Total No. of Questions – [08] Total No. of Printed Pages 03

G.R. No.	

DECEMBER 2017 / ENDSEM

F. Y. B. TECH. (COMMON) (SEMESTER - I)

COURSE NAME: ENGINEERING GRAPHICS

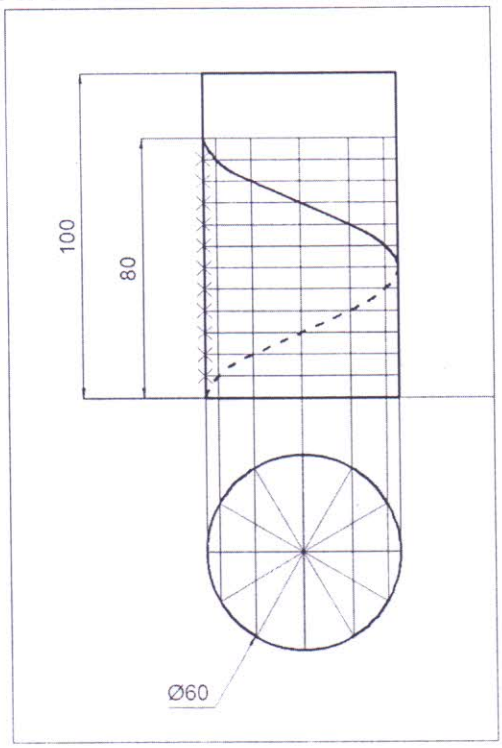
(2017 PATTERN)

Time: [**2 Hours**] Solution [Max. Marks: **50**]

(*) Instructions to candidates:

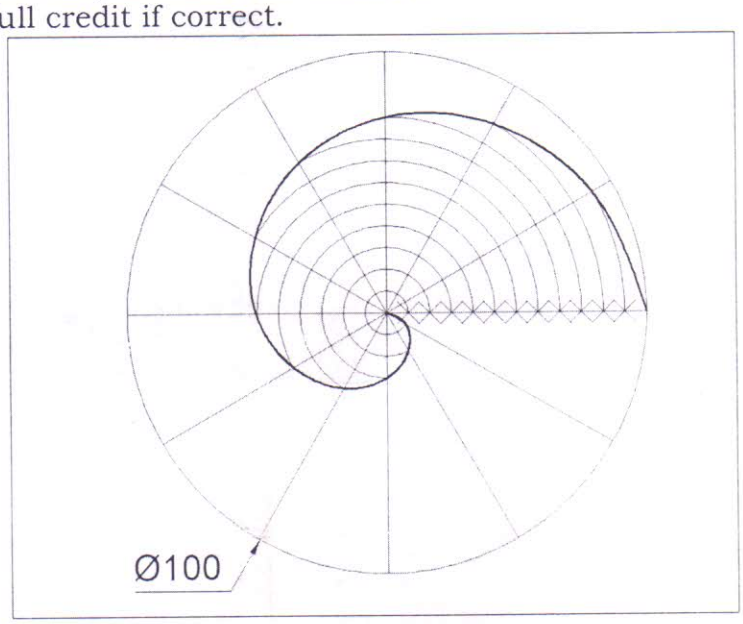
1) **Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed.**
4) **Use suitable data where ever required.**
5) **Use only half imperial size drawing sheet as answer book.**
6) **Retain all construction lines.**
7) **Marks are reserved for dimensioning and good presentation.**

Q.1) a) Draw the helix for one turn upon a cylinder of diameter 60 mm and a height of 100 mm. The pitch of the helix is 80 mm.
Drawing Given Data: 1 Marks, Construction and locating correct points: 2 Marks, Smooth Curve: 1 Marks, Dimensions, Label and Overall Drawing work: 1 Marks
Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.



b) Draw the Archimedean spiral for 1 convolution with diameter of 100 mm

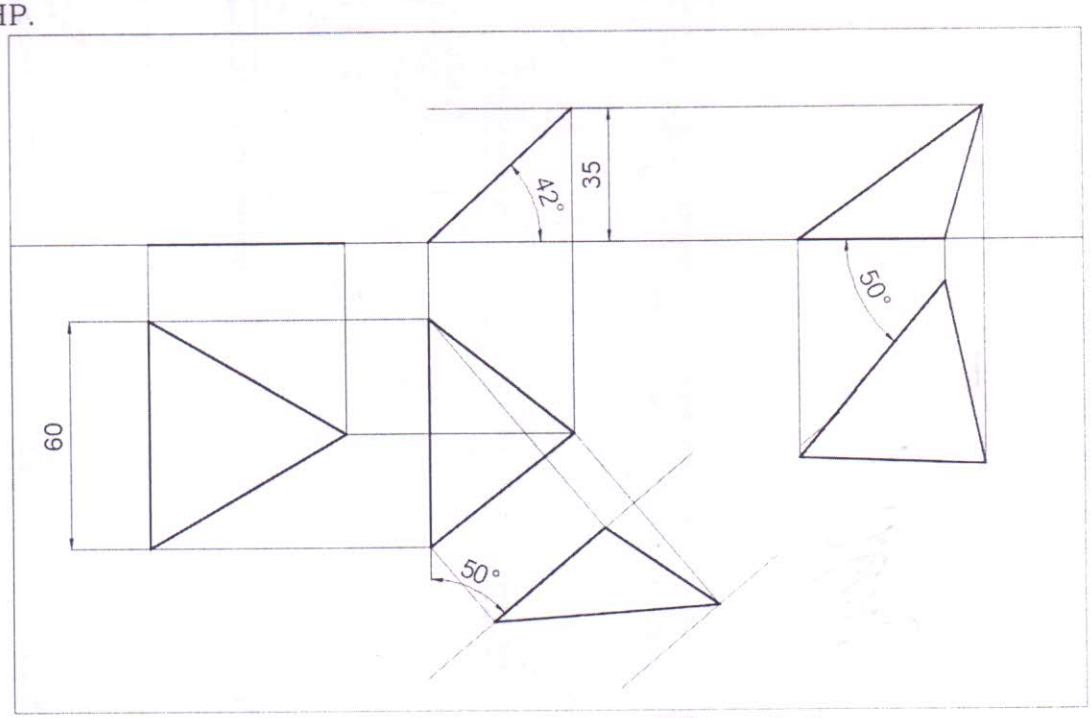
Drawing Given Data: 1 Marks, Construction and locating correct points: 2 Marks, Smooth Curve: 1 Marks, Dimensions, Label and Overall Drawing work: 1 Marks
Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.



[10 marks]

OR

Q.2) An equilateral triangle with side 60 mm is having its base on H.P. Plane is inclined to H.P. in such a way that remaining vertex is at 35 mm from HP. Draw its projections if base makes an angle of 50^0 with XY line. Find angle made by plane with HP.

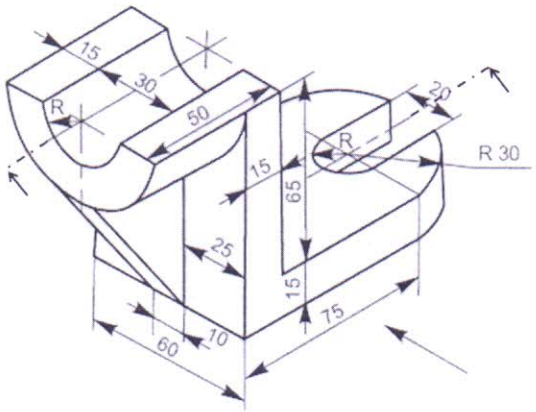


[10 marks]

Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.

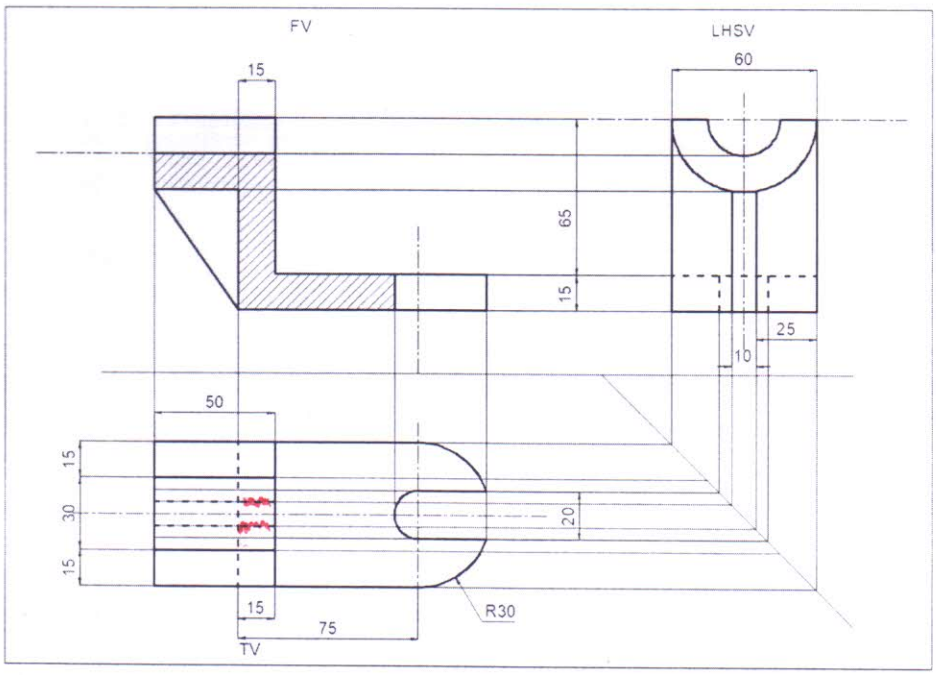
Marking should be done stage wise:
Stage 1: 3 Marks, Stage 2: 3 Marks, Stage 3: 3 Marks, Quality of Drawing, Dimensions, Correct Answer ($42^0 \pm 1^0$): 1 marks

Q.3) Figure shows a pictorial view of an object. By using first angle method of projections, draw; a) Sectional front view, along given cutting plane (Cutting plane is plane of symmetry) b) Left hand side view c) Top view d) Dimensions.



[14 marks]

Solution:

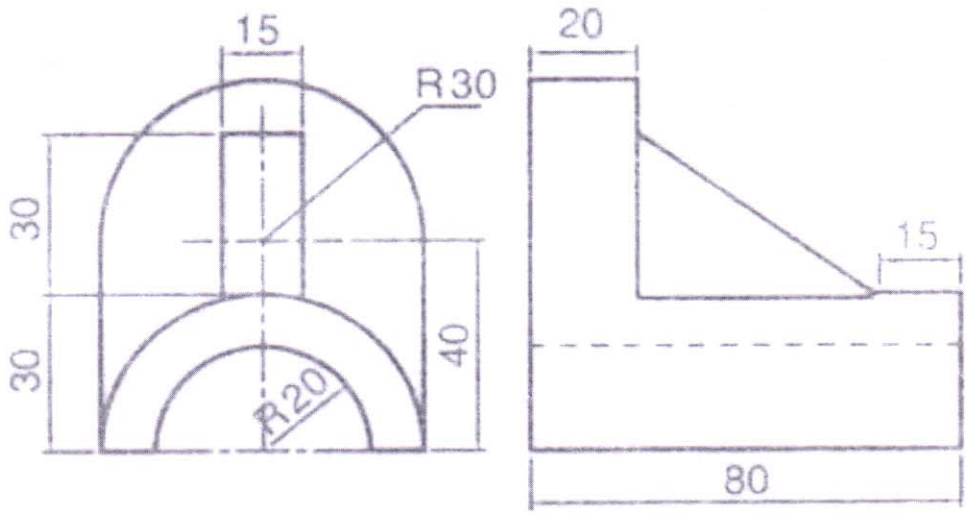


Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.
Marking should be done object wise:

Sectional FV: 5 Marks, LHSV: 4 Marks, TV: 4 Marks, Quality of Drawing, Dimensions: 1 marks

OR

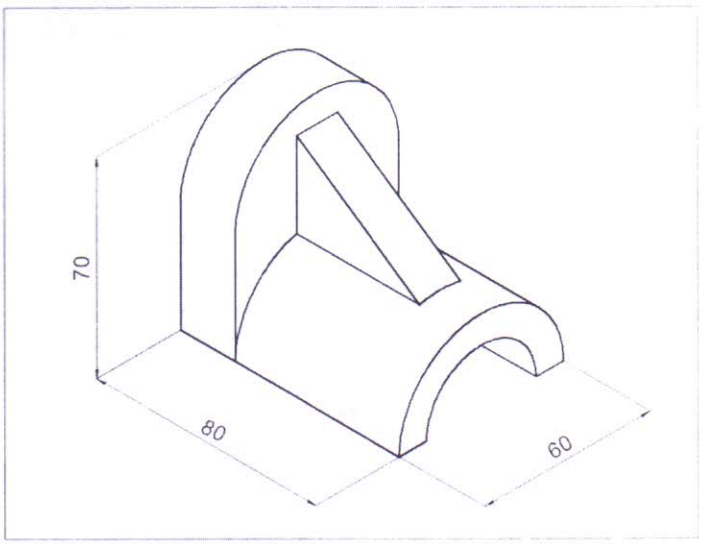
Q.4) Following figure shows FV and LHSV of an object. Draw isometric view using natural scale.



FV LHSV

[14 marks]

Solution:

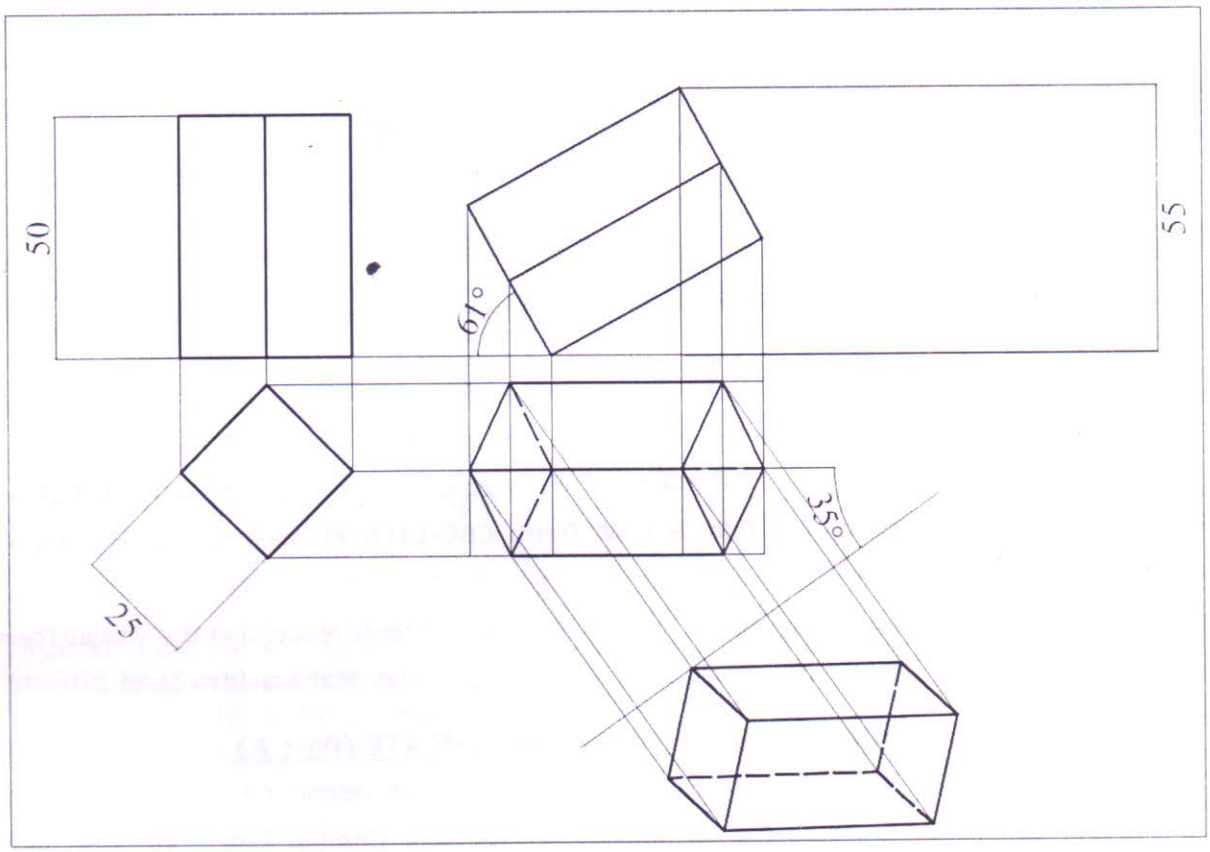


Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.

Marking should be done object wise:
Front Slot with backend arc: 4 Marks, Triangular Rib: 4 Marks, Vertical Plate with curve: 4 Marks
Intersecting surfaces (Curves): 1 Mark

Quality of Drawing: 1 marks

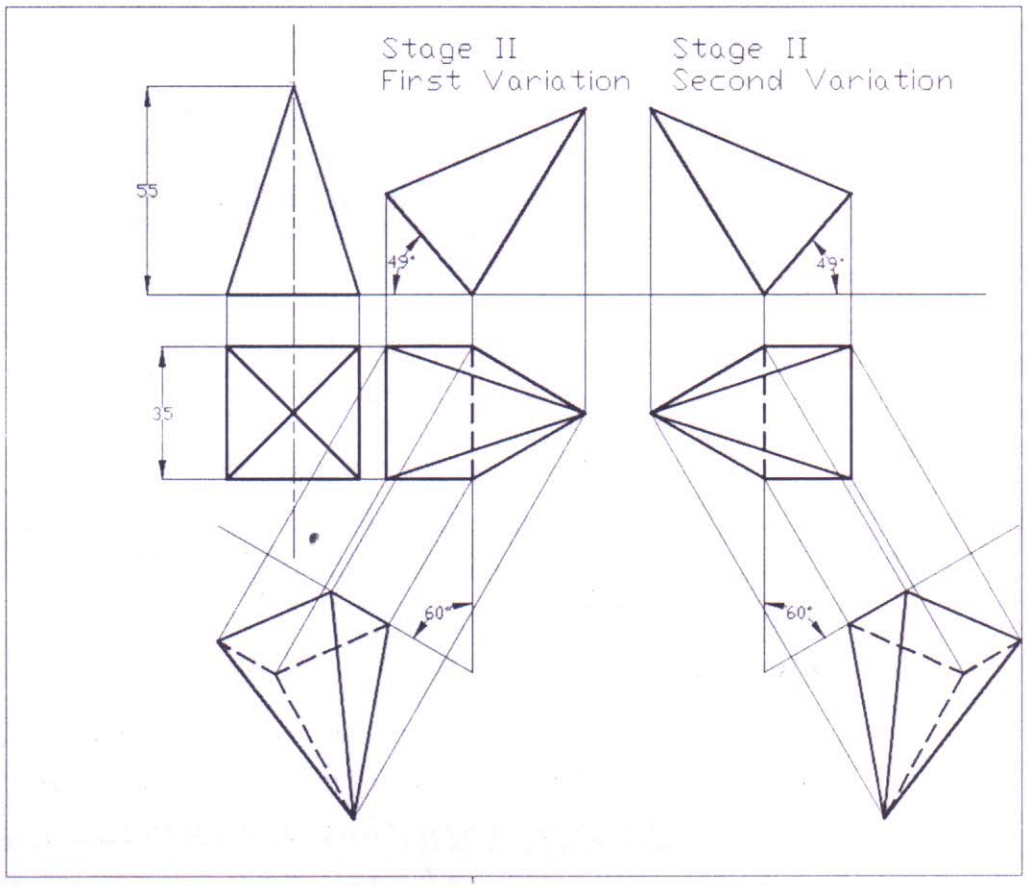
Q.5) A square prism having side of base 25 mm and height 50 mm is kept on the H.P on corner of its base. Highest point of prism from HP is at 55 mm from HP. Draw the projections of the prisms if top view of axis of prism makes an angle of 35° with VP. Find angle made by square base ~~and vertical rectangular face~~ with HP. [14 marks]



Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.
Marking should be done stage wise:
Stage 1: 4 Marks, Stage 2: 4 Marks, Stage 3: 4 Marks, Quality of Drawing, Dimensions: 1, Correct Answer ($61^0 \pm 1^0$): 1 marks

OR

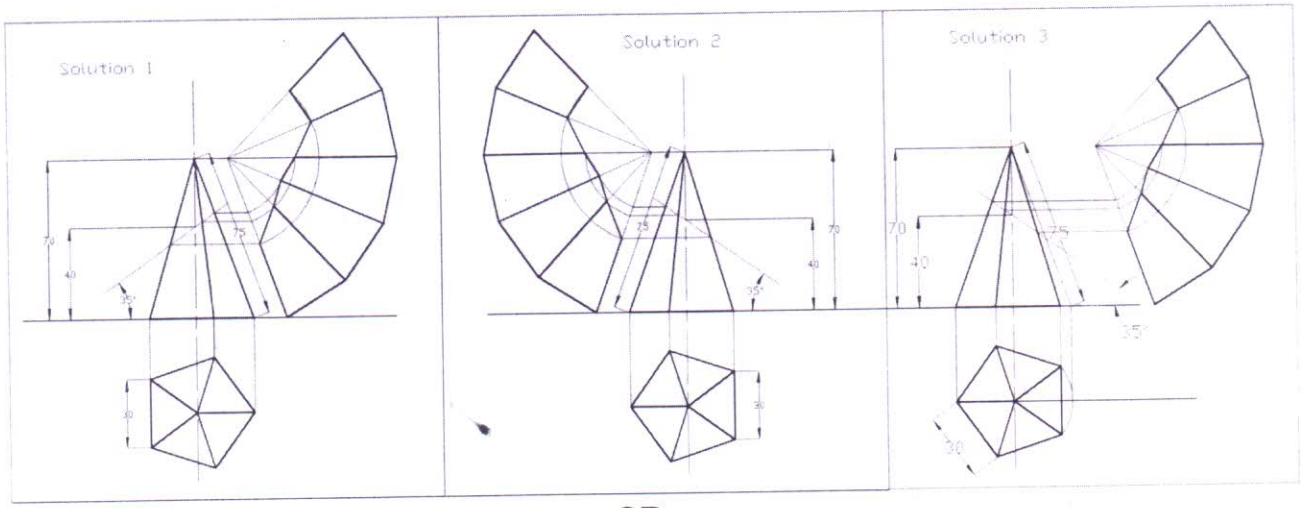
Q.6) A square pyramid of base 35 mm and axis length 55 mm is kept on the H.P. on edge of its base. It is inclined to the H.P in such a way that top view of triangular face containing resting edge appears to be equilateral triangle. Draw the projections of Pyramid if edge on HP makes angle of 60^0 with VP and apex is nearer to observer. Find the angle made by base of pyramid with HP. [14 marks]



Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct.
Marking should be done stage wise:
Stage 1: 4 Marks, Stage 2: 4 Marks, Stage 3: 4 Marks, Quality of Drawing, Dimensions: 1, Correct Answer ($49^0 \pm 1^0$): 1 marks
Note: If apex is not nearer to observer in final stage, final stage becomes incorrect and marks should not be given ONLY for final stage.

Q.7) A pentagonal pyramid, side of base 30 mm and height 70 mm, stands with its base on H.P and an edge of the base is perpendicular to V.P. It is cut by a plane perpendicular to V.P, inclined at 35^0 to H.P and passing through a point on the axis, 40 mm above the base. Develop the lateral surface of the truncated pyramid.
[12 marks]

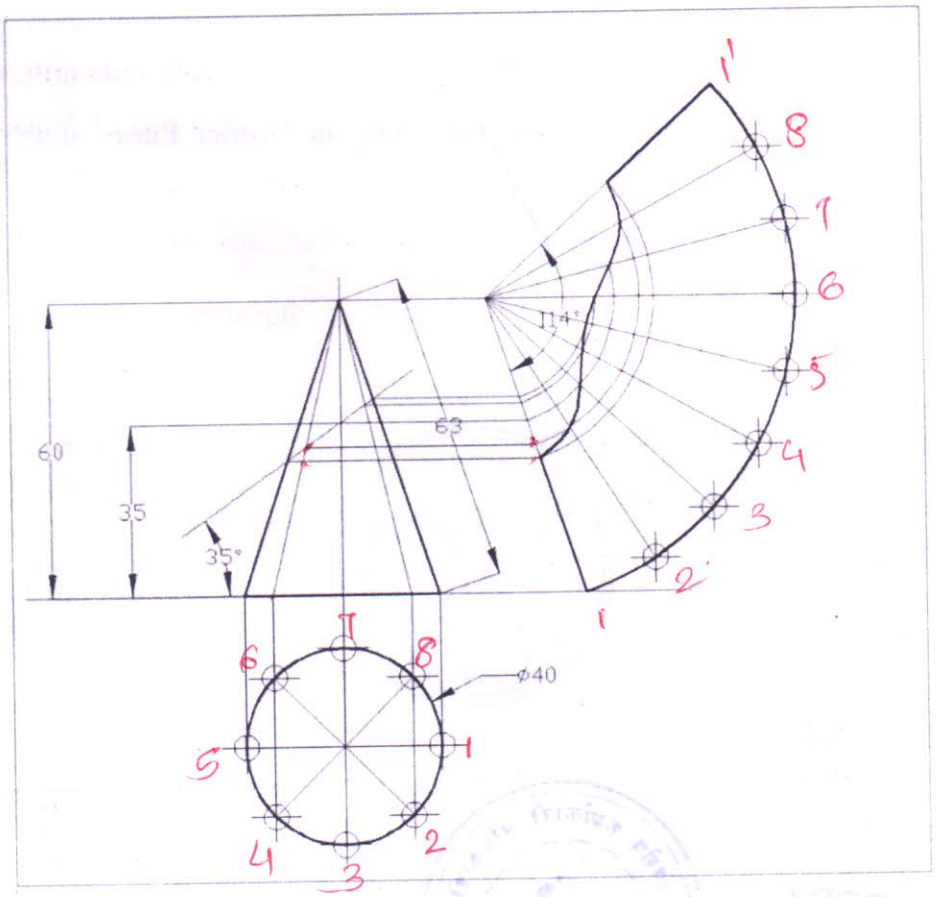
Marking Scheme: Pyramid
Drawing given Data (FV, TV of ~~cone~~): 3 marks
Locating Cutting plane correctly: 2 marks
Construction if required (Case III): 1 Mark (Situations where no construction required(Case I, II, this are to be given directly)
Development of Surface with correct construction: 5 Marks
Dimension and Quality of work: 1 Mark
Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct. Multiple solutions are possible as starting point can be different than given in solutions.



OR

Q.8) A cone of base 40 mm diameter and height 60 mm rests on its base on H.P. A sectional plane perpendicular to V.P and inclined at 35⁰ to H.P passes through the point on axis at 35 mm above HP. Draw the development of the lateral surface of the truncated cone. [12 marks]

Solution:



Marking Scheme:
Drawing given Data (FV, TV of cone): 3 marks, Locating Cutting plane correctly: 2 marks, Calculation of angle: 1 Mark, Development of Surface with correct construction: 5 Marks, Dimension and Quality of work: 1 Mark
Student can choose any method for solution. All correct and alternative solutions should be given full credit if correct. Multiple solutions are possible as starting point can be different than given in solutions.

Note for examiners: In case of unusual/non-conventional but theoretically/mathematically correct solution, by student please contact subject chairman for details.