The Shirpur Education Society's

R. C. Patel College of Engineering and Polytechnic, Shirpur

Department of Mechanical Engineering

NAME OF COURSE: - Production Drawing

CODE OF COURSE: - 313311

SEMESTER: - ME-3K (SYME)

Unit - 2 Conventional representation

14 Marks

SUBJECT TEACHER

Mr. Anil S. Patil

Production Drawing_PDR_(313311)

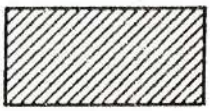
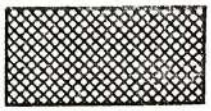
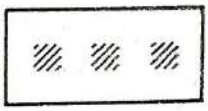
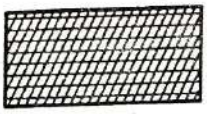
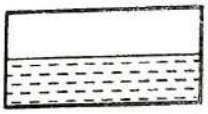
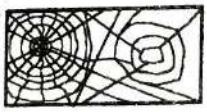
Unit 2 _ Conventional representation

Conventional representation is nothing but a standard method of drawing objects, materials, or parts using symbols instead of drawing every detail of any component/part as exactly as it is.

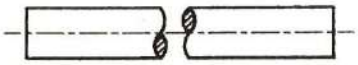
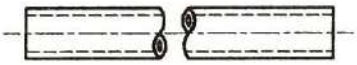
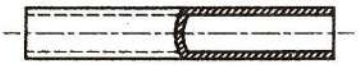
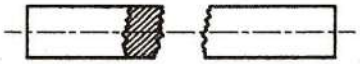
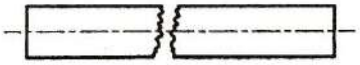
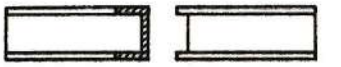
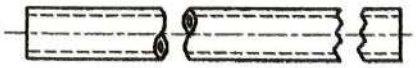
Conventional representation helps to:

- Save drawing time,
- Reduce complexity,
- Make drawings easy to read,
- Follow common engineering standards. **[As per Sp-46 (1988)- BIS Code]**

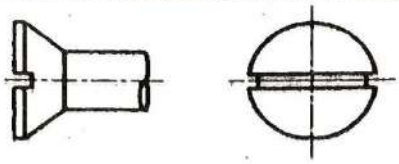
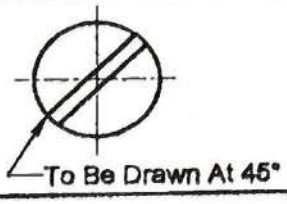
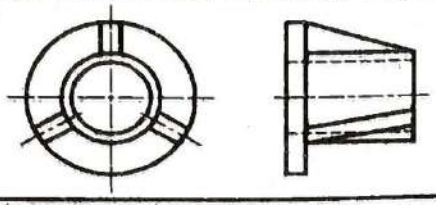
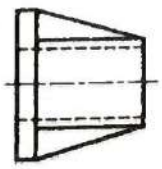
2.1 Engineering Material Conventions

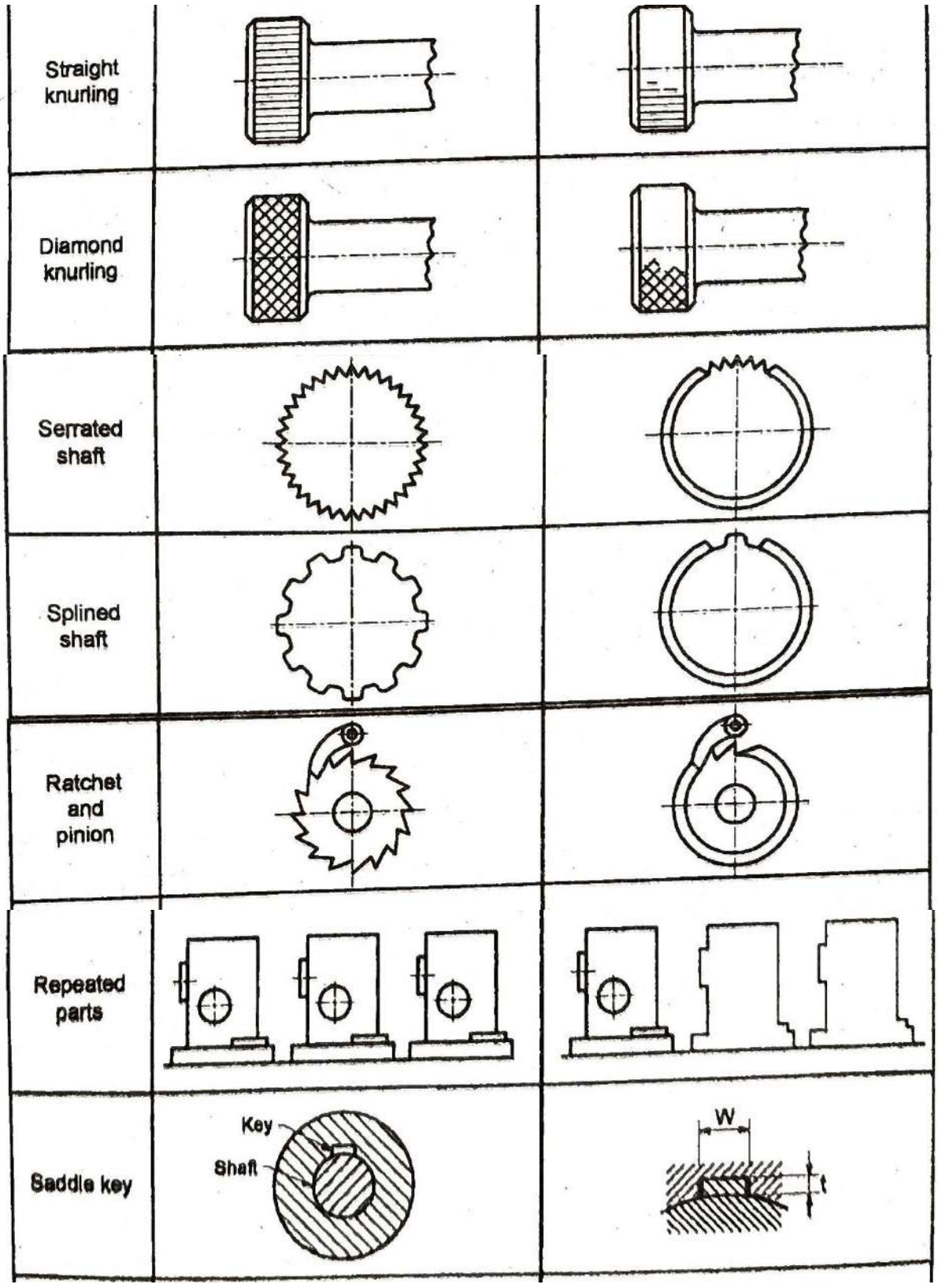
Title	Subject	Material
Metals		Steel, cast iron, copper and its alloys, alluminium and its alloys etc.
		Lead, zinc, tin, white metal etc.
Glass		Glass
Packing and insulating material		Porcelain, stone ware, marble, state etc.
		Asbestos fibre, felt, synthetic resin product, paper, cork, rubber, leather, wax, insulating and filling materials etc.
Liquid		Water, oil, petrol, kerosene etc.
Wood		Wood, plywood etc.
Concrete		Mixture of cement, sand and gravel

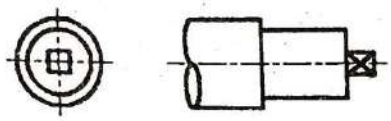
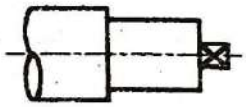
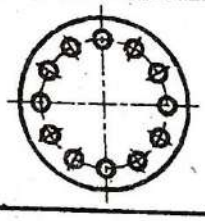
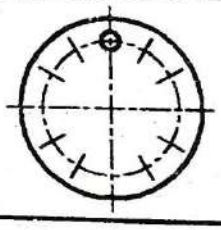
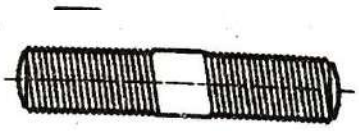
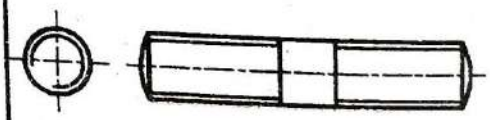
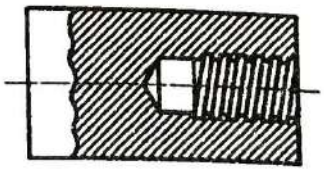
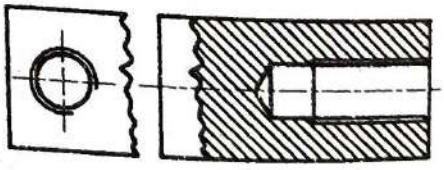
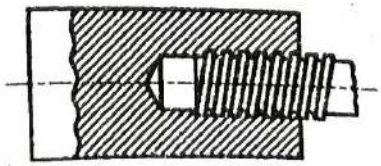
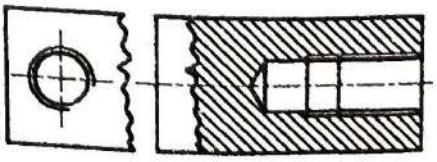
2.2 Conventional breaks in pipes, rod and shaft

Title	Illustration	Symbol
Round Section		
Pipe or Tubing		
Pipe or Tubing		
Rectangular Section		
Rectangular Section (Wood)		
I-Section or rolled section		
Chanel Section		
T Section		
Long brake in pipe		

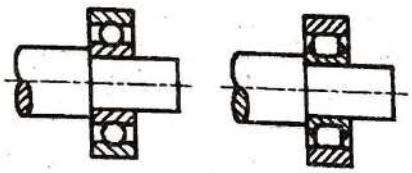
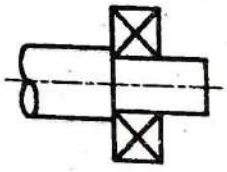
2.3 Conventional representation of common features like slotted head, radial rib, knurling, serrated shaft, splined shaft, ratchet and pinion, repeated parts, square on shaft, holes on circular pitch, internal and external threads

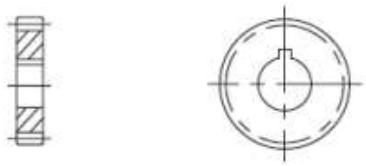
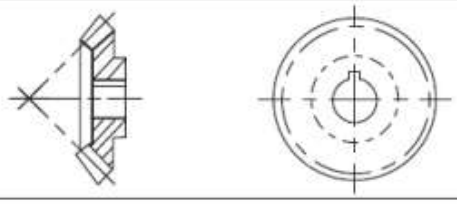
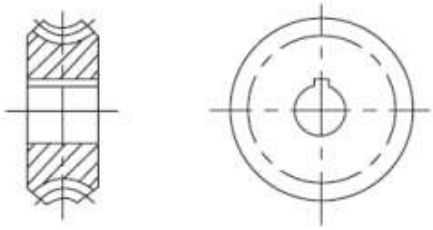
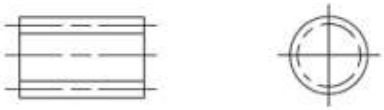
Title	Actual Projection / Section	Convention
Slottted head		
Radial ribs		

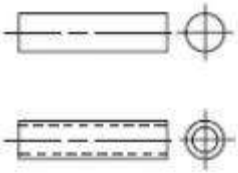
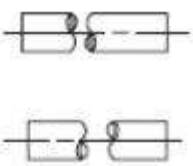

Straight knurling
Diamond knurling
Serrated shaft
Splined shaft
Ratchet and pinion
Repeated parts
Saddle key
Key
Shaft
W
t

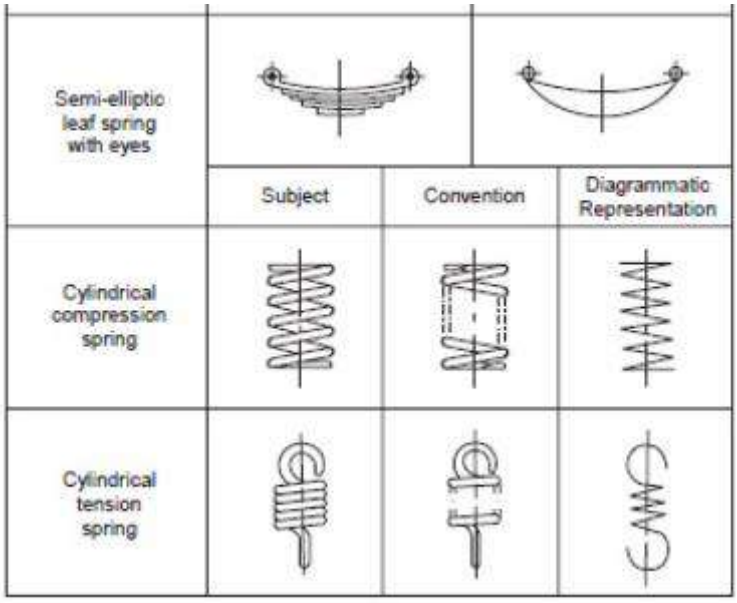
Title	Subject	Convention
Square on shaft		
Holes on circular pitch		
External screw thread		
Internal screw thread		
Screw thread assembly		

2.4 Conventional representation of standard parts like ball and roller bearing, gears, springs

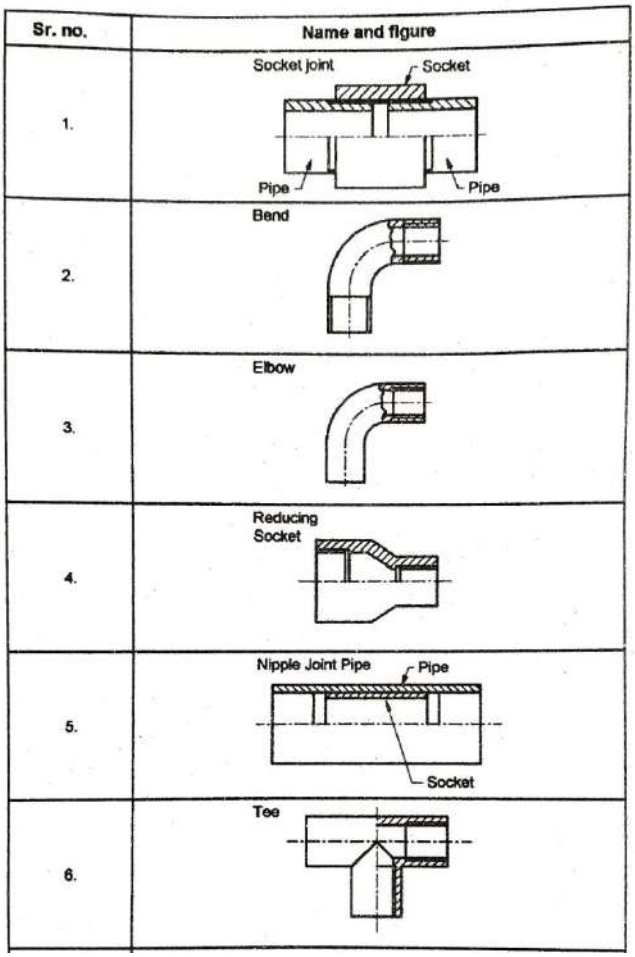
Title	Subject	Convention
Bearing		

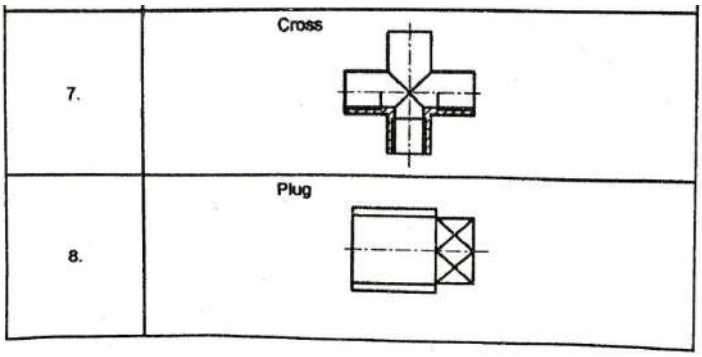
Title	Convention
Spur gear	
Bevel gear	
Worm wheel	
Worm	

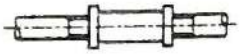
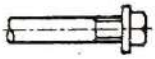
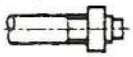
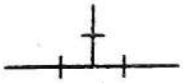
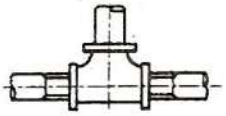
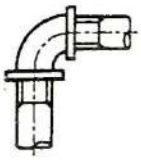
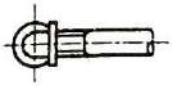
Title	Subject	Convention
Splined shafts		
Interrupted views		
Semi-elliptic leaf spring		

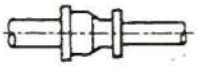
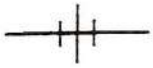
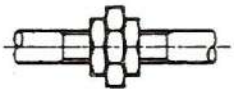
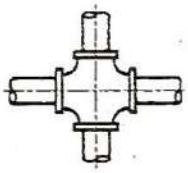
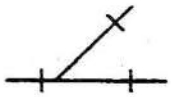
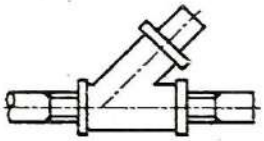
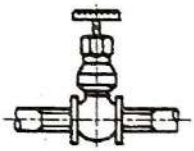
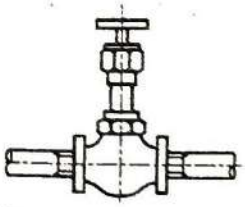
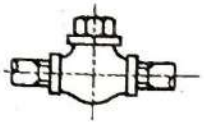


2.5 Pipe joints and valves

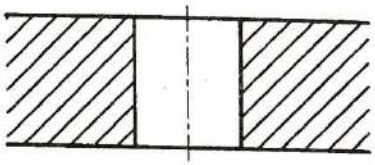
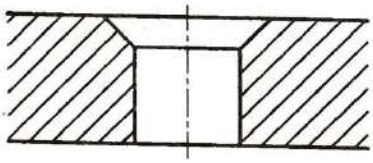
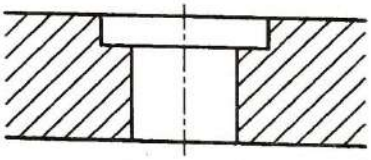
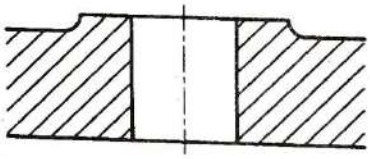
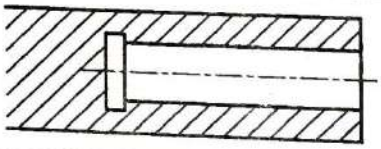
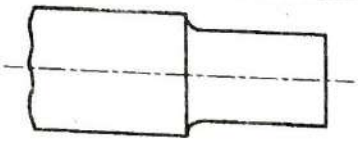
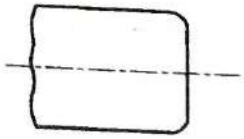
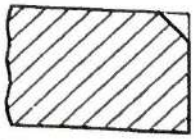
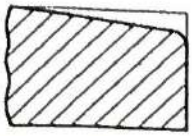




Component	Single line symbol	Double line
Coupling		
Cap		
Plug		
Tee		
90° Elbow		
90° Elbow turned down		
45° Elbow		

Component	Single line symbol	Double Line
Reducer or reducing coupling		
Union		
Cross		
Globe valve		
Lateral		
Gate valve		
Check valve		

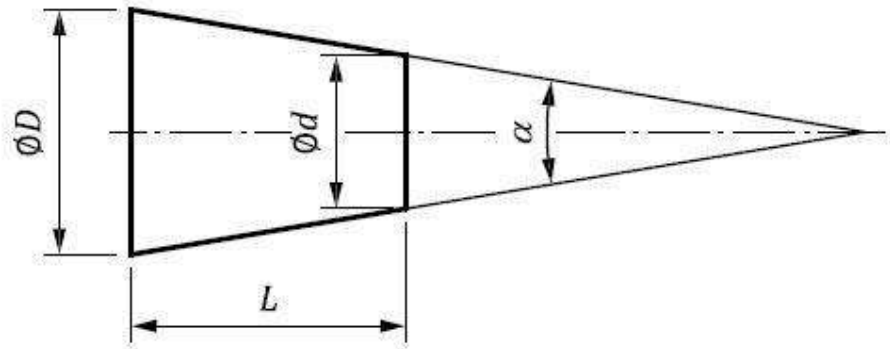
2.6 Counter sunk and counter bored holes

Sr. No.	Machine operation	Convention
1.	Bored component	
2.	Counter sunk	
3.	Counter bore	
4.	Faced	
5.	Bored and Recessed	
6.	Fillet of female radius	
7.	Male radius	
8.	Chamfered	
9.	Bevelled	

2.7 Tapers

The rate of taper is the ratio of the difference in the diameters of two sections of a cone to the distance between them. As shown in fig below

$$C = \frac{D-d}{L} = 2\tan\left(\frac{\alpha}{2}\right)$$



QUESTION BANK

Program Name: Mechanical Engineering Program Group	Program Code: ME
Course Title : Production Drawing (313311)	Semester: Third

Unit 2: Conventional representation

1. Draw the conventional representation of following :– (10M) CO1-2.1,2.2,2.3-A **W-25**
   i) Cast Iron, Glass,
   ii) Bearing
   iii) Pipe with rectangular section
   iv) Helical spring with circular cross section
   v) Bevel gear
   vi) Check valve
   vii) Draw symbol of – 1) Parallism 2) Runout.
2. Sketch to represent taper 1:10 on a shaft diameter 40 mm and length 110 mm.(4M) CO1-2.7-A **W-25, W-25**
3. Draw the conventional representation of the following: i) Long Break in pipe ii) I-section pipe. (2M) CO1-2.2-A **S-25**
4. Draw the conventional representations of following: i) Bearings ii) Holes on circular pitch. (2M) CO1-2.2-A **S-25**
5. Draw the conventional representations of following machine components: i) Bevel Gear ii) Spur Gear (2M) CO1-2.4-A **S-25**
6. Define "Taper". Draw its standard convention. (2M) CO1-2.7-A **S-25**
7. Draw the actual view and conventional representation of: i) Internal Screw thread ii) Semi-elliptic leaf spring. (2M) CO1-2.3,2.4-A **S-25**
8. Draw conventional representation of any four of the following: i) Glass ii) Pipe or tubing iii) Cast iron iv) Splined shaft v) Globe valve vi) Counter sunk (4M) CO1-2.1,2.6-A **S-25**
9. Draw a sketch to represent taper 1:20 on a shaft of φ40mm and length 120mm.(4M) CO1-2.7-A **S-25**
10. Draw the conventional representation of the following : (i) Diamond Knurling (ii) Splined Shaft (2M) CO1-2.3-A **W-24**
11. Draw the conventional representation of the following : (i) Short break in pipe (ii) Gate valve (2M) CO1-2.3,2.5-A **W-24**
12. Draw the material convention of the following : (i) Copper (ii) Rubber (iii) Glass (iv) Marble (4M) CO1-2.1-A **W-24**
13. Draw the conventional representation of the following : (i) Holes on circular pitch (ii) Bearings (4M) CO1-2.3,2.4-A **W-24**
14. Draw the conventional representation of the following : (i) Spur gear (ii) Worm and worm wheel (4M) CO1-2.4-A **W-24**

29/5/2026
Mr A S Patil

29/05/2026
Mr. B S Gate