

Government College of Engineering, Amravati

(An Autonomous Institute of Government of Maharashtra)

First Year B. Tech. (All Branches)

Summer – 2017

Course Code: MEU201

Course Name: Engineering Graphics

Time: 3 hr.

Max. Marks: 60

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
- 5) Figures to the right indicate full marks.

1 (a) A drawing is drawn in inch units to a scale $3/8$ of full size. Draw the scale showing $1/8$ of inch divisions and to measure up to 16 inches. Construct a comparative scale showing centimeter and millimeter and long enough to measure up to 40 centimeters 6

(b) Construct an ellipse in a parallelogram 125×90 mm side. 6
Take included angles of parallelogram as 100°

2 (a) Draw the curve traced out by the ends of straight rod AP, 6
140mm long when it rolls without sleeping on a semicircle having its diameter AB = 90mm. Assume ,the

Cont.

rod AP to be vertical and tangent to the semicircle initially.

- (b) A line BC, 60mm long, is inclined at 40° to the HP and 20° to VP. Its end B is in HP and 50 mm in front of VP. Draw its projections and Determine its traces. 6

3 Solve Any TWO questions.

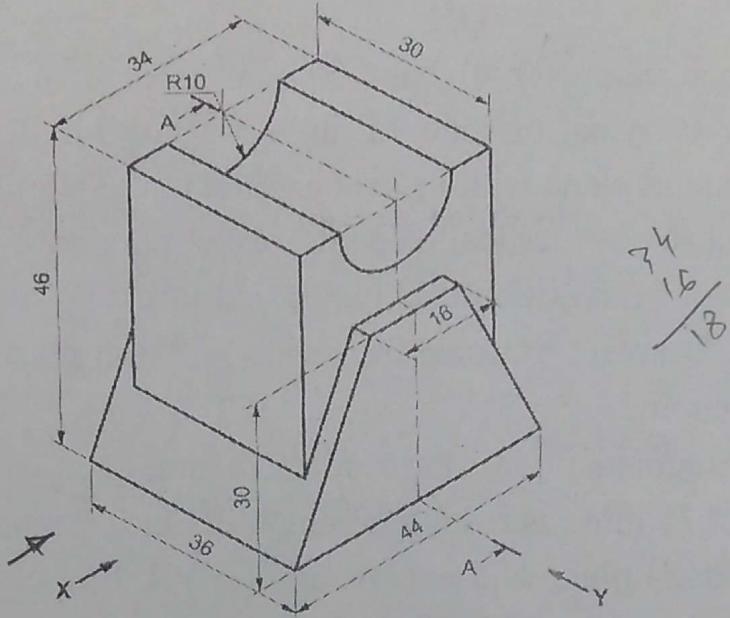
- (a) Draw projection of following points. 6
(All three view if possible)

- P(-35,-45)
- Q(35,40)
- R(-55,65)
- S(40,-30)
- T(00,-35)

- (b) A circular lamina of 60 mm diameter has a square hole of 30 mm side. A diagonal of hole is parallel to VP. The lamina is inclined to ground such that the diagonal parallel to VP measure 20 mm in top view. Draw three view of lamina. Find the inclination of lamina with the ground. 6

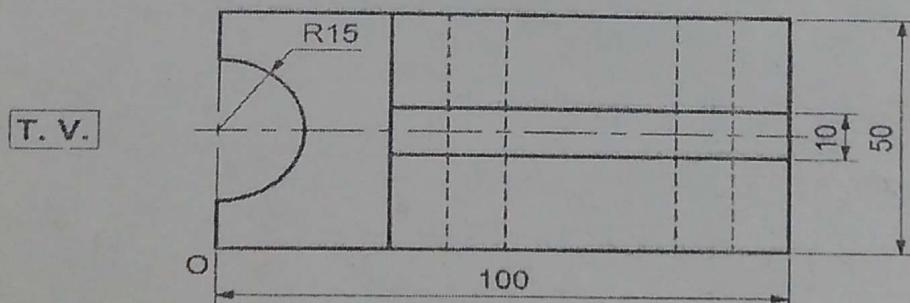
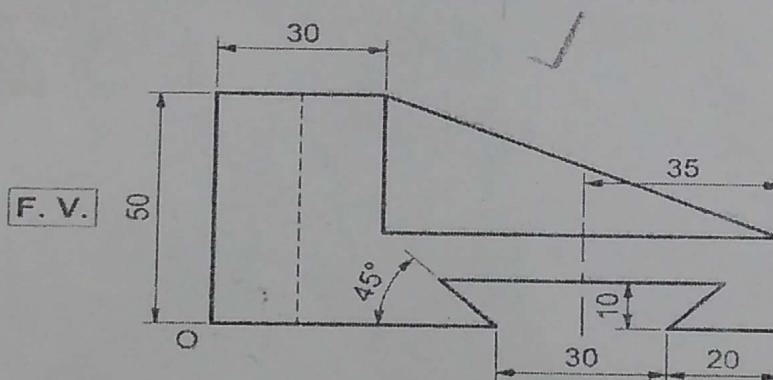
- (c) A hexagonal prism of side of base 35 mm and length of axis 80 mm is resting on the HP on one of its rectangular faces. Draw its projections when its axis is inclined to the VP at 55° . 6

- 4 Pictorial view of object is given. Draw FV, RHSV & TV in first angle system. Insert necessary dimensions, in Aligned System of Dimensioning 12



5 Solve Any ONE question.

(a) Front view and Top view is given below in first angle 12 projection method. Draw its isometric view



Cont.

fv

OR

- (b) i) A cone, diameter of base 50 mm, axis 60 mm long, is lying on one of its generator on the 06 horizontal plane with its axis parallel to the VP. It is cut by a vertical section plane parallel to generator (on which it is lying) and bisecting the axis . Draw its sectional front view and true shape of section
- ii) A hexagonal prism, base edge 30 mm, vertical height 75 mm , is resting on one of its face on the horizontal plane and axis parallel to VP. It is cut by a plane, the HT of which makes an angle of 55^0 with the XY line and cuts the axis at a point 40 mm from one of its end. Draw sectional front view 06

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First Year B. Tech. (All Branches)

Winter – 2016

Course Code: MEU201

Course Name: Engg. Graphics

Time: 3 hr.

Max. Marks: 60

Instructions to Candidate

- 1) All questions are compulsory.
 - 2) Assume suitable data wherever necessary and clearly state the assumptions made.
 - 3) Diagrams/sketches should be given wherever necessary.
 - 4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
 - 5) Figures to the right indicate full marks.

- 1 (a) A drawing is drawn in inch units to a scale 3/8 full size. Draw the scale 1/8 of an inch divisions and to measure upto 16 inches. Construct a comparative scale showing centimeters and millimeters and long enough to measure upto 40 centimeters.

(b) For a perfect gas , the relation between pressure P and volume V in an isothermal expansion is given by $PV = \text{constant}$. Draw the curve of isothermal expansion of an enclosed volume of gas if $6 * 10^{-6} \text{ m}^3$ of gas corresponds to pressure of $6 * 10^{-6} \text{ kg/c m}^2$. Name the curve . Locate at least 8 points.

2 (a) A circular disc of diameter AB 80 mm rotates with uniform angular velocity. The point P which is at A moves with uniform liner velocity and reaches the point B, when the disc completes one revolution. Trace locus of point P moving from A to B. 6

(b) A end A of straight line AB=36 mm long is 12 mm away from HP, and VP, and another end B is 24 mm away from HP and VP respectively. Draw the top view and front view of the straight line AB and determine the true inclination with HP and VP respectively. 6

3 Solve Any TWO questions.

(a) Draw projection of following points. 6
(All three view if possible)

- L (-20,-50)
- M (70,85)
- N (-15,50)
- O (20,-65)
- P (00,-55)

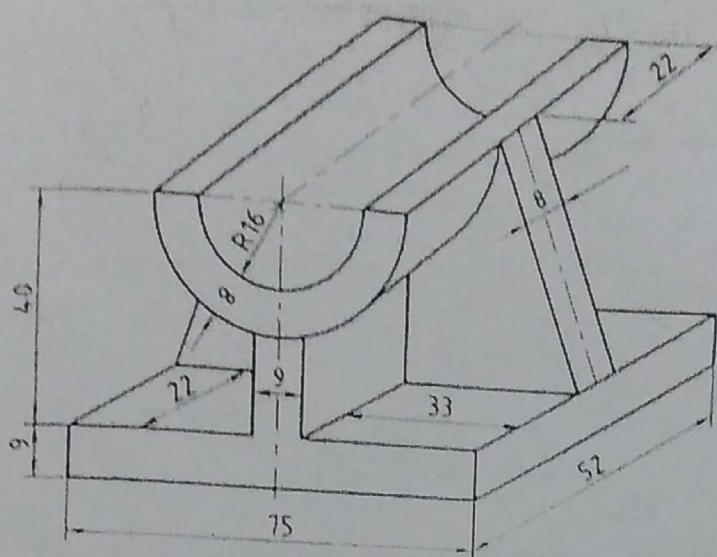
(b) Draw the projections of a pentagonal plane, side 25 mm, resting in HP on one of its edge. The plane of pentagon is inclined at 45^0 to the HP and the perpendicular from the midpoint of the resting edge, makes an angle of 30^0 with the VP. 6

(c) A hexagonal prism of side of base 25 mm and length of axis 70 mm is resting on the HP on one of its rectangular faces. Draw its projections when its axis is inclined to the VP at 45^0 . 6

Pictorial view of object is given. Draw FV looking

4

from direction of arrow, RHSV & TV in first angle system. Insert necessary dimensions, in Aligned System of Dimensioning 12

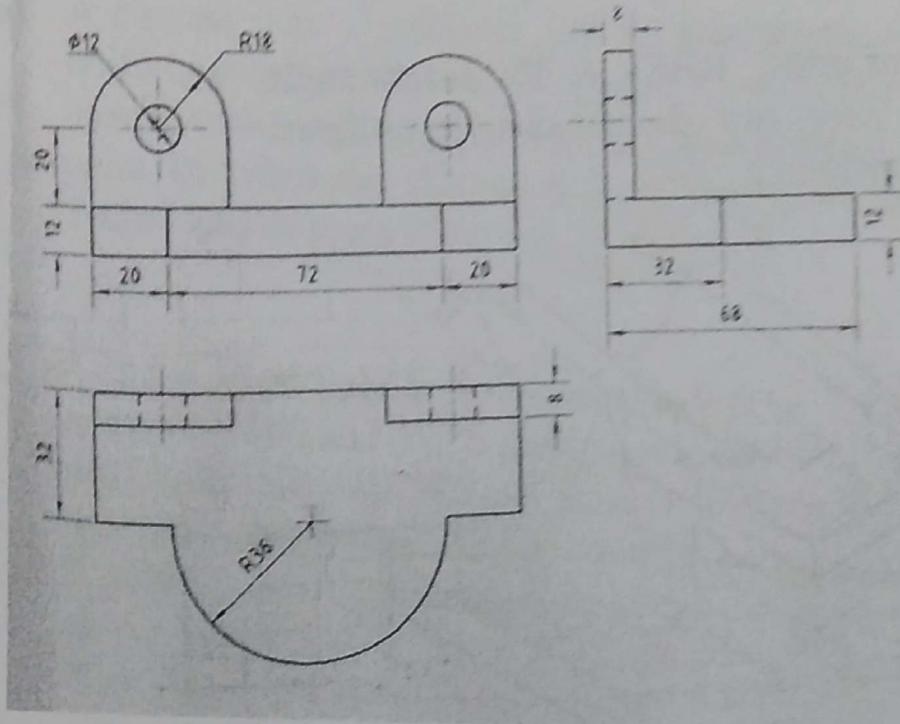


Solve Any **ONE** question.

5

12

- Front view and Top view AND LHSV is given
(a) below in first angle projection method. Draw its isometric view



OR

- (b) A square pyramid with a base side of 45 mm and an axis length of 70 mm is resting on the base on the HP with the base sides equally inclined to the VP. It is cut by the different cutting planes such that the true shape of the section is

- An equilateral triangle of maximum possible size
- An equilateral triangle of 30 mm side
- A kite of smallest diagonal 35 mm and maximum possible longest diagonal
- A pentagon of 30 mm base and 50 mm height

Draw FV and TV and the cutting planes. Also, draw the true shape of the section in each case.

Government College of Engineering, Amravati
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Second Semester B. Tech.

Summer – 2013

Course Code: MEU201

Course Name: Engineering Graphics

Time: 3 Hrs.

Max. Marks: 60

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Use of drawing instruments and non-programmable calculator is permitted.
- 4) Due credit will be given to neatness and adequate dimensions.
- 5) Retain all construction lines.
- 6) All questions carry marks as indicated to the right.

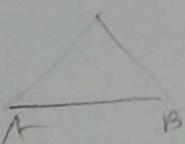
01. (a) The area of a field is 50,000 sq. m. The length and breadth of the field, on the map is 10 cm and 8 cm respectively. Construct a vernier scale, which can read up to one meter. Mark the lengths of 278 meter and 62 meter on the scale. What is the R.F. of the scale?

6



(b) In a triangle ABC, AB, BC and AC are 100 mm, 55 mm and 70 mm respectively. Draw an ellipse such that A and B are foci and C is a point on the curve.

6



Contd..



02. (a) Draw a circle with horizontal diameter AB equal to 65 mm. Draw a line AC 150 mm long and tangent to the circle. Trace the path of A, when the line AC rolls on the circle, without slipping. Name the curve. 6

(b) A line PQ 100 mm long is inclined at 40^0 to HP. The end P is 15 mm above HP and end Q is 60 mm in front of VP. Draw projections of the line if its Front View measures 75 mm. 6

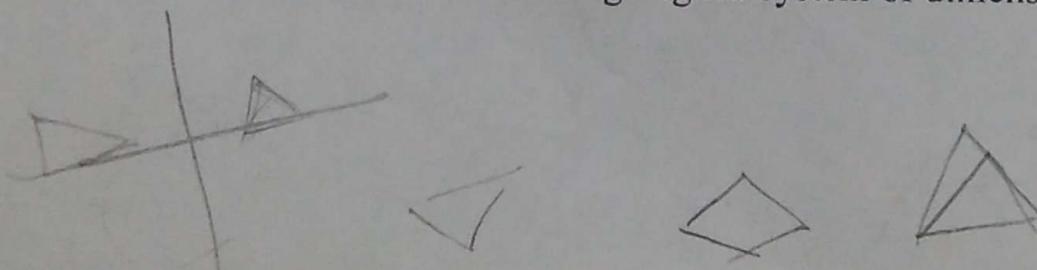
03. Solve any TWO sub-questions.

(a) A regular hexagon of 40 mm side has a corner in HP. Its surface is inclined at 45^0 to the HP and the diagonal through the corner which is in the HP makes an angle of 30^0 with the VP. Draw its projections. 6

(b) A tetrahedron of 50 mm long edges is resting on one of its edges on the HP with triangular face through that edge is perpendicular to the HP and axis parallel to the VP. Draw its projections. 6

(c) A regular hexagonal plane of 40 mm side is resting on one of its sides on the HP having that side parallel to and 25 mm in front of VP. It is tilted about that side so that its highest side rests in the VP. Draw the projections. 6

04. Figure-I show pictorial view of an object. Draw its Front View looking in the direction X, side view looking in the direction Y and top view using first angle projection method. Show all the dimensions using aligned system of dimensioning. 12



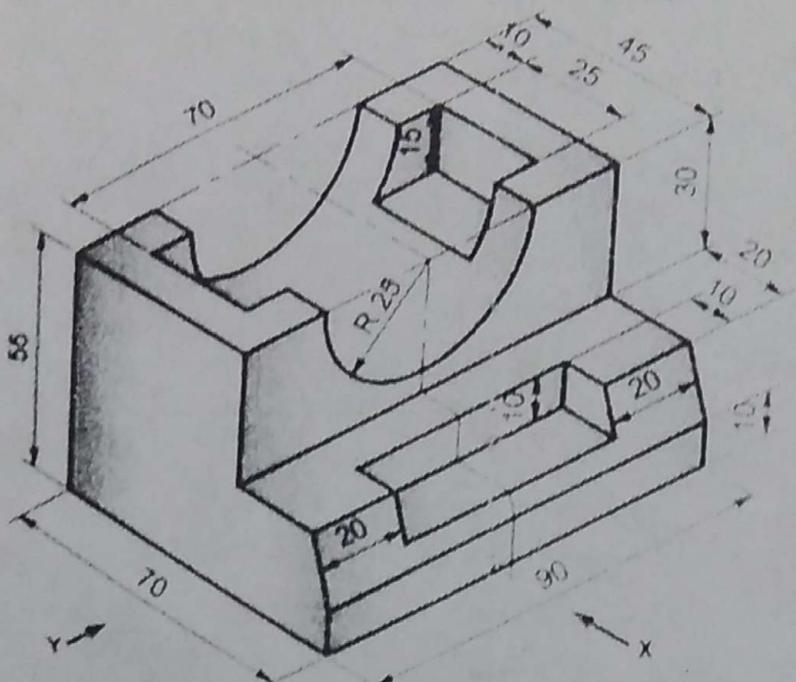


Figure-I

05. Solve any **ONE** sub-question.

- (a) A cone of base diameter 60 mm and axis 90 mm has a generator in the VP and parallel to the HP. An AVP, parallel to the generator farthest from the VP and passing through the midpoint of the axis, cuts the cone. Draw top view, sectional front view of the cone and true shape of section. 12

OR

- (b) Draw an isometric view for an object whose projections are shown in Figure-II in first angle projection method. The 'O' represents the origin of drawing. 12

Contd..

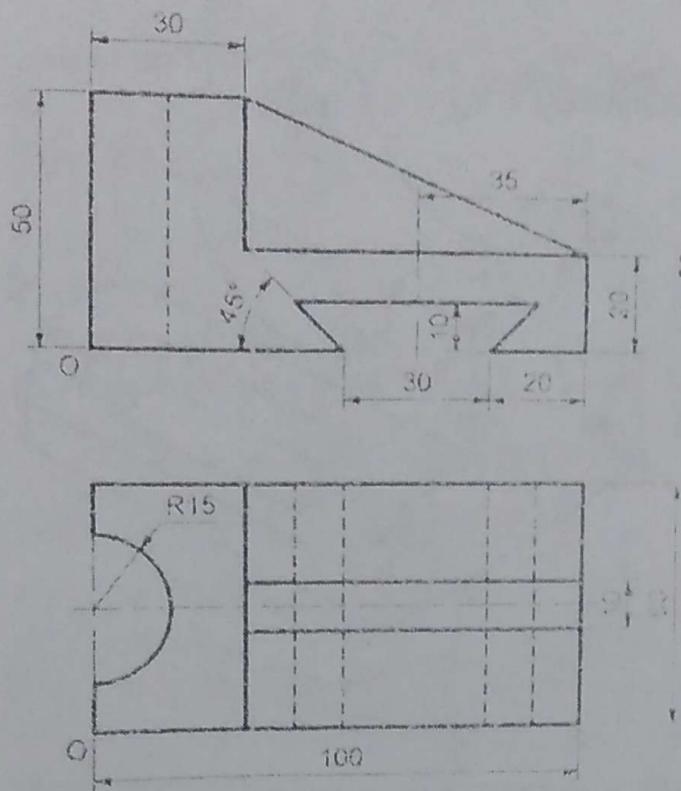


Figure-II

Government College of Engineering, Amravati
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Second Semester B. Tech.

Winter – 2017

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Time: 3 hr.

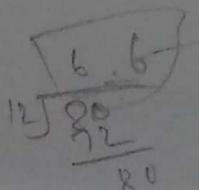
Max. Marks: 60

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
- 5) Figures to the right indicate full marks.

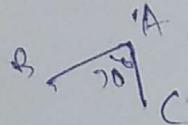
1 Solve ALL questions.

- a) A car is running at a speed of 80 kmph. construct a plane scale long enough read up to 65 km. choose suitable RF which limits the length of the scale between 17cm & 19 cm. also show on the scale the time taken to cover a distance of 60 km. **06**
- b) A circus man rides a motorcycle inside a globe of diameter 4 metres. The motor cycle wheel is 0.8 metre in diameter. Draw the locus of a point spot on the circumference of the motorcycle wheel for **06**



Cont.

its one complete revolution.



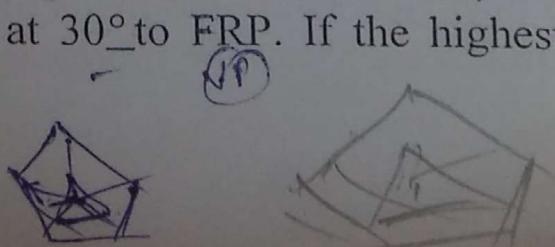
2 Solve Any **TWO** questions

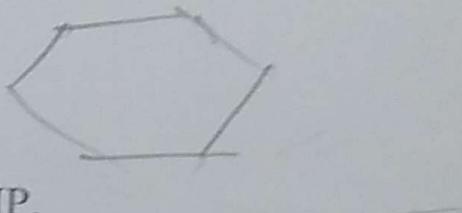
- a) AB and AC are two links welded together at the point A at an angle of 70° to each other. The ends A and B of the link AB are constrained to slide in the vertical and horizontal guides respectively. Draw the loci of the point C and the mid point M of the link AB as the link AB moves from the vertical to the horizontal position. AB = 80 mm and AC = 67 mm. **06**
- b) A line AB 50mm long has its end A away from the HP & the VP than end B. The line is inclined to HP at 30° & to the VP by 45° . draw the projections if end A is 35 mm above HP & 50 mm in front of VP. **06**
- c) Draw projection of following points. **06**
(All three view if possible)

- A(-40,-45)
- B(35,30)
- C(-15,25)
- D(20,-50)
- E(00,-25)
- G(-30,00)

3 Solve **ALL** questions

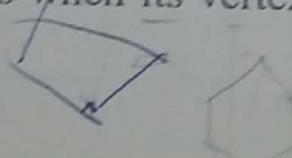
- a) A pentagonal plate of side 30 mm has a central equilateral triangular hole of 20 mm sides, with a side of plate & that of triangle parallel to each other. The plate is kept on HP on this side, the side being inclined at 30° to FRP. If the highest





point of the plate is 40 mm above the HP, determine the angle the plate makes with HP. Project the triangular hole in all the views

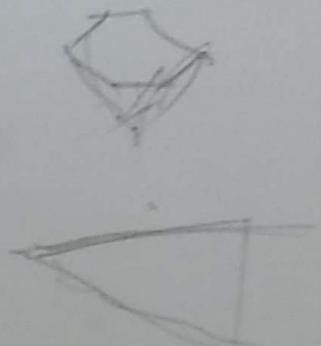
- b) A right regular hexagonal pyramid edge of base 30 mm & axis 65mm long held on VP on one of its slant edges. A plane containing the edge & the axis of the pyramid is perpendicular to the VP & 45° to HP. draw its projections when its vertex is kept towards HP.



Solve ALL questions

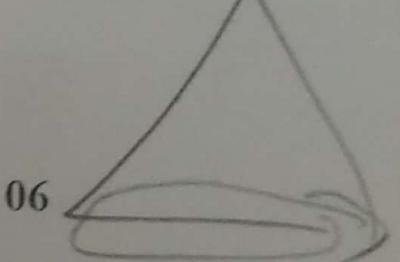
- a) 1) A cone, diameter of base 50 mm, axis 60 mm long, is lying on one of its generator on the horizontal plane with its axis parallel to the VP. It is cut by a vertical section plane parallel to generator (on which it is lying) and bisecting the axis . Draw its sectional front view and true shape of section

06



- 2) A cube 40 mm side is lying on the HP on its square base. It is cut by section plane such that true shape of section is a trapezium of parallel side equal to the length of diagonal of a square face for one side & half of that length for other side. Draw FV, STV & true shape of section. Measure the angle made by cutting plane with the HP.

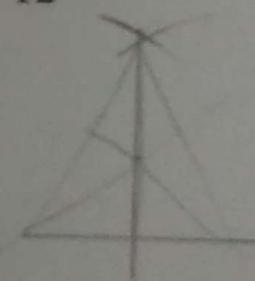
06



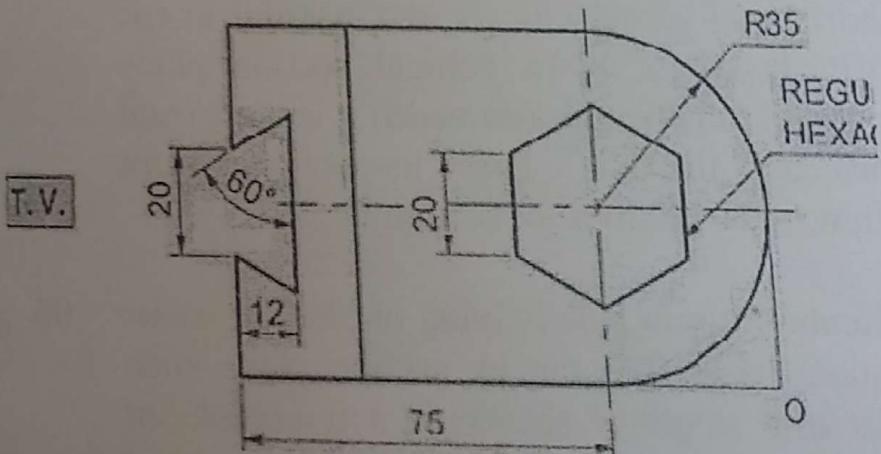
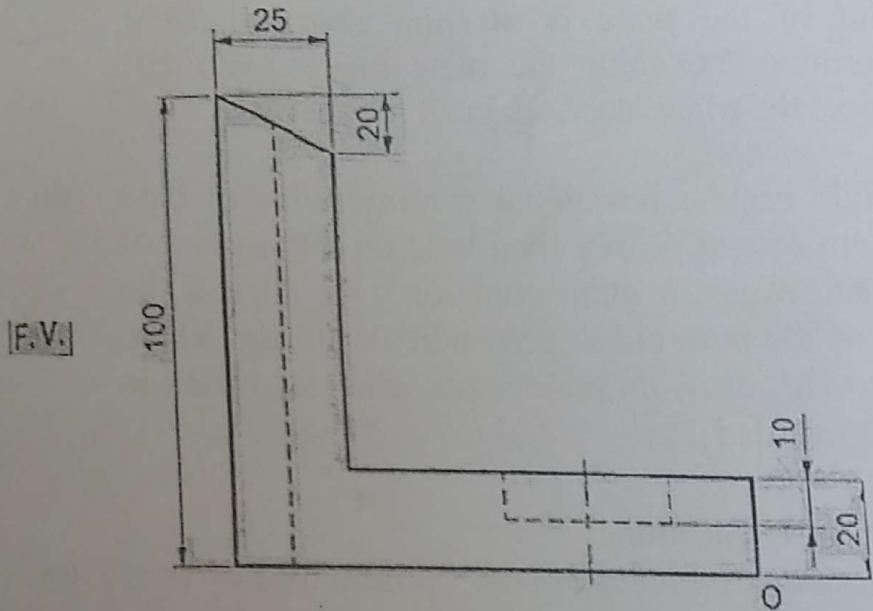
OR

- b) Fig shows F.V. and T.V. of an object. Draw isometric view

12



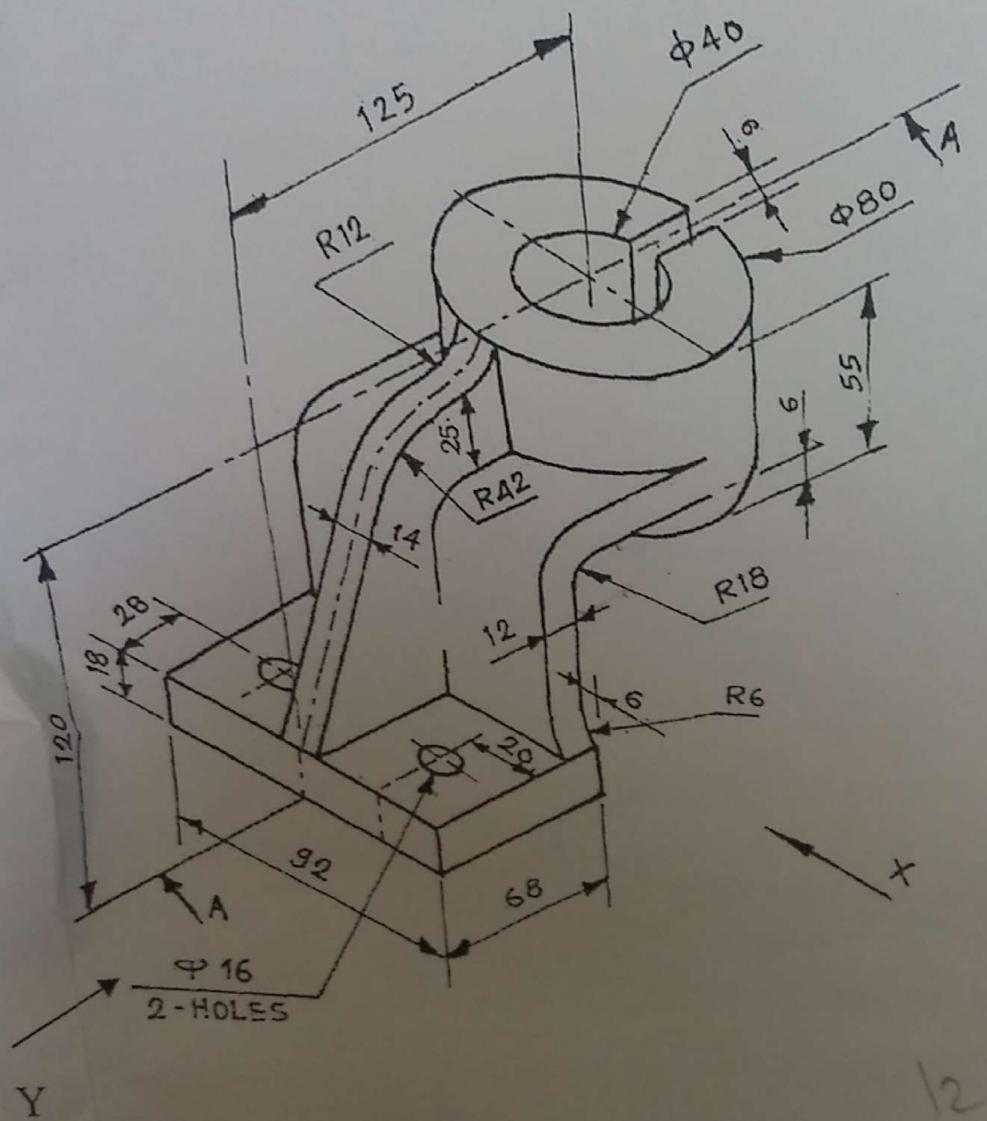
Cont.



5 Solve ALL questions

12

- a) Fig shows pictorial view of an object. Draw following views : (i) Front view looking in direction X. (ii) Side view looking in direction Y. (iii) Top view



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Second Semester B. Tech. (all Branches)

Summer – 2018

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Max. Marks: 60

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
- 5) Figures to the right indicate full marks.

1 Solve ALL questions. 06

- (a) A length of the Khandala Tunnel on Mumbai-Pune expressway is 330m. On the road map, it is shown by a 16.5cm long line. Construct a scale to show metres and to measure up to 400m. Show the length of 289m long bridge on the expressway. Construct another scale to read the equivalent length in yards and measure up to 500 yards.

- (b) Rod OC, 100 mm long rotating uniformly about O. During the time rod completes one revolution; point

Contd..

P starts from C moves along the rod uniformly at O and reaches back to point C. Draw the path traced out by point P. Give name to curve.

2 Solve ALL questions.

- (a) AB and AC are two links welded together at the point A at an angle of 70° to each other. The ends A and B of the link AB are constrained to slide in the vertical and horizontal guides respectively. Draw the loci of the point C and the mid point M of the link AB as the link AB moves from the vertical to the horizontal position. AB = 80 mm and AC = 67 mm. 06
- (b) The TV of line CD measures 80 mm and makes an angle of 55° with XY. End C is in the VP and HT of line is 25 mm above the XY. The line is inclined at 30° to the HP. Draw the projections of line CD. Determine its true length. True inclination with the VP, and the VT. 06

3 Solve Any TWO questions

- (a) Draw projection of following points. 06
(All three view if possible)

- A(-35,-45)
- B(25,30)
- C(-15,25)
- D(20,-50)
- E(00,-35)
- G(-40,00)

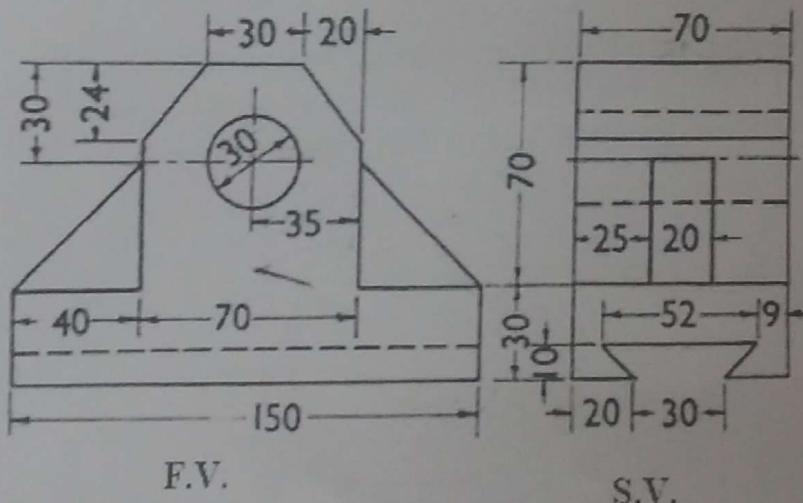
- (b) A circular plate of 60 mm diameter has a square hole side 25 mm punched centrally. A plate is 06

resting on the HP on point A of its rim with its surface inclined at 30° to the HP & diameter AB through A is inclining at 45° to the VP. Draw the projection of the plate with hole.

B (contd.)

- (c) A right circular cylinder of diameter of base 40 mm & axis 60 mm long rest on HP on one of its base rim such that its axis is inclined at 45° to the HP & TV of axis is inclined at 60° to the VP.
- Solve Any ONE question.

- 4 (a) Fig shows F.V. and S.V. of an object. Draw 12 isometric view



OR

- (b) 1) A cone, diameter of base 50 mm, axis 60 mm long, is lying on one of its generator on the horizontal plane with its axis parallel to the VP. It is cut by a vertical section plane parallel to generator (on which it is lying) and bisecting the axis. Draw its sectional front view and true shape of section

06

Contd..

"Or"

- 2) A tetrahedron of side 50 mm rests on a face on the HP. One of the edges other than those on the HP is parallel to the VP. Different section planes cut the tetrahedron in such a way that the true shape of the section is

I. An isosceles triangle of base 18 mm and maximum height

I. An isosceles triangle of maximum base and 37 mm, height

II. An equilateral triangle of 18 mm side

Draw FV and TV and locate the cutting planes. Also, draw true shape of the section in each case.

5 (a) Fig shows pictorial view of an object. Draw following views : (i) Front view looking in direction X.(ii) Side view looking in direction Y. (iii) Top view

