding usually without drawing came under which projection?
- a) **Perspective projection**
 - b) Oblique projection
 - c) Isometric projection
 - d) Orthographic projection
38. In orthographic projection, each projection view represents how many dimensions of an object?
- a) 1
 - b) **2**
 - c) 3
 - d) 0
39. In orthographic projection an object is represented by two or three views on different planes which _____
- a) gives views from different angles from different directions
 - b) **are mutually perpendicular projection planes**
 - c) are parallel along one direction but at different cross-section
 - d) are obtained by taking prints from 2 or 3 sides of object
40. To represent the object on paper by orthographic projection the horizontal plane (H.P) should be placed in which way?
- a) **The H.P is turned in a clockwise direction up to 90 degrees**
 - b) The H.P is turned in anti-clockwise direction up to 90 degrees
 - c) H.P plane is placed to left side of vertical plane parallel to it
 - d) H.P plane is placed to right side of vertical plane parallel to it
41. The hidden parts inside or back side of object while represented in orthographic projection are represented by which line?
- a) Continuous thick line
 - b) Continuous thin line
 - c) **Dashed thin line**
 - d) Long-break line
42. What is additional 3rd view on orthographic projection in general for simple objects?
- a) Front view
 - b) **Side view**
 - c) Top view
 - d) Back view
43. The front view of an object is shown on which plane?
- a) Profile plane
 - b) **Vertical plane**
 - c) Horizontal plane
 - d) Parallel plane
44. The Top view of an object is shown on which plane?
- a) Profile plane
 - b) Vertical plane
 - c) **Horizontal plane**
 - d) Parallel plane
45. The side view of an object is shown on which plane?
- a) **Profile plane**
 - b) Vertical plane
 - c) Horizontal plane
 - d) Parallel plane



46. What types of sketch are typically used in the refinement stage of the design process?

- a) isometric
- b) **document**
- c) oblique
- d) ideation

47. What type of sketch incorporates convergence?

- a) isometric
- b) perspective
- c) oblique
- d) multi view

48. What type of sketch shows the front in true shape?

- a) isometric
- b) **perspective**
- c) **oblique**
- d) multi view

5. Missing and Auxiliary views

Position in Question Paper

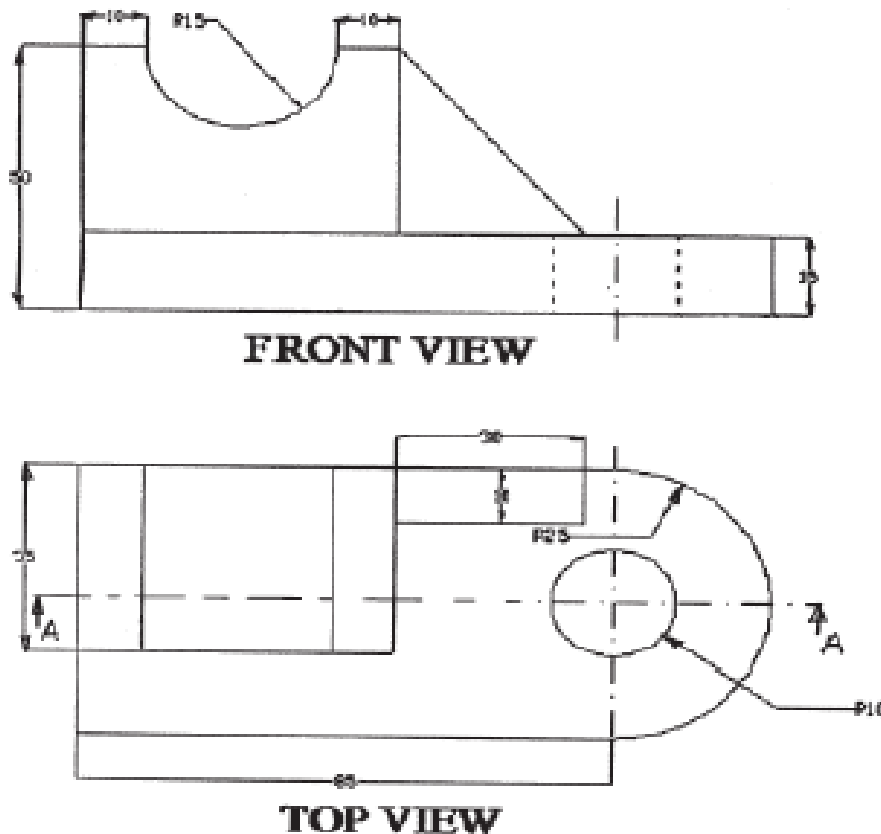
Total Marks-16

Q.4. c) 8-Marks.

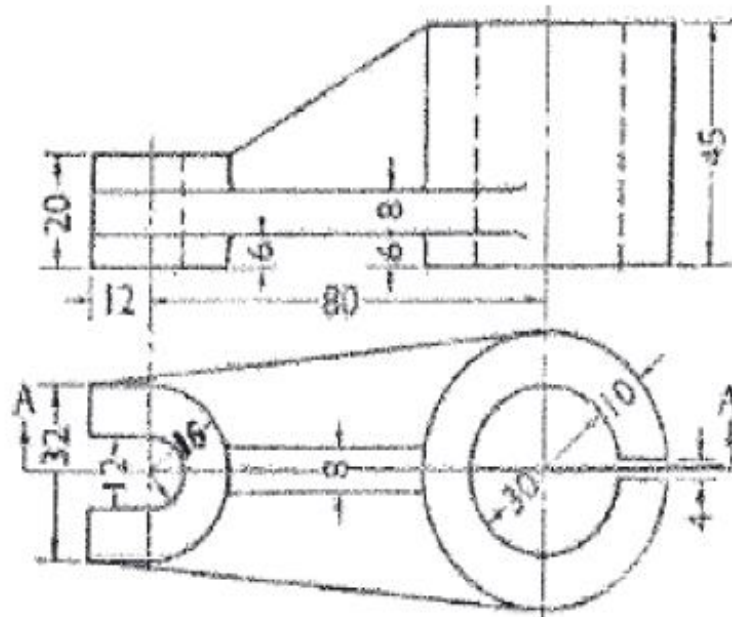
Q.5. a) 8-Marks.

Descriptive Question

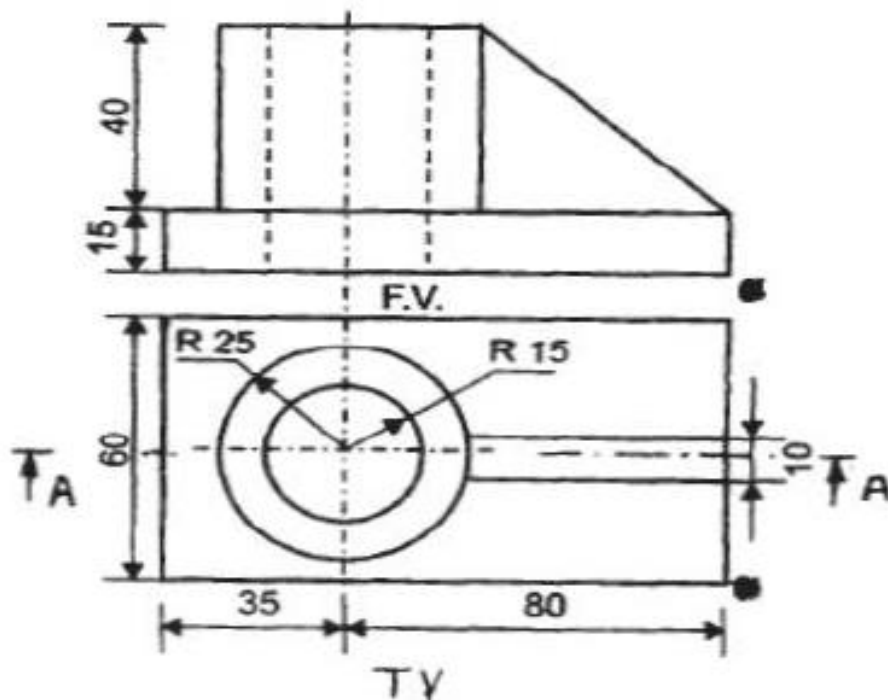
- Figure shows front view and top view of the object. Draw the following views of the object. (Use first angle method) (i) Sectional front view A - A. (ii) Top view (iii) Right hand side view.



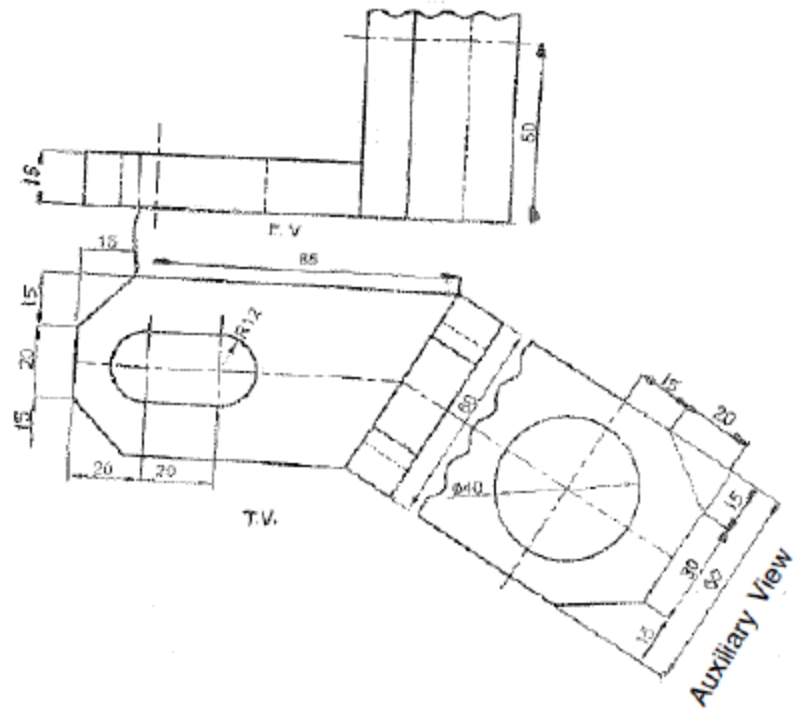
- Figure shows front view and top view of the object. Draw the following views of the object. (Use first angle method) (i) Sectional front view A - A. (ii) Top view (iii) Left hand side view



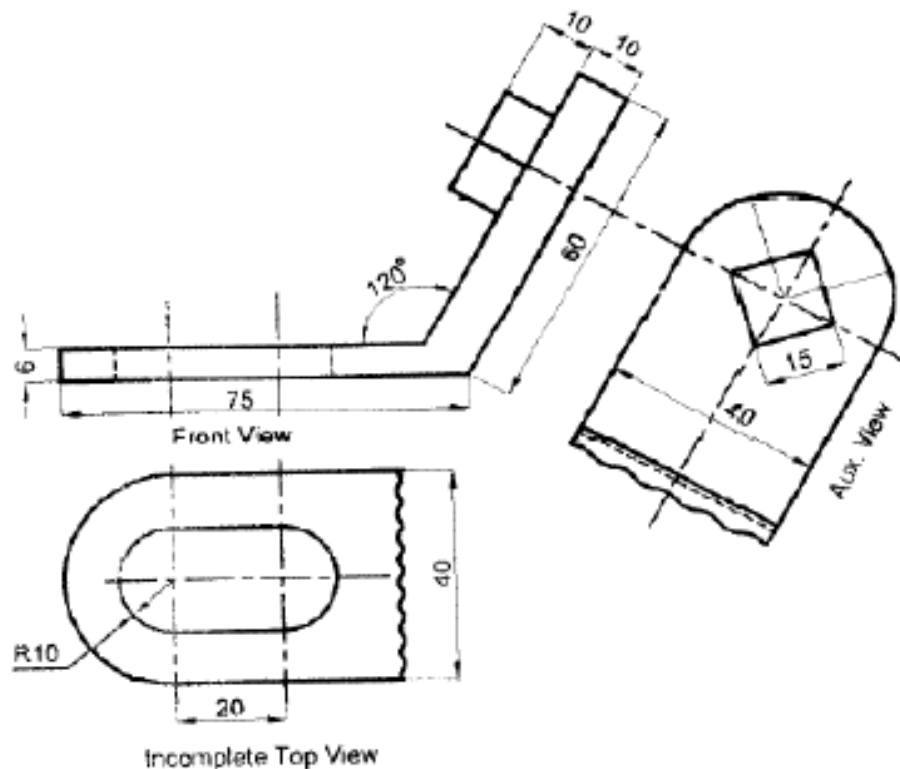
3. Figure shows front view and top view of the object. Draw the following views of the object. (Use first angle method) (i) Sectional front view A - A. (ii) Top view (iii) Right hand side view



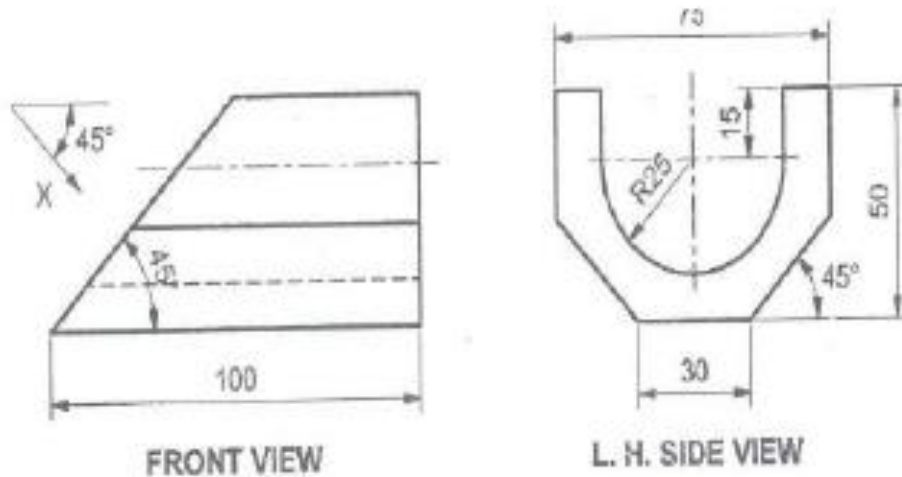
4. Figure shows incomplete front view, top view and auxiliary view of bracket. Draw the given views and complete the front view.



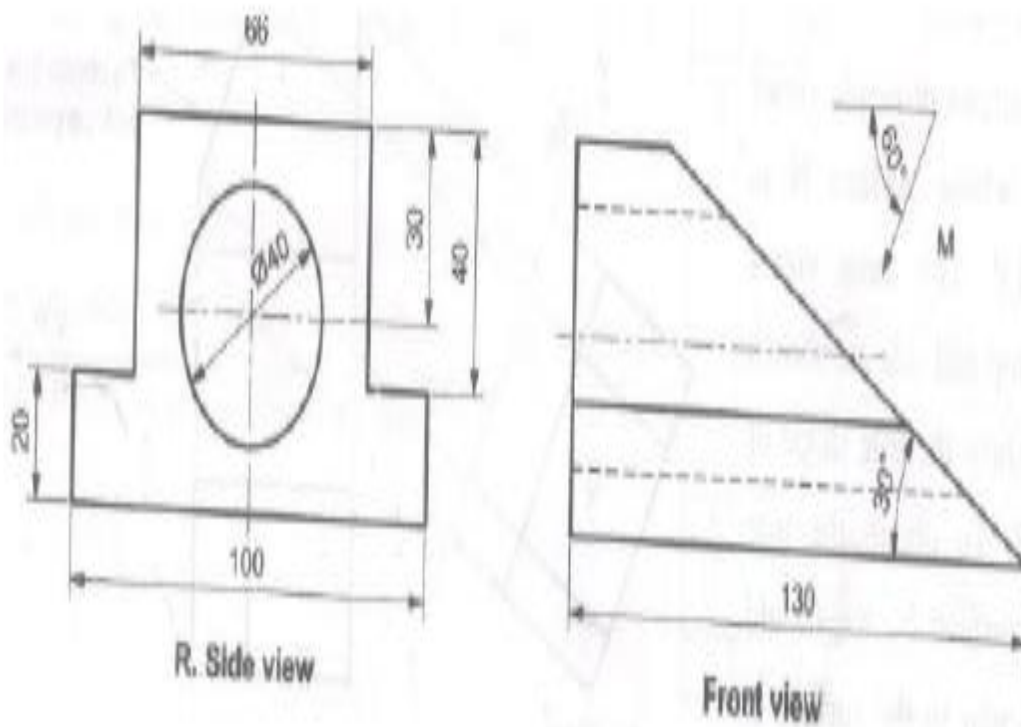
5. Figure shows incomplete top view, front view and auxiliary view. Draw the given views and complete the top view.



6. Figure shows front view and side view of object. Draw the given views and complete the auxiliary view.



7. Figure shows front view and side view of object. Draw the given views and complete the auxiliary view.





MCQ Question

(Total number of Question=Marks*3=16*3=48)

Note: Correct answer is marked with **bold**

- The front and top view are sometimes not sufficient to convey all the information regarding the object. Additional views are therefore projected on other planes known as
 - auxiliary vertical plane
 - auxiliary plane**
 - auxiliary inclined plane
 - horizontal and Vertical plane
- Auxiliary views cannot be used for the determining _____
 - the true length of a line
 - the point-view of a line
 - the edge-view of a line
 - the apparent size**
- Auxiliary planes are of _____ types.
 - 2**
 - 3
 - 1
 - 6
- What are non-parallel and non-intersecting lines called?
 - Spiral lines
 - Parallel lines
 - Skew lines**
 - Perpendicular lines
- The shortest distance between two parallel lines is equal to the length of the perpendicular drawn between them. If its true length is to be measured, then the two given parallel lines should be shown in their _____ views.
 - top
 - front
 - point**
 - line
- The end projectors of a line AB is 40 mm. The point A is 24 mm above HP and 10 mm in front of VP. Point B is 46 mm above HP and 46 mm in front of VP. What will be the True length of the line?
 - 57 mm**
 - 37 mm
 - 50 mm
 - 47 mm
- Plane appears as foreshortened surface in all the projection planes is known
 - The parallel plane
 - The vertical plane
 - The slant plane**
 - The horizontal plane
- To save space on the drawing or to save time only _____ view may be drawn.
 - Half auxiliary**
 - Full auxiliary
 - Front
 - Top
- Planes which are inclined to both the reference planes are_____
 - vertical planes
 - inclined planes
 - horizontal planes
 - oblique planes**

10. Auxiliary views tend to make use of _____ projection.
- orthographic projection
 - axonometric projection**
 - oblique projection
 - isometric projection
11. In _____ the direction of viewing is such that two of the three axes of space appear equally foreshortened.
- orthographic projection
 - trimetric projection**
 - dimetric projection
 - isometric projection
12. In _____ the parallel projection rays are not perpendicular to the viewing plane as with orthographic projection, but strike the projection plane at an angle other than ninety degrees.
- isometric projections
 - orthographic projections
 - axonometric projection
 - oblique projections**
13. The lines used to create the auxiliary view should appear as _____ in the finished view.
- Object lines**
 - Construction lines
 - Reference lines
 - Construction lines
14. The offset distance for the width (front to back) distance of the auxiliary view is the same distance of the _____ in the top view.
- Width**
 - height
 - length
 - None of these
15. The principle reason for using an auxiliary view is _____.
- to eliminate hidden lines
 - to create a true projection plane from an inclined plane in one of the primary views**
 - to show cylinders as ellipses
 - to locate center marks
16. Circular shapes appear in this fashion when viewed at an angle other than 90 degrees:
- Circular
 - Elliptical**
 - Lengthened
 - Angular
17. When adding dimensions to an auxiliary view it will be necessary to use the _____ tool.
- Linear dimension
 - Aligned dimension**
 - Baseline dimension
 - Angle dimension
18. An efficient method for trimming the corners on an auxiliary view is to use the _____.
- 0 radius fillet**
 - Hatch tool
 - Extend tool
 - Grips function
19. In this type of auxiliary view, a break line is used to indicate the imaginary break in the views:



- a) Primary
c) Revolved
- b) Secondary
d) **Partial**
20. When using the descriptive geometry method to create an auxiliary view the drafter should _____.
- a) **rotate the snap grid to the same angle of the inclined plane**
b) offset the right vertical line of the front view
c) rotate the top line of the front view 45 degrees
d) offset the top line of the front view 2 inches
21. This is the most common application for developments and intersections:
- a) **Sheet metal construction**
c) Piping
- b) Architecture
d) Mechanical engineering
22. This type of auxiliary view is projected onto a plane that is perpendicular to one of the principal planes of projection
- a) **Primary**
c) Revolved
- b) Secondary
d) Partial
23. A partial auxiliary view usually shows only features on the _____ of the inclined line and not any projection of other planes.
- a) hidden lines
c) **plane**
- b) center lines
d) none of the above
24. A partial auxiliary view is used to show only the _____ in the auxiliary view.
- a) **projected inclined plane**
c) the projected top view
- b) the projected side view
d) none of the above
25. This type of surface may be a plane, a single curved surface, or a warped surface:
- a) Edge surface
c) **Ruled surface**
- b) Auxiliary surface
d) Developed surface
26. In this type of view, the cutting plane line indicates both the location of the cutting plane and the direction of sight::
- a) Removed section
c) **Revolved section**
- b) Auxiliary section
d) Partial section
27. The principle views associated with orthographic projection are
- a) Front view
c) Right side view
- b) Top view
d) **All of the above**
28. A secondary auxiliary view is a projection off of the _____.
- a) Front view
c) Top view
- b) **Primary auxiliary view**
d) None of the above
29. This type of solid is formed by sweeping a shape along a linear path:
- a) Planar solid
c) Revolved solid
- b) Warped solid
d) Extruded solid
30. In offset sections, offsets or bends in the cutting plane are all:
- a) **90 degrees**
c) 180 degrees
- b) Either 90 or 180 degrees
d) 30, 60, or 90 degrees



31. To avoid having to dimension to a hidden feature the drafter can utilize a _____ section.
- a) whole
b) broken out
c) half
d) all of the above
32. When filling an area with a hatch pattern in AutoCAD the drafter needs to be able to
- a) **see the entire bounding area to hatch**
b) set Ortho on
c) turn ISO grid off
d) set the layer to Defpoints
33. Objects that are symmetric can be shown effectively using this type of section:
- a) Quarter section
b) Full section
c) **Half section**
d) Symmetric section
34. This type of section is not in direct projection from the view containing the cutting plane
- a) Revolved section
b) Broken-out section
c) **Removed section**
d) Full section
35. By using a _____ section of a cylindrical mechanical part the drafter should be able to show only one view of the part.
- a) half
b) **revolved**
c) whole
d) broken out
36. In the section view, the areas that would have been in actual contact with the cutting plane are shown with:
- a) A cutting plane line
b) Visible lines
c) **Section lining**
d) Lines and arrows
37. These breaks are used to shorten the view of an object:
- a) Section breaks
b) **Conventional breaks**
c) Aligned breaks
d) Full breaks
38. To understand some of the hidden geometry of components an imaginary plane is used to cut the object which is called _____
- a) auxiliary plane
b) **section plane**
c) picture plane
d) additional plane
39. Which of the following is not the purpose of using cutting (section) plane?
- a) Interpretation of object
b) **Cutting the objects**
c) Visualizing of object
d) Invisible features
40. What is the role of recirculating balls in the integral power steering?
- a) Affect steering stability
b) Prevent control in event of hydraulic failure
c) **Combine high mechanical efficiency with smooth operation**
d) Provide hard steering



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41. To find the true shape of the section, it must be projected on a plane parallel to the _____
- a) Profile plane
 - b) **Section plane**
 - c) Vertical plane
 - d) Auxiliary plane
42. A section plane is parallel to V.P the top view gives _____ which is _____ to xy line.
- a) true shape, parallel
 - b) **straight line, parallel**
 - c) true shape, perpendicular
 - d) straight line, perpendicular
43. Angle of section lines with HP & VP is
- a) 30°
 - b) 60°
 - c) 90°
 - d) **None of these**
44. The section plane is perpendicular to H.P and inclined to V.P the top view of section if section is a line. It _____ xy line.
- a) is perpendicular to
 - b) is parallel to
 - c) **is inclined to V.P**
 - d) crosses
45. A section is perpendicular to both the reference planes the true shape and size is obtained by taking projection of section on to _____ plane.
- a) horizontal
 - b) vertical
 - c) **profile**
 - d) auxiliary
46. A section is parallel to vertical plane the true shape and size is obtained by taking projection of section on to _____ plane.
- a) horizontal
 - b) **vertical**
 - c) profile
 - d) auxiliary
47. Section of solids is to know the
- a) Visible edges
 - b) **Invisible edges**
 - c) Outer boundary lines
 - d) None of these
48. Solid portion cut is represented by lines
- a) Parallel to HP
 - b) **Parallel & perpendicular to HP**
 - c) Perpendicular to HP
 - d) **None of these**

6. Free hand sketches/Conventional Representation

Position in Question Paper

Total Marks-8

Q.1. a) 2-Marks.

Q.1. b) 2-Marks.

Q.1. c) 2-Marks.

Q.1. d) 2-Marks.

Descriptive Question

1. Draw free hand sketches of rivet heads
2. Draw conventional representation of rivet joints (i) single riveted butt joint (ii) double riveted butt joint (iii) double riveted butt joint with zigzag (iv) single riveted lap joint (v) double riveted lap joint (vi) double riveted lap joint with zigzag
3. Draw free hand sketches and conventional representation of welding joints and foundation bolt (i) fillet weld (ii) spot weld (iii) double j butt weld (iv) seam weld (v) eye foundation bolt (vi) lewis foundation bolt
4. Draw free hand sketches of pulley and coupling (i) muff coupling (ii) protected flange coupling (iii) flexible flange coupling (iv) universal joint coupling (v) pulley (vi) v belt
5. Draw conventional representation of common engineering material (i) steel/cast iron (ii) concrete (iii) glass (iv) packaging material (v) water/liquids (vi) wood

MCQ Question

(Total number of Question=Marks*3=8*3=24)

Note: Correct answer is marked with **bold**

- Which of the following is false regarding sketching?
 - Initial ideas are represented in sketch form
 - Sketching are made in correct proportions
 - Sketching is done with the use of instruments**
 - Sketching need not have a scale
- To sketch an object, which of the following should be done thoroughly?
 - Need to collect scales and higher grade instruments
 - Scaling should be decided perfectly
 - All the features of the object should be observed clearly**
 - Need to know what instruments are needed
- Which of the following is wrong to do in sketching?
 - Using no proper scale
 - Using no proper instruments
 - Sketching it as small as possible**
 - Sketching with proper proportions
- Which of the following increases proficiency in sketching?
 - Using proper instruments
 - Using a better scale
 - Using appropriate dimensions
 - Having constant practice**
- Which of the following pencil grade is suitable for sketching?
 - 10H
 - 6H
 - H**
 - 9H
- Trammel method is used in sketching free-hand to draw _____
 - Horizontal lines
 - Vertical lines
 - Oblique lines
 - Large-radii arcs**
- What should be the minimum distance between the hand and the pencil tip while drawing a horizontal line?
 - 5 mm
 - 40 mm**
 - 100 mm
 - 80 mm
- Which of the following is not used in free-hand sketching?
 - Cross-sectioned graph paper
 - Soft rubber-eraser
 - Soft-grade pencil
 - Hard-grade pencil**



9. The following is not included in title block of drawing sheet.?
- a) Sheet No
 - b) Scale
 - c) Method of projection
 - d) **Size of chart**
10. Which of the following represent reducing scale?
- a) 1:1
 - b) **1:2**
 - c) 2:1
 - d) 10:1
11. Which of the following represent enlarge scale?
- a) 1:1
 - b) 1:2
 - c) **2:1**
 - d) 1:10
12. In first angle projection method, object is assumed to be placed in
- a) First quadrant
 - b) Second quadrant
 - c) Third quadrant
 - d) Fourth quadrant
14. A line PQ lie in both the vertical plane and profile plane the front and side views of that line coincides at vertical reference line.
- a) **True**
 - b) False
 - c) Incomplete statement
 - d) Can't say anything's
15. If a line RS lie on both vertical and horizontal plane then which of the following two views coincides to give a line again?
- a) **Front , Top**
 - b) Top, Side
 - c) Side, Isometric
 - d) Isometric, Front
16. Which If a line LM lies on profile plane and horizontal plane then which of the following two views coincides to give a line again?
- a) Front , Top
 - b) **Top, Side**
 - c) Side, Isometric
 - d) Isometric, Front
17. If a line AB lies on horizontal plane and vertical plane then which of the following view gives a point?
- a) Front view
 - b) Top view
 - c) **Side view**
 - d) Isometric View
18. In _____ the parallel projection rays are not perpendicular to the viewing plane as with orthographic projection, but strike the projection plane at an angle other than ninety degrees.
- a) isometric projections
 - b) orthographic projections
 - c) axonometric projection
 - d) **oblique projections**
19. The lines used to create the auxiliary view should appear as _____ in the finished view.
- a) **Object lines**
 - b) Construction lines
 - c) Reference lines
 - d) Construction lines
20. The offset distance for the width (front to back) distance of the auxiliary view is the same distance of the _____ in the top view.



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- | | |
|-----------------|------------------|
| a) Width | b) height |
| c) length | d) None of these |
21. The principle reason for using an auxiliary view is _____.
- | | |
|----------------------------------|--|
| a) to eliminate hidden lines | b) to create a true projection plane from an inclined plane in one of the primary views |
| c) to show cylinders as ellipses | |
| d) to locate center marks | |
22. Circular shapes appear in this fashion when viewed at an angle other than 90 degrees:
- | | |
|---------------|----------------------|
| a) Circular | b) Elliptical |
| c) Lengthened | d) Angular |
23. When adding dimensions to an auxiliary view it will be necessary to use the _____ tool.
- | | |
|-----------------------|-----------------------------|
| a) Linear dimension | b) Aligned dimension |
| c) Baseline dimension | d) Angle dimension |
24. An efficient method for trimming the corners on an auxiliary view is to use the _____.
- | | |
|---------------------------|-------------------|
| a) 0 radius fillet | b) Hatch tool |
| c) Extend tool | d) Grips function |