

Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)

First Year B. Tech. (All Branch)

Winter – 2018

Course Code: MEU 201

Course Name: Engineering Graphics

Time: 3.00 Hours

Max. Marks: 60

Instructions to Candidate

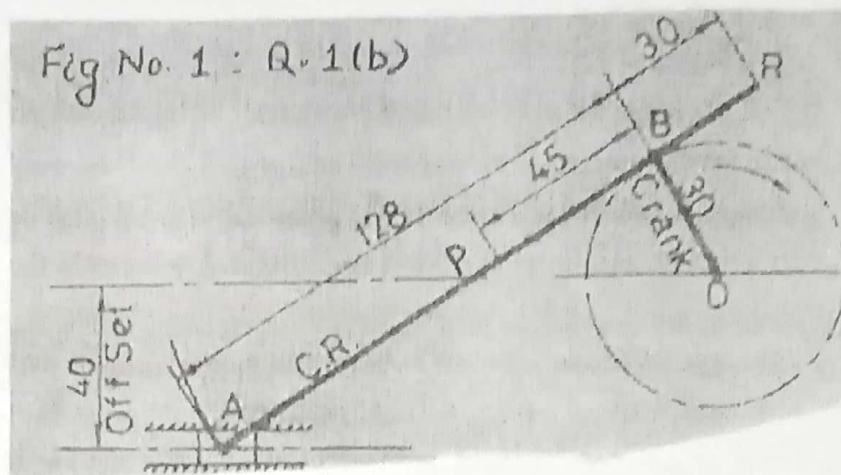
- 1) All questions are compulsory, there are internal choices.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Use of drawing instruments and non-programmable calculators is permitted.
- 4) Figures to the right indicate full marks.

1. a) Find the locus of a point P, moving in a plane, keeping its distances equal from a fixed point O_2 and a fixed circle $(O_1, 25)$. O_2 is 70 mm away from the centre O_1 .

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- (b) OBA is an offset slider crank chain. Crank OB is 30 mm long and rotates in clockwise direction. Connecting rod AB is 128 mm long, offset is 40 mm. Draw the loci of two points P and R as shown in figure 1. PB = 45 mm and BR = 30 mm.

Fig. No. 1, Question No. 1 (b)



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2. Attempt Any Two Questions:

- (a) A semicircle with O_2 as the centre and radius equal to 30 mm is fixed. O_1P_0 is the inelastic string of 132 mm length. End O_1 of the string is fixed. Point O_1 is 18 mm on upper side and 18 mm on the left side of O_2 . String is turned in anticlockwise direction and simultaneously wound round the surface of the semicircle. Draw the locus of the point P, the other free end of the string.

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- (b) A straight road going uphill from station 'A', due east to another station 'B' and has a slope of 15° . Road distance between station 'A' and station 'B' is 14 km. Another leveled (horizontal) road of 17 km length, to join station 'B' to station 'C', is in the direction of 30° east of north when looked from 'B'. Determine the length, direction and slope of the straight road joining 'A' to station 'C'.

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- (c) A regular pentagonal plate, of 50 mm sides, has one of its corners on ground. The plane of the pentagon is inclined at 30° to the ground or H.P. The side of the pentagon, which is opposite to the corner, which is on ground, is inclined at 45° to the V.P. Draw the projections of the plate.

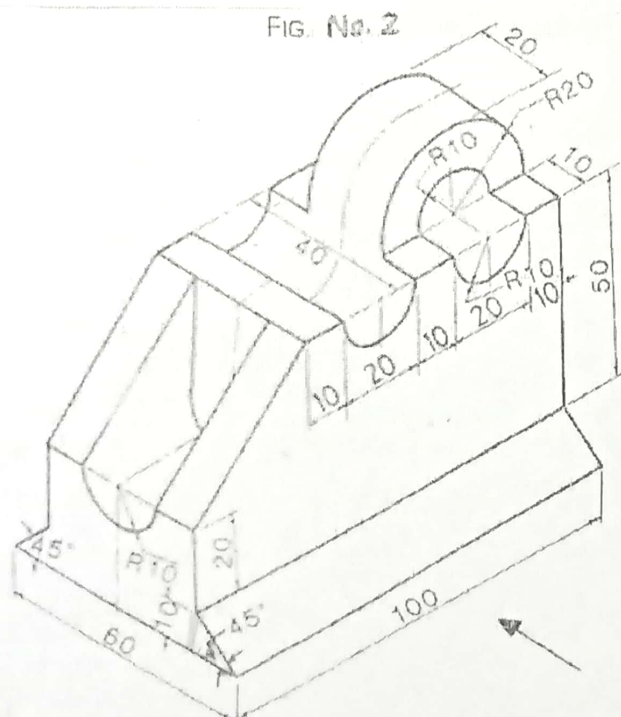
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3. A regular pentagonal pyramid, with the sides of the base 30 mm and height 80 mm rests on an edge of its base. The base is tilted until its apex is 50 mm above the level of the edge of the base on which it rests. Draw the projections of the pyramid when the edge on which it rests, is parallel to the V.P. and the apex of the pyramid points towards V.P. 12

4. A cone base 75 mm diameter and axis 80 mm long is resting on its base on the ground. It is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35 mm from the apex. Draw its front view, sectional top view, sectional side view and true shape of the section. 12

5. **Attempt Any One Question:**

- (a) Pictorial view of an object is given in Fig. No. 2 below. Draw, scale full size, views of the object as stated below (i) Front view (ii) Left-hand side view and (iii) Top view, using First angle projection method.



OR

$$\sin 45^\circ = \frac{10}{x}$$

$$x = 10\sqrt{2} \text{ V.}$$

$$L = 100$$

$$h = 80$$

$$w = 60$$

- (b) The projections of a casting are given in Figure No 3. below in Third-angle projection method. Draw its isometric view.'

