Total No. of Questions : 8] [Total No. of Printed Pages : 4

Roll No. .....

AU/IP/IEM/ME-305

B. E. (Third Semester) EXAMINATION, Dec., 2011

(Grading/Non-Grading System)

(Common for AU, IP/IEM & ME Engg. Branch)

MACHINE DRAWING AND DESIGN

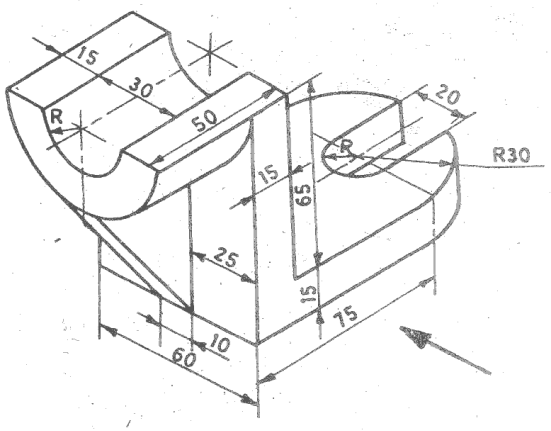
Time : Four Hours

Maximum Marks : { *100 (Non-Grading)* / *70 (Grading)*

Note : Attempt *four* questions in all selecting *one* question from each Unit.

Unit – I

1. Draw the full sectional front view and top view of the Anchor bracket given in Fig. 1. 20



P. T. O.

Or

2. (a) Draw the conventional representation of the following machine elements : 12

   (i) External thread

   (ii) Splined shaft

   (iii) Bearing

   (iv) Semielliptical leaf spring with eye

   (b) Sketch the following welding symbols along with respective illustration : 8

   (i) Single V butt weld

   (ii) Fillet weld

Unit – II

3. The various parts of a stuffing box are shown in Fig. 2 (at the end). Draw the assembled half sectional view with left half in section and view from above of the stuffing box. 40

Or

4. Draw the following views of a plummer block suitable for supporting a shaft of diameter 50 mm :

   (i) half sectional view from front with right half in section

   (ii) top view 40

Unit – III

5. (a) What is a CAD software ? Name and explain the tools which you will find in a CAD software under "Draw tool bar". 10

   (b) What is factor of safety ? Discuss the factors which influence the selection of factor of safety in a design problem. 10

Or

6. (a) Enlist and explain the four fundamental reasons for implementing a computer aided design system. 10

   (b) What are different types of external loads which a machine part is subjected to during its operation. 10

Unit – IV

7. Design riveted joints for the longitudinal seams of a boiler having 1·20 m dia. to withstand maximum pressure of 2·5 N/mm^2. The material of the shell plate and rivet is C20 having the following allowable stresses : 20

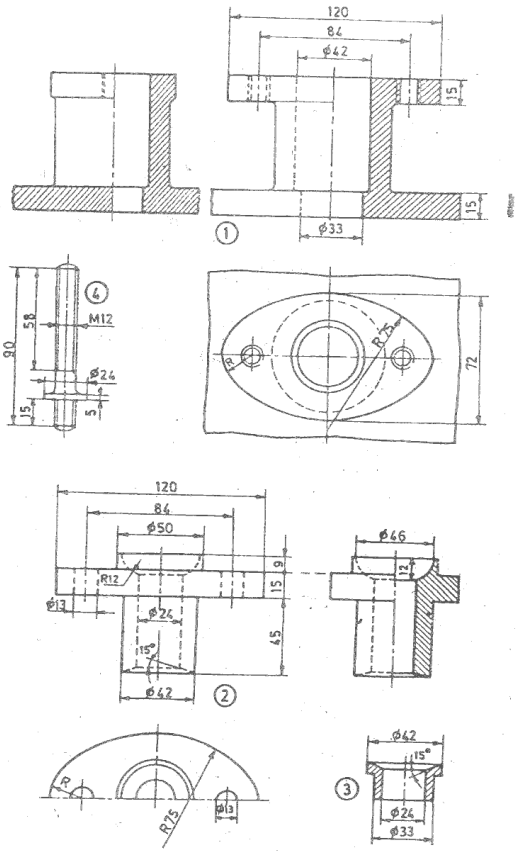
$$\sigma_t = 86 \text{ N/mm}^2$$

$$\sigma_c = 129 \text{ N/mm}^2$$

$$\tau_s = 52 \text{ N/mm}^2$$

Or

8. Design a knuckle joint to connect two mild steel rods which transmits a tensile force of 28 kN. The safe working stresses for tension, shear and crushing are 100 N/mm^2, 65 N/mm^2 and 150 N/mm^2 respectively. 20



Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Gland	Brass	1
3	Bush	Brass	1
4	Stud	MS	2
5	Nut, M12	MS	2

Fig. 22 Stuffing box

ME-III
Dec. 201