DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Bachelor of Technology (Mechanical Engineering) SEMESTER - 3 Winter 2025 (Regular)

Course :Bachelor of Technology (Mechanical Engineering) Branch : Engineering and Technology

Semester : SEMESTER - 3

Subject Code & Name: 25AF1612PC304 - MACHINE DRAWING AND CAD

Time : 3 Hours] **[Total Marks : 60**

Instructions to the Students:

1.Each question carries 12 marks.

2.Question No. 1 will be compulsory and include objective-type questions.

3.Candidates are required to attempt any four questions from Question No. 2 to Question No.6

4.Use of non-programmable scientific calculators is allowed.

5.Assume suitable data wherever necessary and mention it clearly.

Q1. Objective type questions. (Compulsory Question) 12

1 Which sectional view is used when only a small portion of an object needs to be sectioned to show internal features?

A) Full Section
B) Half Section
C) Partial Section
D) Auxiliary Section

2 A shaft has multiple grooves and a keyway along its length. Which section view would best represent the cross-section of these features directly on the main view?

A) Removed Section
B) Offset Section
C) Auxiliary Section
D) Revolved Section

3 Which of the following machine elements is used to connect two shafts for torque transmission?

A) Coupling
B) Gear
C) Bearing
D) Rivet

4 Which of the following is the primary purpose of a screwed fastener?

A) To transfer power between machine elements
B) To connect two machine parts permanently
C) To hold two parts together temporarily or permanently
D) To provide lubrication between moving parts

5 What is the primary function of a shaft coupling in mechanical systems?

A) To connect two shafts and allow for relative motion or misalignment
B) To increase the torque of the system
C) To provide a bearing surface for rotation
D) To absorb vibrations between connected parts

6 Which of the following is typically not included in a detailed production drawing?
A) Surface finish requirements
B) Tolerances on dimensions
C) Material specifications
D) Manufacturing process costing

7 In engineering drawings, the symbol Ra is used to specify:
A) Geometric tolerance
B) Surface roughness value
C) Angular dimension
D) Type of fit between two mating parts

8 In AutoCAD, which command is used to create linear measurements on a drawing?
A) LINE
B) DIM
C) OFFSET
D) GRID

9 The VIEW commands in AutoCAD are primarily used to:
A) Draw circles and arcs
B) Modify object layers
C) Change the way the drawing is displayed on the screen
D) Add dimensions to a drawing

10 Which of the following gear types is used to transmit motion between shafts that are set at right angles to each other?
A) Spur gear
B) Helical gear
C) Worm gear
D) Bevel gear

11 Which of the following is the main advantage of riveted joints over welded joints in certain applications?
A) Riveted joints can handle higher temperatures
B) Riveted joints are easier to inspect and repair
C) Riveted joints are stronger than welded joints
D) Riveted joints require less maintenance than welded joints

12 What is the line formed at the junction of two interpenetrating solid objects called?
A) Tangent Line
B) Axis Line
C) Intersection Curve
D) Reference Line

Q2. Solve the following.

A) A pictorial view of an object is shown in Figure No. 1. Draw the following view: 6

i) Sectional front view, Section A-A

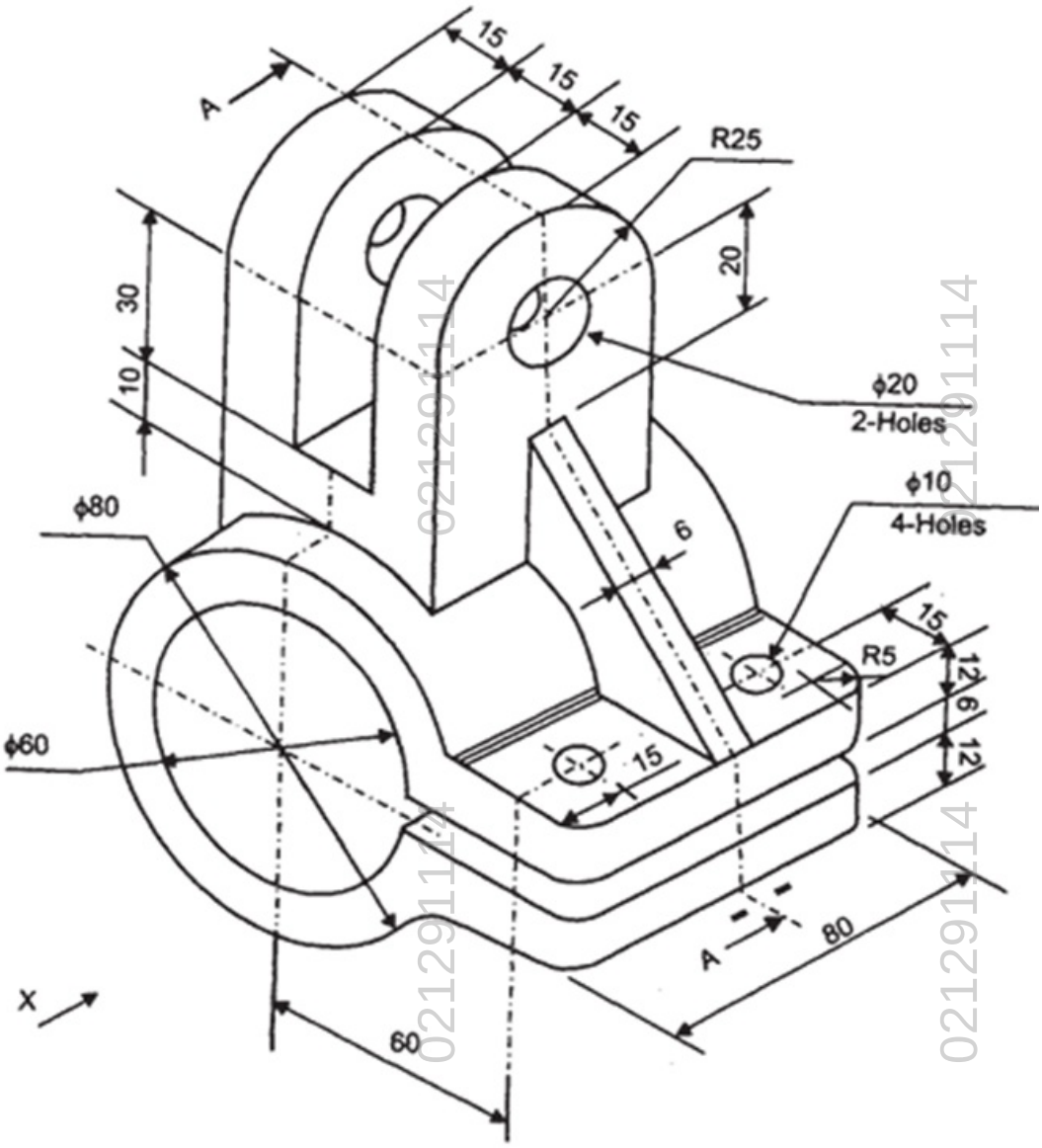


Fig. No 1

B) A Pictorial view of an object is shown in Fig. No 2 Draw the following view: 6
i) Sectional front view in X Direction along A-B

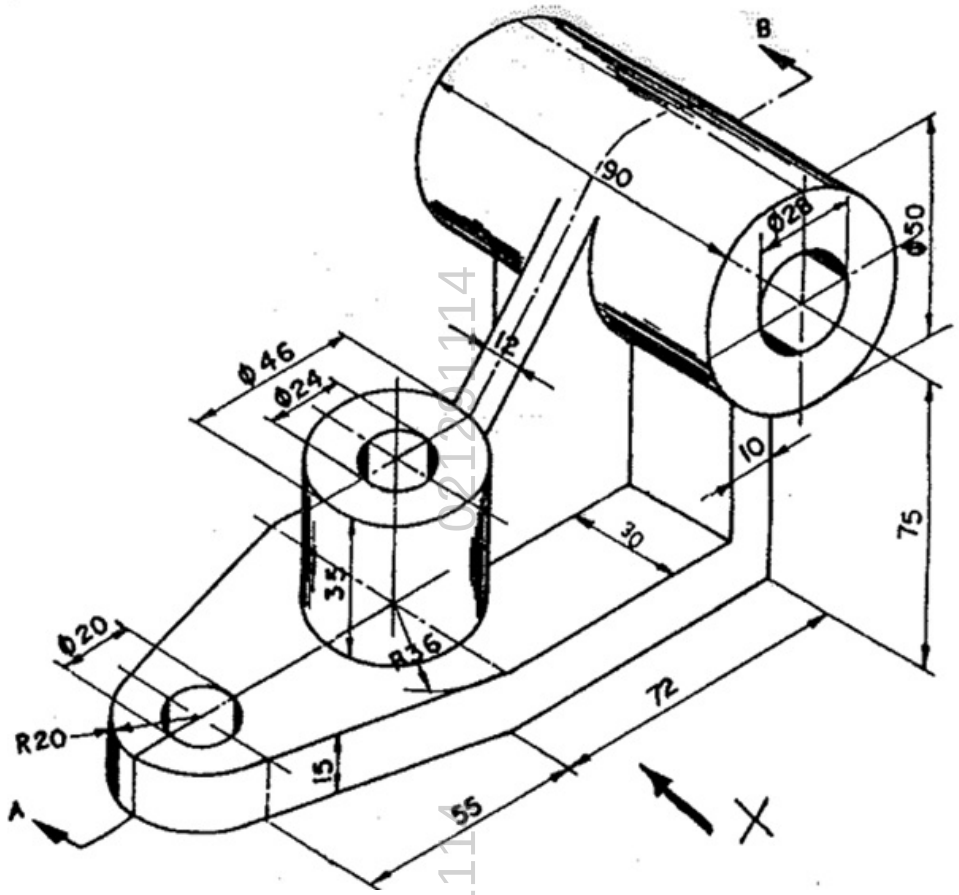


Fig. No. 2

Q3. Solve the following.

A) Draw the neat and proportionate sketches of the following 6
1. Single riveted lap joint
2. Hexagonal Nut

B) Draw the standard symbol of the following welded joints. 6
1. Fillet weld
2. Single-V Butt weld
3. Single-Bevel Butt weld
4. Spot weld
5. Seam Weld
6. Double-J Butt weld

Q4. Solve Any Two of the following.

A) A square prism 30 mm base sides and 70mm axis is completely penetrated by another square prism of 25 mm sides and 70 mm axis, horizontally. Both axes Intersects & bisect each other. All faces of prisms are equally inclined to VP. Draw projections showing curves of intersections. 6

B) A vertical cone, base diameter 75 mm and axis 100 mm long, is completely penetrated by a cylinder of 45 mm diameter. The axis of the cylinder is parallel to HP and VP and intersects axis of the cone at a point 28 mm above the base. Draw projections showing curves of intersection. 6

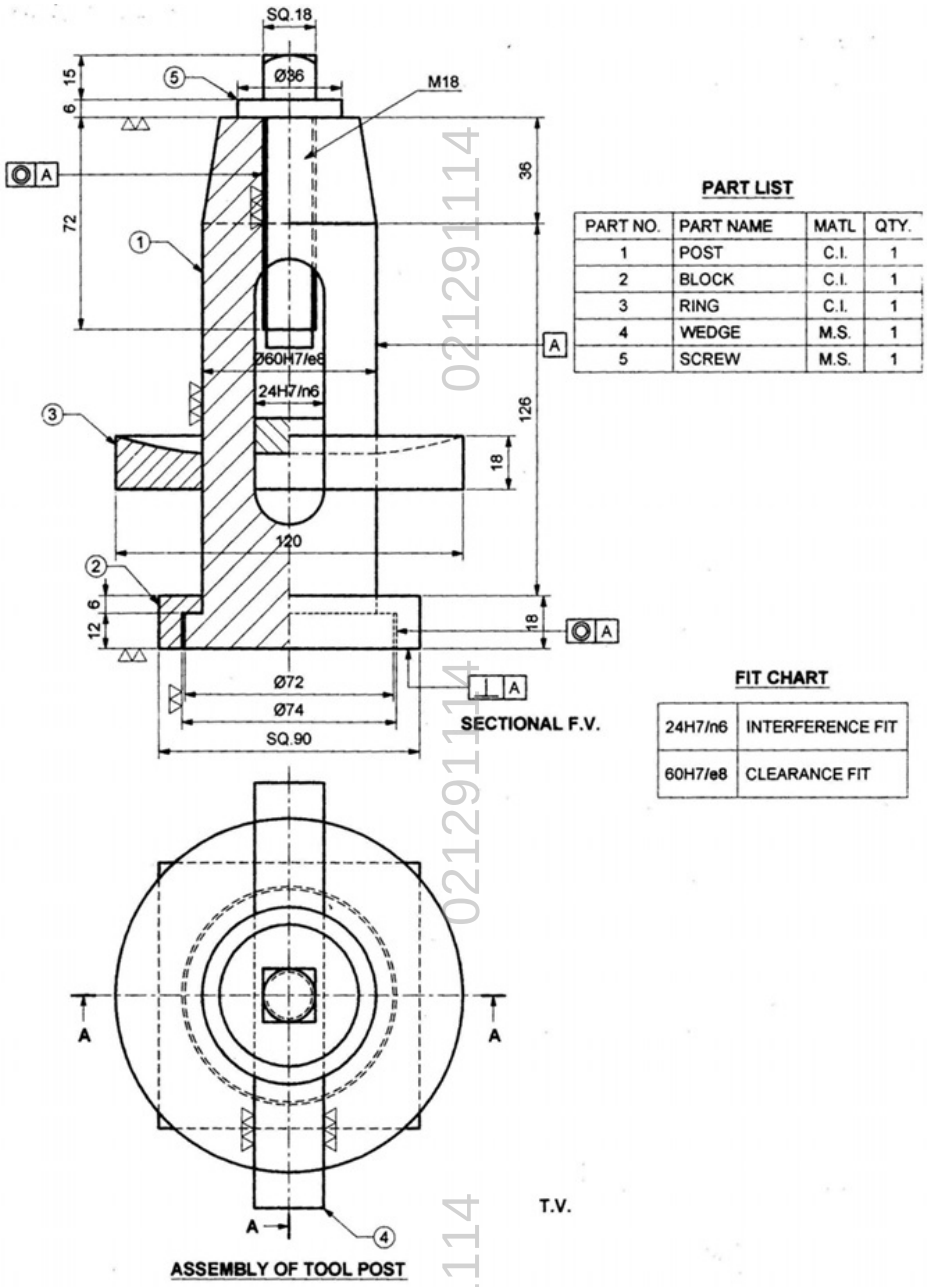
C) A vertical cylinder of 75 mm diameter is penetrated by another cylinder of 50 mm diameter, the axis of which is parallel to both HP and VP. The axes are 9 mm apart. Draw the projections showing curves of intersection. 6

Q5. Solve Any Two of the following.

A) Fig. No.3 shows the assembly of a Lathe Tool Post. Draw the following details providing dimensions and tolerances 6

i) Draw sectional Front View of Post

ii) Draw two views of Block



PART LIST

PART NO.	PART NAME	MATL	QTY.
1	POST	C.I.	1
2	BLOCK	C.I.	1
3	RING	C.I.	1
4	WEDGE	M.S.	1
5	SCREW	M.S.	1

FIT CHART

24H7/n6	INTERFERENCE FIT
60H7/e8	CLEARANCE FIT

Fig. No. 3

B) Figure No. 4 Shows the assembly of steam engine crosshead. Draw the half sectional orthographic view of the following parts. 6

i) CAP – Elevation view

ii) Brass – Elevation

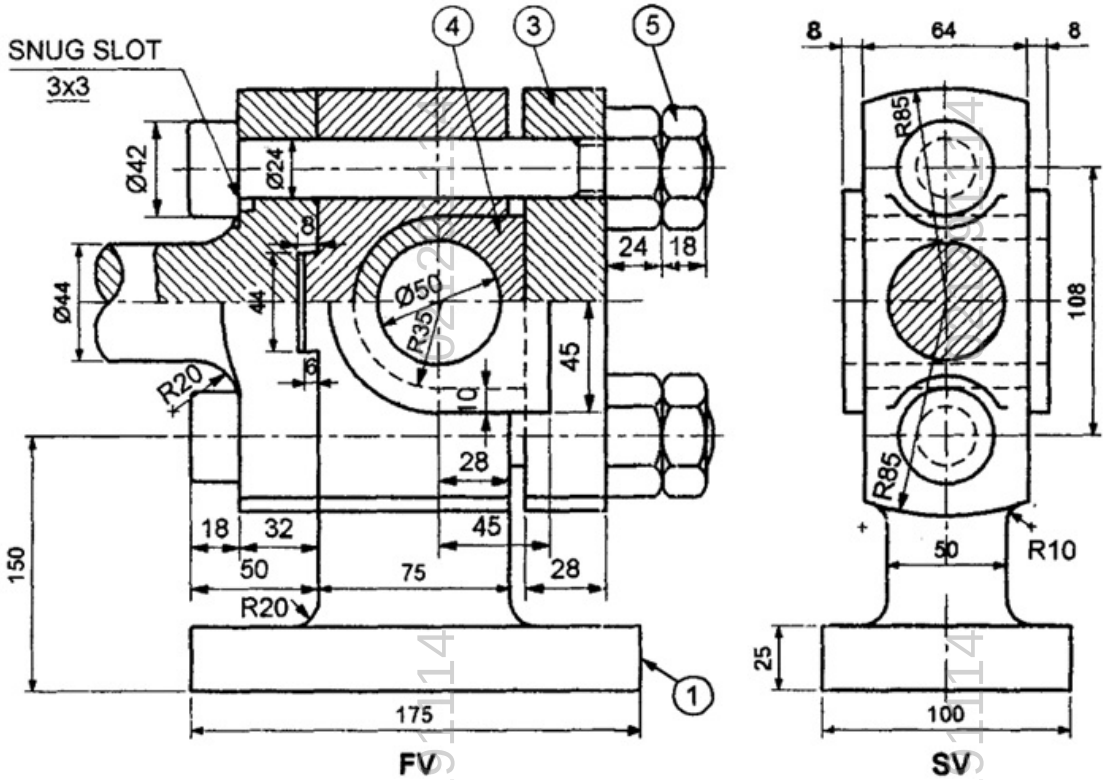
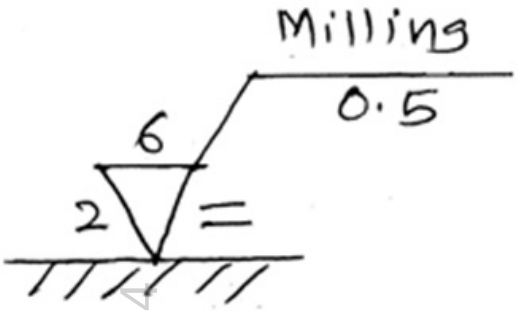


Fig. No. 4

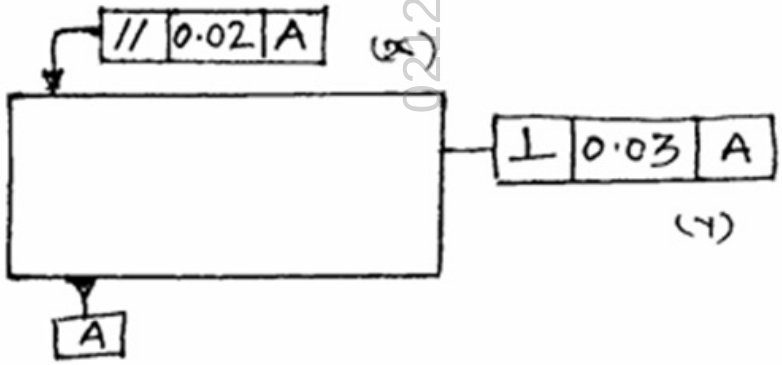
PART LIST

PART NO.	PART NAME	MATL.	QTY.
1	CROSS BODY	C.I.	1
2	PISTON ROD END	C.I.	1
3	CAP	C.I.	1
4	BRASS (TWO HALVES)	G.M.	1
5	ROUND HEAD NUT & BOLT	M.S.	2

C) i) State the Meaning of following Symbol. 6



ii) What is the meaning of the symbol x and y.



Q6. Solve Any Two of the following.

A) List benefits and limitations of Computer Aided Design and Drafting. 6

B) List and explain the various commands used for transformation of an object in AutoCAD software. 6

C) Explain the drawing commands LINE, CIRCLE,and RECTANGLE in AutoCAD with examples 6

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