Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80249

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Mechanical Engineering (Sandwich)

MS 8301 – MACHINE DRAWING

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define pitch diameter in screws.
2. Sketch the conventional representation for the following elements.
   (a) Helical tension spring
   (b) Screw thread assembly
3. Define Bill of Materials.
4. Name any four mechanical fasteners.
5. Differentiate between hole basis system and shaft basis system.
6. Define zero line.
7. Differentiate between protected and un-protected type flange coupling.
8. Where do you prefer keyed joints? Mention any two type of keys.
9. What type of material should be used for the following gear box components?
   (a) Gear box case
   (b) Spring washer standard
   (c) Bearing bush
   (d) Hex Nut
10. What is the use of a screw jack?

PART B — (5 × 13 = 65 marks)

11. (a) Why are special type of bolts used? Explain any six special bolts with conventional representation and its types.

Or

(b) Explain and draw the representation of any six screw threads in detail.

12. (a) Define the cause for bolted joint failure. Explain the following methods used to tighten the bolts in detail. (i) Torque control tightening. (ii) Angle control tightening. (iii) Yield control tightening. (iv) Bolt stretch method. (v) Use of tension indicating methods

Or

(b) Explain in detail, the standard requirements to make a Mechanical assembly.

13. (a) Define fits and classify its types with complete illustrations. Also explain system of fits and its types with a neat sketch.

Or

(b) Draw the symbols and its Indications on the drawing of any six Geometrical Tolerancing

14. (a) Details of a footstep journal bearing is shown in Fig. 1. Draw the front view in half section of the bearing showing all parts assembled. Show only important dimensions on the assembly drawing. Add the item list.

Or

(b) Details of a sleeve and cotter joint is shown in Fig. 2. Draw the following views of the joint showing all parts assembled. (i) Sectional front view (ii) Left side view. Show only important dimensions on the assembly drawing. Add the item list

15. (a) Details of a screw jack is shown in Fig. 3 Assemble the parts of Jack and draw the front view showing right half in section Show only important dimensions on the assembly drawing. Add the item list.

Or

(b) Details of a Plummer block is shown in Fig. 4. Assemble the block and show the front view showing right half in section. Show only important dimensions on the assembly drawing. Add the item list.

PART C — (1 × 15 = 15 marks)

16. (a) The details of a Footstep Ball Bearing are shown in Fig. 5. Assemble the bearing and draw the front sectional view. Show only important dimensions on the assembly drawing.

Or

(b) The details of a Drill Jig are shown in Fig.6. Assemble the jig and draw the front sectional view and right-side view. Show only important dimensions on the assembly drawing.

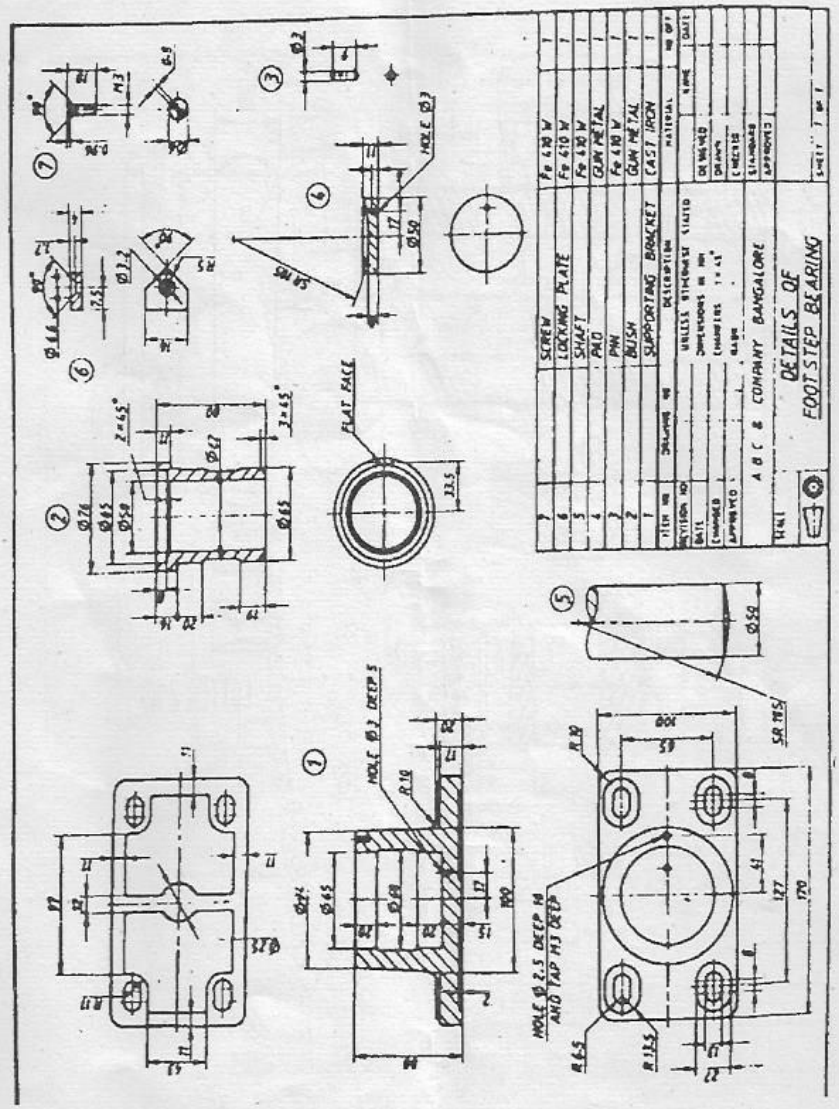

Fig.1

Foot Step Bearing

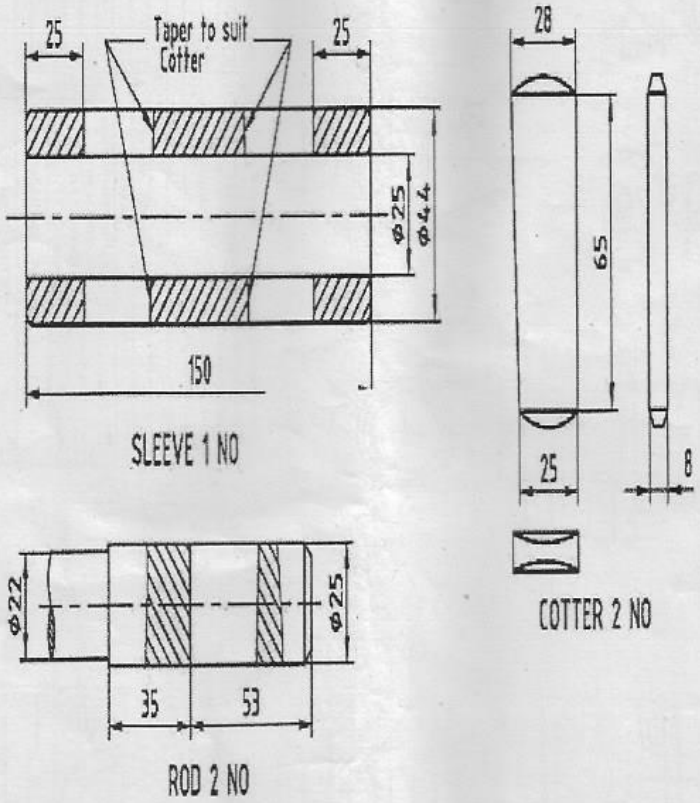

Fig.2

Sleeve and Cotter Joint

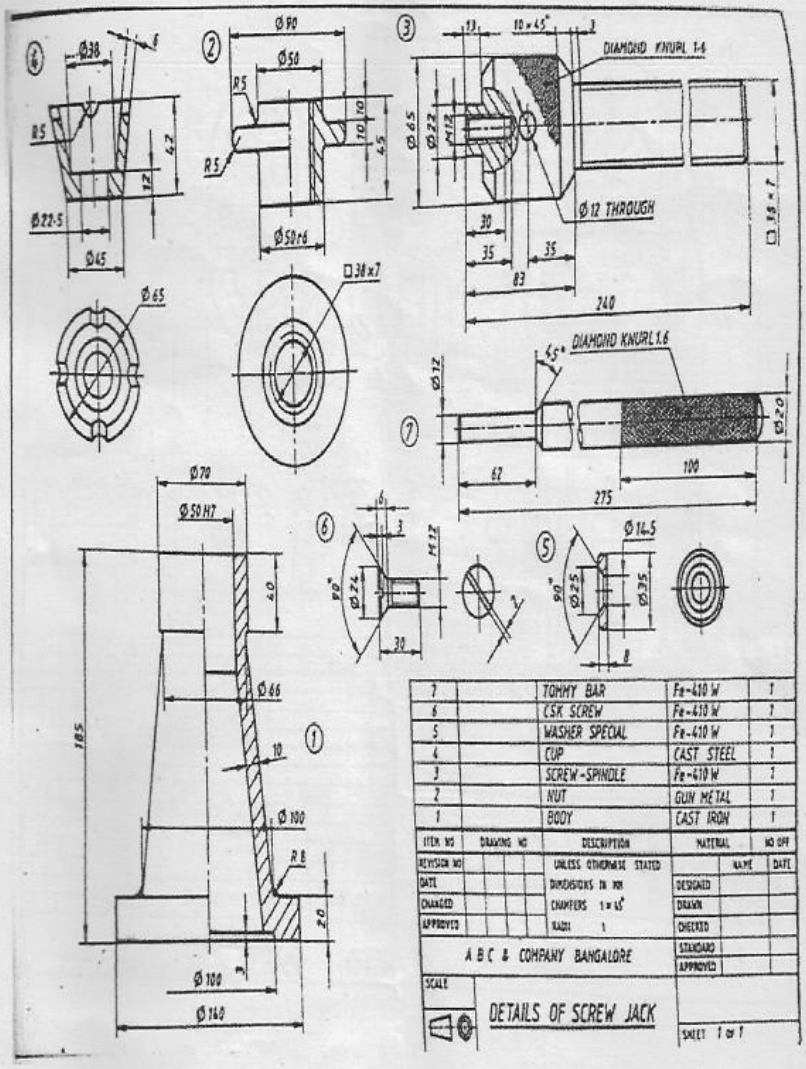

Fig.3

Screw Jack

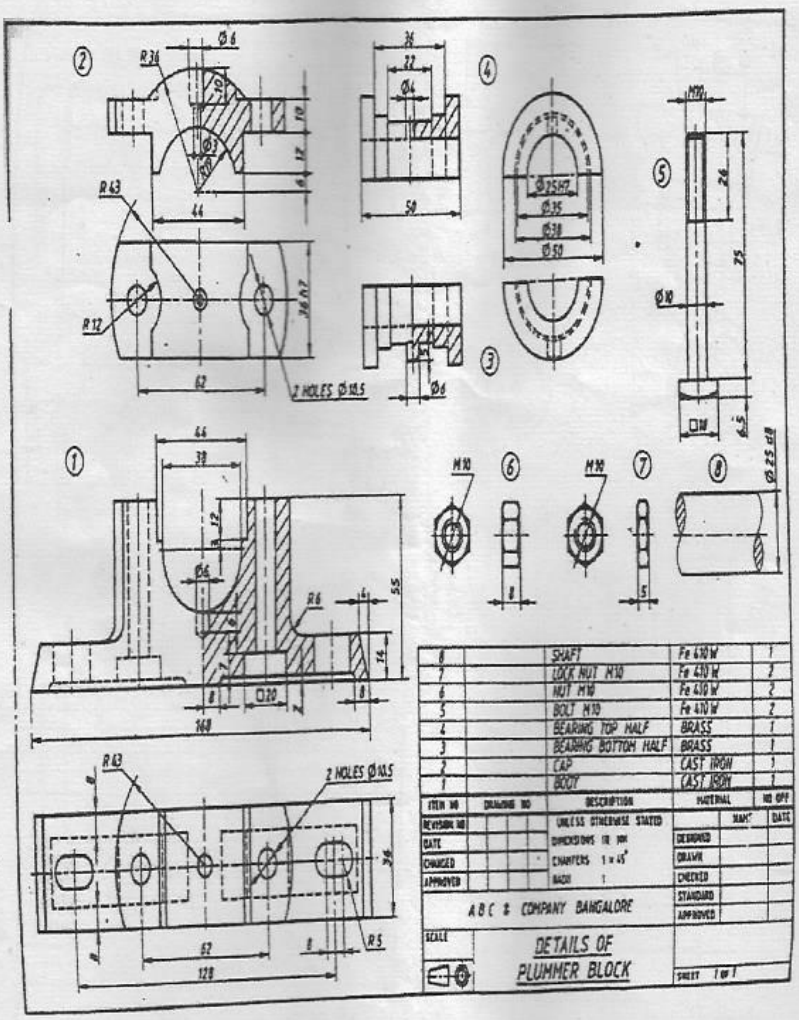

Fig.4

Plummer Block

Part No	Description	Material	No. of parts
1	Body	Cast Iron	1
2	Thrust ball bearing	Commercial	1
3	Thrust pad	Fe 110W	1
4	Radial ball bearing	commercial	1
4	Shaft	Fe 410 W	1
5	Cap	Cast Iron	1
6	Hex Screws M8	Fe 410 W	6

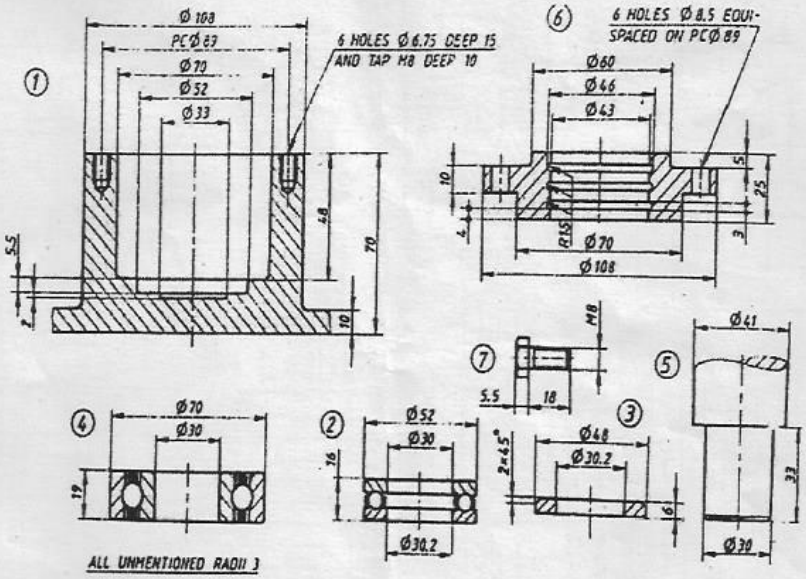

Fig.5

Footstep Ball Bearing

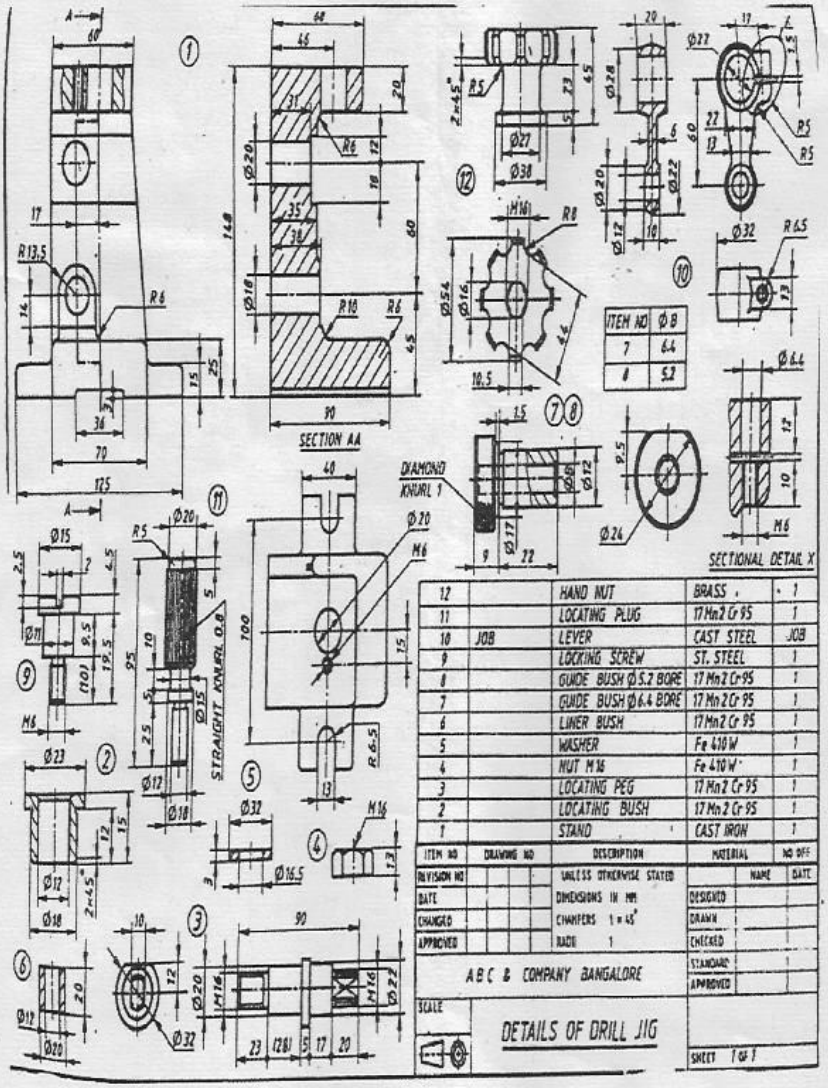

Fig.6

Drill Jig