**F 3084**                    (Pages : 3)                    Reg. No..............................

                                                             Name...................................

# B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

## Third Semester

Branch : Mechanical Engineering and Automobile Engineering

### MACHINE DRAWING—I (M, U)

(Old Scheme—Prior to 2010 Admissions—Supplementary/Mercy Chance)

Time : Three Hours                                      Maximum : 100 Marks

*Missing dimensions, if any, may be assumed.*
*Drawing sheets will be supplied.*

*Answer all questions.*

1. Answer any *two* of the following :—

   (a)  Two vertical plates each 25 mm thick are bolted by means of a square bolt M12 × 70 N.

   Draw a sectional elevation of the assembly and indicate all dimensions.

   (b)  Make a neat sectional view of (i) both internal and external I.S. recommended square thread ; and (ii) Acme thread, taking a pitch of 30 mm. Indicate all proportions in the drawing and show at least three threads.

   (c)  Draw a double riveted lap joint to connect two plates 10 mm thick. Use flat head rivet.

                                                             (2 × 7½ = 15 marks)

2. An isometric view of a flexible coupling (pin type) is shown in Fig. 1 (on page 2). Draw the top half-sectional elevation and end view of the coupling.

                                                             (25 marks)
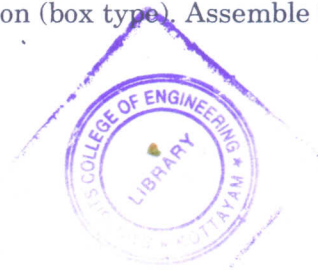
3. Fig. 2 shows (on page 3) details of steam engine piston (box type). Assemble the parts and draw
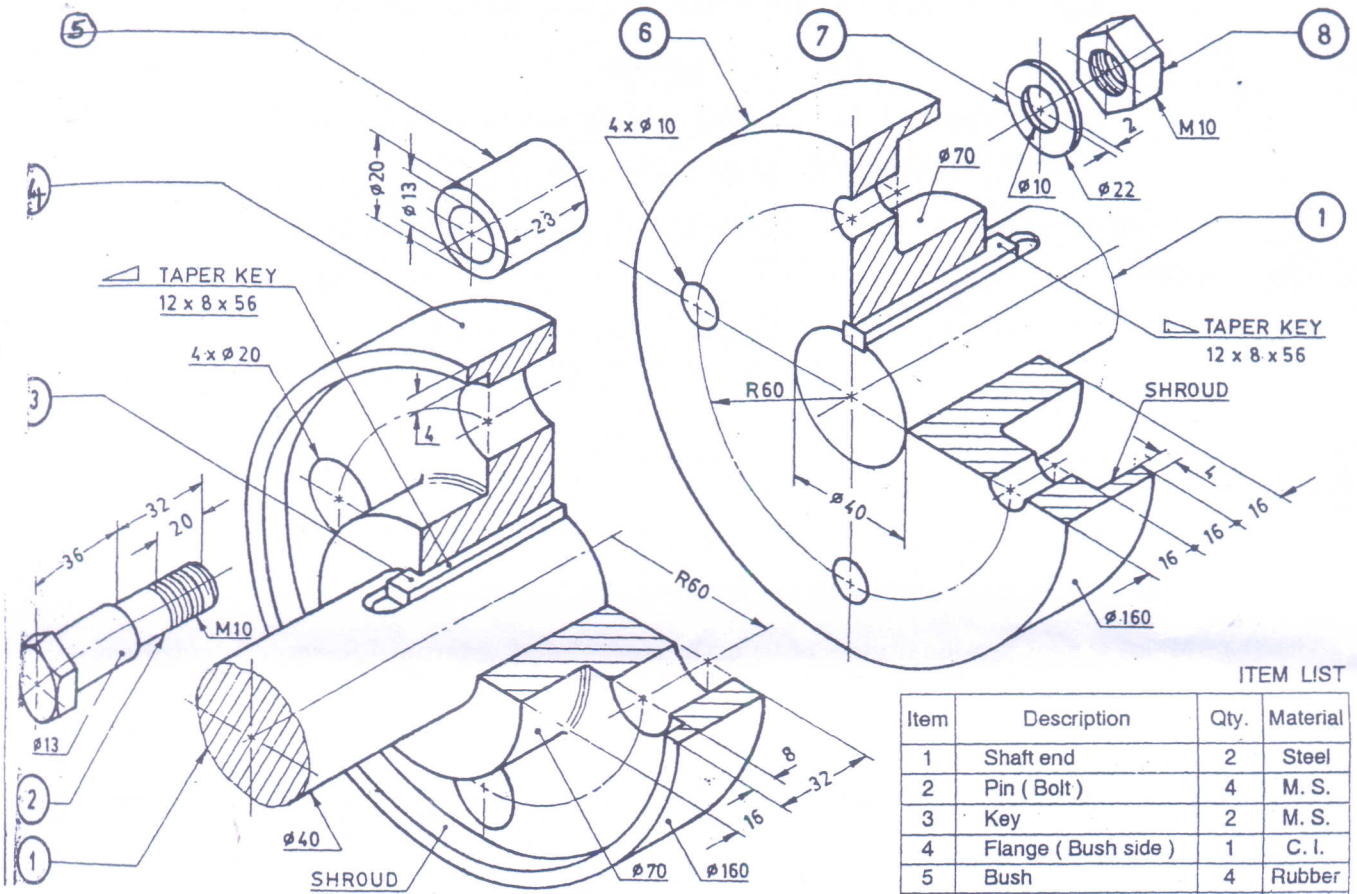
   (a)  Top half-sectional elevation.                      (40 marks)

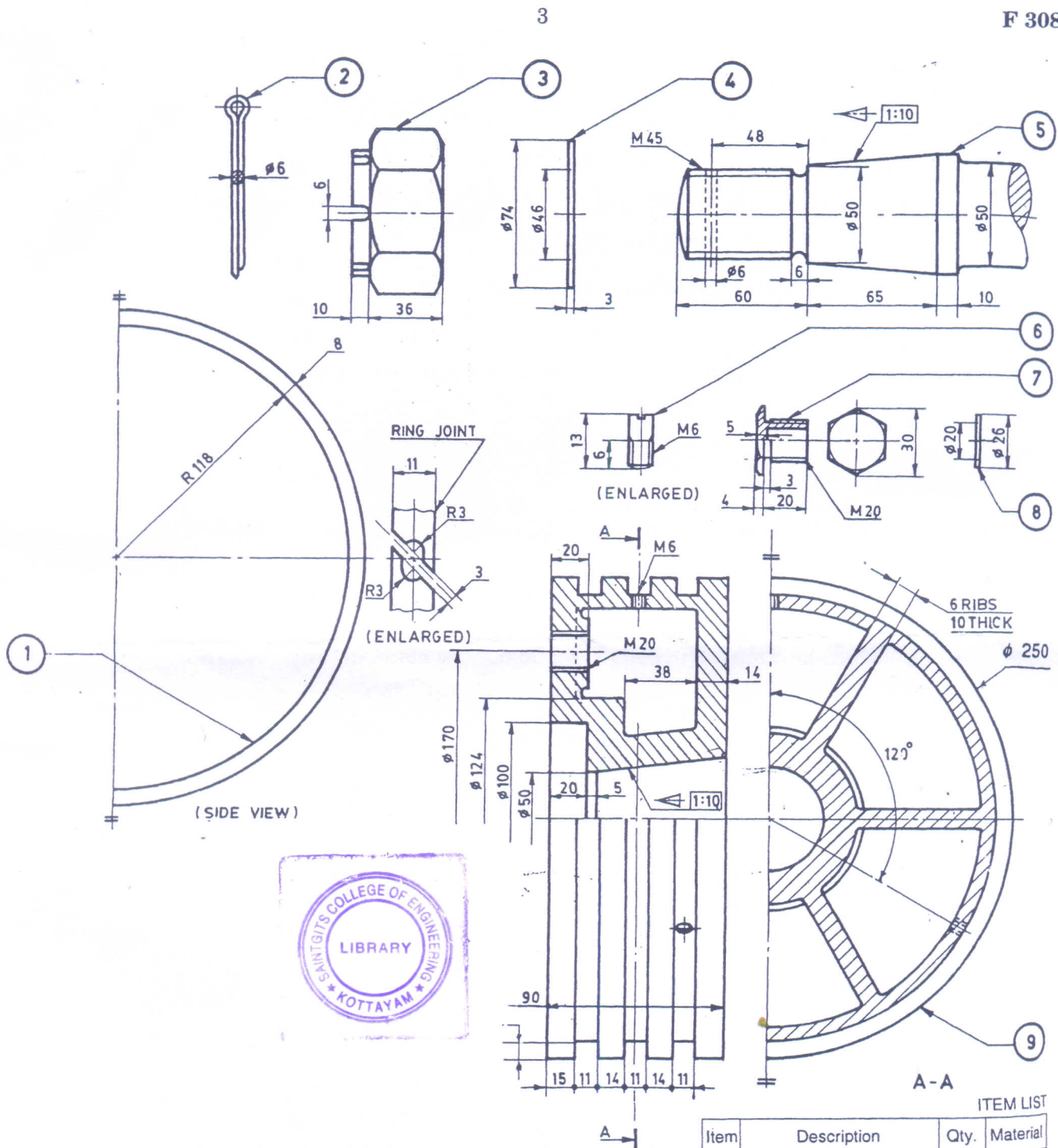   (b)  End view.                                          (20 marks)

⑤

④

TAPER KEY
12 x 8 x 56

4 x ⌀ 20

③

32
20
36

M 10

⌀ 13

②

①

⌀ 20
⌀ 13
23

4

⌀ 40

SHROUD

⌀ 70    ⌀ 160

8
16    32

R 60

⑥    ⑦    ⑧

4 x ⌀ 10

⌀ 70

⌀ 10
⌀ 22
M 10

①

TAPER KEY
12 x 8 x 56

SHROUD

R 60

⌀ 40

4
16    16    16

⌀ 160

**ITEM LIST**

| Item | Description | Qty. | Material |
|---|---|---|---|
| 1 | Shaft end | 2 | Steel |
| 2 | Pin ( Bolt ) | 4 | M. S. |
| 3 | Key | 2 | M. S. |
| 4 | Flange ( Bush side ) | 1 | C. I. |
| 5 | Bush | 4 | Rubber |
| 6 | Flange ( Nut side ) | 1 | C. I. |
| 7 | Washer | 4 | M. S. |
| 8 | Nut | 4 | M. S. |

Flexible Coupling

Figure 1.

**Steam Engine Piston**

**Figure 2.**

| Item | Description | Qty. | Material |
|---|---|---|---|
| 1 | Piston ring | 3 | C.I. |
| 2 | Split pin | 1 | M.S. |
| 3 | Castle nut | 1 | Steel |
| 4 | Washer | 1 | M.S. |
| 5 | Piston rod | 1 | Steel |
| 6 | Peg screw | 3 | Brass |
| 7 | Plug screw | 6 | Steel |
| 8 | Washer for plug | 6 | Steel |
| 9 | Piston | 1 | C.I. |

ITEM LIST