Seat No. _____

GANPAT UNIVERSITY
B. TECH. SEM.-I (A) (CE, IT, EC, BM&I)
REGULAR EXAMINATION NOV./DEC.-2011
ME-102 ENGINEERING GRAPHICS

[Time: 3 Hours]   [Total Marks: 70]

Instructions:
(1) All questions are compulsory.
(2) Right figure indicate full marks.
(3) Only scientific calculator is allowed.
(4) Retain all the construction/ projection lines.
(5) Figures drawn in the question paper are not to the scale.
(6) Use your own judgment of dimensions which are not given.
(7) All dimensions in the sketches are in mm.

SECTION-I

Que:1 'OAB' is a slider crank mechanism shown in **Fig.-1**. 'OA' is a crank of 30 mm length. [12] 'AB' is a connecting rod of 100 mm length, on which a rod 'PR' of 20 mm length is welded normally at the centre of the connecting rod. 'AB' is extended to 'S', where 'AS' is 20 mm. The slider 'B' is sliding on straight path passing through 'O'. Draw the locus of point 'R' and 'S' for one complete revolution of crank 'OA'.

OR

Que:1 Draw a cycloid for a rolling circle of 60 mm diameter, rolling along a straight line [12] without slipping. Take initial position of the tracing point 'P' at the bottom of the vertical centre line of the rolling circle. Draw normal and tangent to the curve at any point.

Que:2 **Fig. – 2** show pictorial view of an object. Draw following views using third angle [11] projection method:
    (i)   Front view from 'X'
    (ii) Side view
    (iii) Top Plan.

OR

Que:2 **Fig. – 3** show pictorial view of an object. Draw following views using first angle [11] projection method:
    (i)   Front view from 'X'
    (ii) R.H. sectional side view along 'A-A'
    (iii) Top Plan.

Que:3 In **fig.- 4** F.V. and T.V. of the object is given in 1st angle system. Draw its isometric [12] view.

SECTION - II

Que:4 A line EE, 75 mm long, has its end E 20 mm below H.P. and 25 mm behind V.P. The [12] end F is 50 mm below H.P and 65 mm behind V.P. Draw the projections of line EF and find its inclination with H.P. and V.P.

OR

Que:4 The top view and the front view, of the line CD, measure 65 mm and 53 mm [12] respectively. The line is inclined to H.P. and to V.P. by 30^0 and 45^0 respectively. The end C is on the H.P. and 12 mm in front of V.P. Other end D is in 1st quadrant. Draw the projections of the line CD and find its true length.

Que:5 ABCD is a rhombus of diagonals AC = 110 mm and BD = 70 mm. Its corner A is in the **[11]** H.P. and the plane is inclined to the H.P. such that the plan appears to be a square. The plan of diagonal AC makes an angle of 20^0 to the V.P. Draw the projections of the plane and find its inclination with H.P.

OR

Que:5 A cube of 50 mm long edges is resting on the H.P. on one of its corners, with one of the **[11]** body diagonals parallel to H.P. and (i) inclined at 45^0 to the V.P. or (ii) perpendicular to V.P. Draw the projections of the cube.

Que:6

(a) A cylinder of 50 mm diameter of base and 75 mm length of axis, has one of its ends on **[06]** the H.P. It is cut by an A.I.P. in such a way that the true shape of the section is an ellipse of largest possible major axis. Draw the sectional plan, true shape of the section and find inclination of the section plane with the H.P.

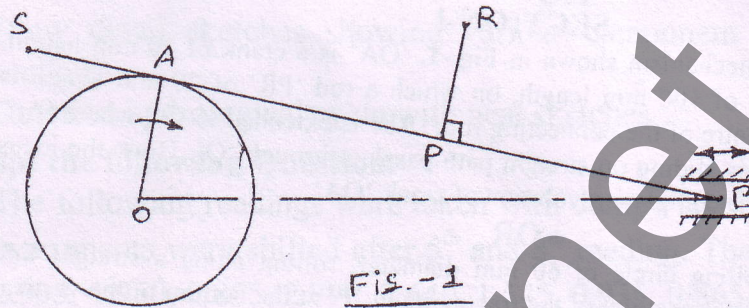(b) Draw the development of lateral surfaces of the cut prism shown in **fig.-5.** **[06]**
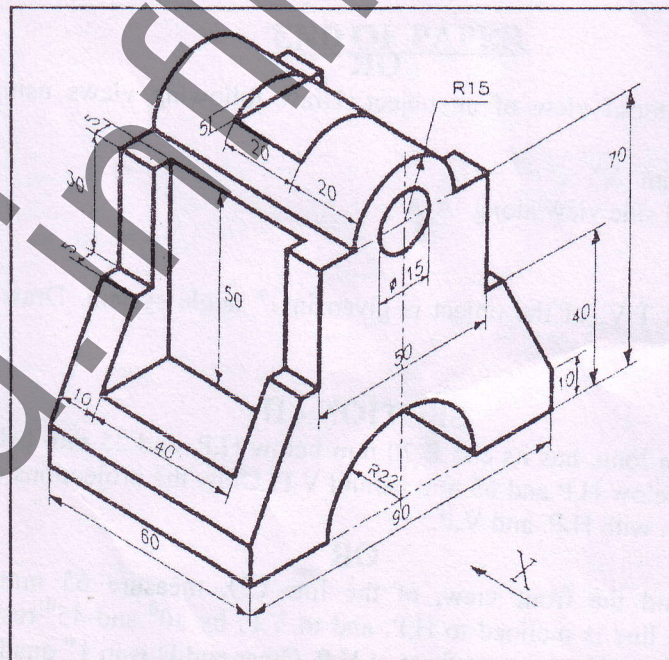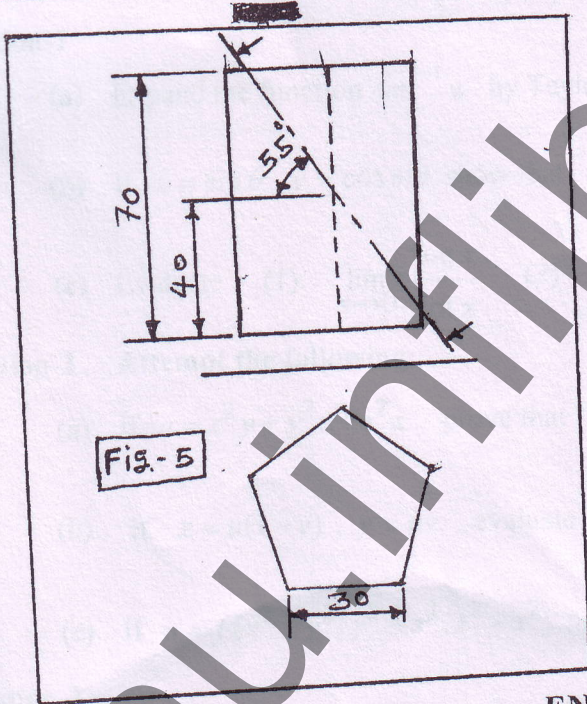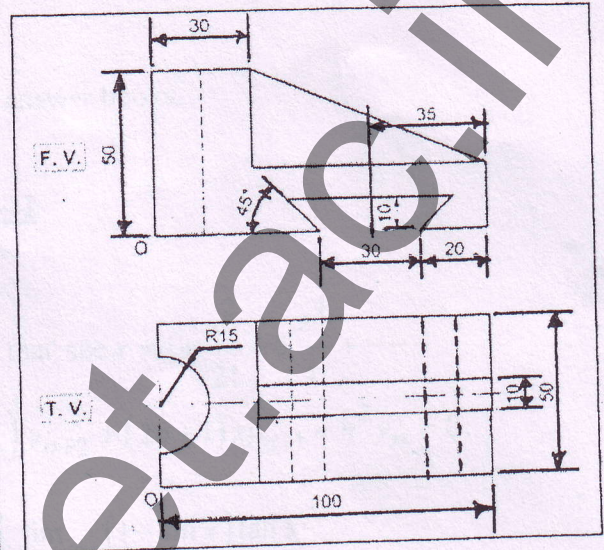

Fig.-1

R15

Fig.-2

Fig.-3

Fig.-4

Fig.-5

END OF PAPER