

u2/u5

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LAB GROUP L2B

Booklet-A

CE101 Engineering Drawing July-Nov 2019

Indian Institute of Technology Guwahati

MID-SEMESTER EXAMINATION

Date: 14.09.2019

Total Marks: $15 \times 1 + 12 \times 2 + 2 \times 3 = 45$

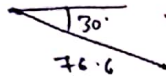
Time: 1 hr (11:00 am – 12:00 pm)

NOTES: (1) Answer all questions. (2) Questions 1-15 carry 1 mark each (3) Questions 16-27 carry 2 marks each (4) Questions 28-29 carry 3 marks each (5) There are no step marking. (6) This exam paper contains 8 pages, printed on both sides. (7) Free-hand drawing is allowed. (8) There is no negative marking. (9) In case of any discrepancy/missing data, write your assumption and solve. (10) In case of free hand sketches, take suitable lengths of the objects and the distances of points from XY. (11) Rough work to be done in attached sheet.

1-Mark questions

17/15

1. If a line AB is inclined at 50° to HP and is parallel to VP, its true length and true inclination with HP will be observed in Front view.
2. 10 VSD = 9 MSD: A Vernier scale following such a rule is called as Forward Vernier Scale.
3. In case of third angle projection, the Top view is above the XY line and the Front view is below the XY line. Is this statement true/false? True
4. If a lamina is parallel to HP, then the true shape will be seen in the top view.
5. While completing a letter using 'Single Stroke', the pen/pencil cannot be lifted. State whether the statement is True of False. False
6. A multiview orthographic projection is a type of convergent projection. Is this statement true/false? False



7. A line AB of 100 mm is inclined at 40° to HP and 30° to VP. The top view 'ab' measures 76.6 mm. If M is the midpoint of line AB, the distance of the midpoint from one of its end, 'am', in the top view is ~~42.3~~ ~~38.3~~ 25.5 mm.

8. If a line is inclined at 20.3° to the HP and 69.7° to the VP, its true length is seen in side view.

9. If the TV of a lamina is perfect square but the FV is a rectangle, then the true shape of the lamina is a rectangle.

10. If the eccentricity ratio of a conic is greater than 1, the represented conic is hyperbola.

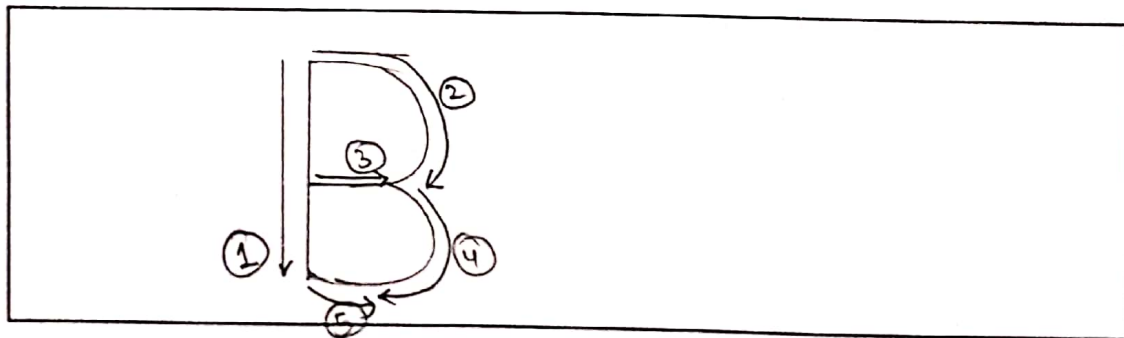
11. A point is on HP and behind VP. The point is lying in the 2nd quadrant.

12. If a line seen as a point in the profile plane, it will have 0 (zero) number of trace(s).

13. The sum of the distances of a point on the ellipse from the two foci is equal to length of the major Axis.

14. A line is said to be inclined if it is inclined to both HP and VP.

15. Draw the capital letter "B" and mark the sequence of strokes.



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2-Marks questions

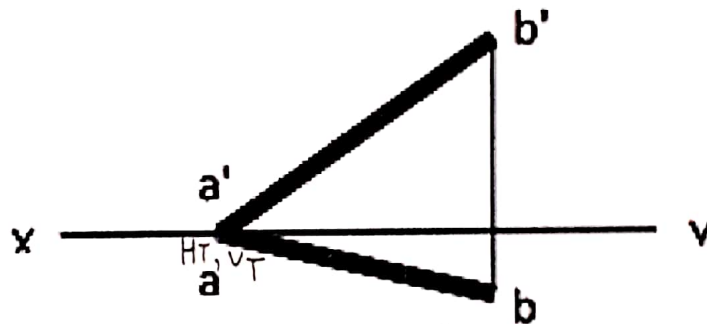
16. If a generating circle of radius 'r' rolls inside of a directing circle of radius 'R', the generated cycloid will be termed as hypocycloid and the angle subtended by one complete revolution of the generating circle will be expressed as

$$\frac{R}{r} \times 360^\circ$$

17. The recommended size of A2 drawing sheet is 594 mm \times 420 mm

18. Conic is defined as the locus of a point moving in a plane such that the ratio of its distance from a fixed point to the distance from a fixed line is always a constant.

19. The figure indicates the projections of line AB. In the same figure provided, locate the HT and VT of the line AB.



20. IIT Guwahati has an area of 2.85 km^2 . It is to be represented by a map of dimension $150 \text{ mm} \times 190 \text{ mm}$. The representative fraction for the map is $\frac{1}{10000}$.

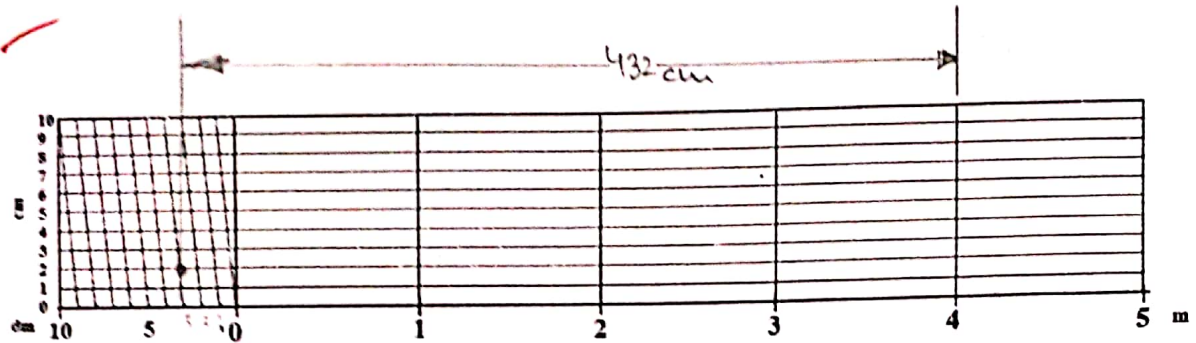
$$\begin{aligned} \text{Actual Area} &= 2.85 \text{ km}^2 \\ &= 2.85 \times 10^6 \text{ m}^2 \\ \text{Area of Drawing} &= 150 \times 190 \times 10^{-6} \text{ m}^2 \\ \text{RF} &= \sqrt{\frac{\text{Area of Drawing}}{\text{Actual Area of IIT}}} \\ &= \sqrt{\frac{150 \times 190 \times 10^{-6}}{2.85 \times 10^6}} \\ &= \sqrt{100 \times 10^{-10}} \\ &= 10^{-4} \end{aligned}$$

21. The top view (TV) of a rectangular shaped room will show its length and breadth (width) dimensions.

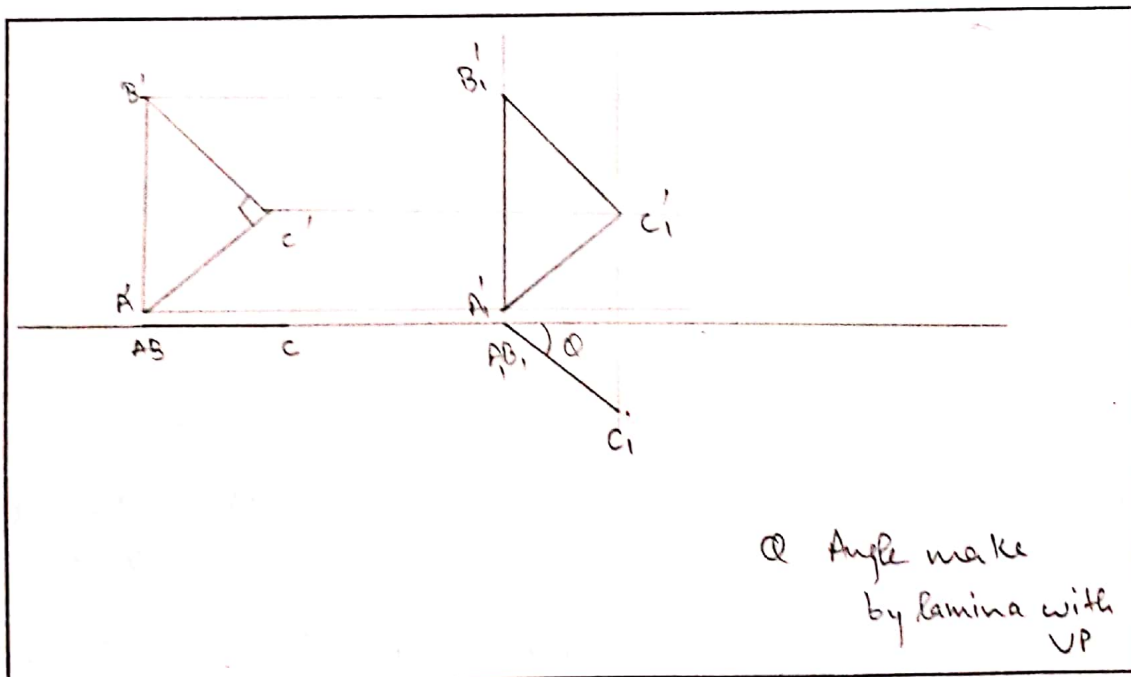
22. A regular pentagon of 20 mm side is parallel to VP. The perimeter of the geometry in FV

is 100 (20 x 5) mm.

23. Mark a distance of 432 cm on the diagonal scale, provided in the figure.

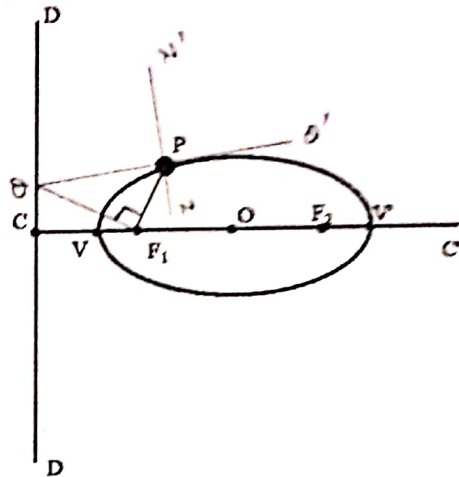


24. A right angle triangle lamina rests on VP on its edge, and makes an angle with VP. Draw the projections for first set (or, initial) TV and FV.



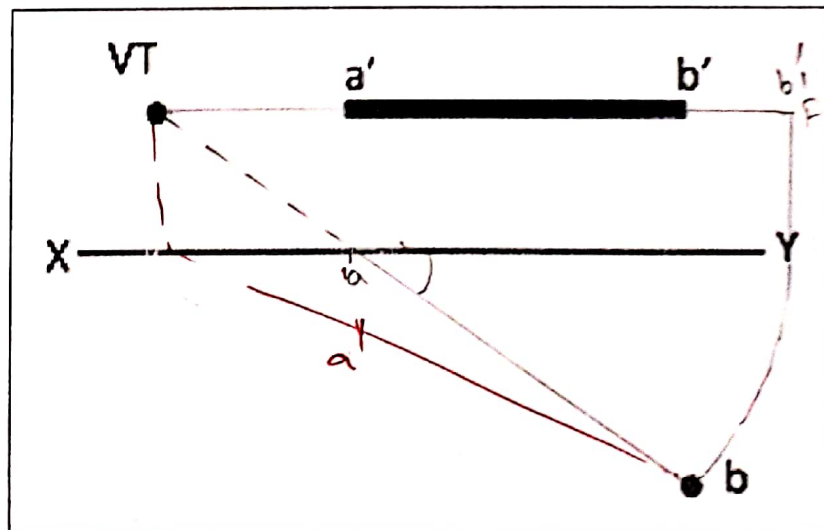
- ✓ write the steps to draw the tangent and normal passing through Point P. Also, sketch the same on the figure provided.

- ① Join PF_1
- ② Draw perpendicular to PF_1 to cut Directrix at D
- ③ Join Q to P
- ④ Extend QP to Q'
- ⑤ At point P make perpendicular to QQ' to get the Normal NN'



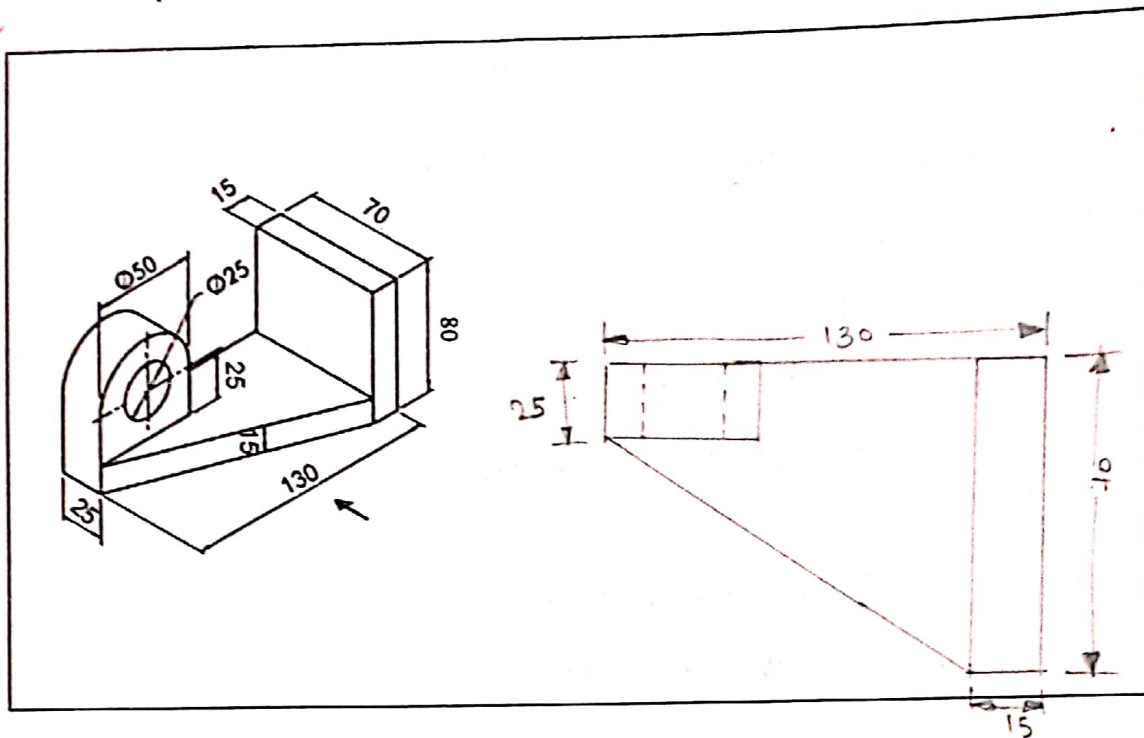
Hence QQ' is the tangent &
 NN' is the Normal.

26. Given the figure, show the construction for finding the true length of line AB.



$\therefore a', b'$ represent TL

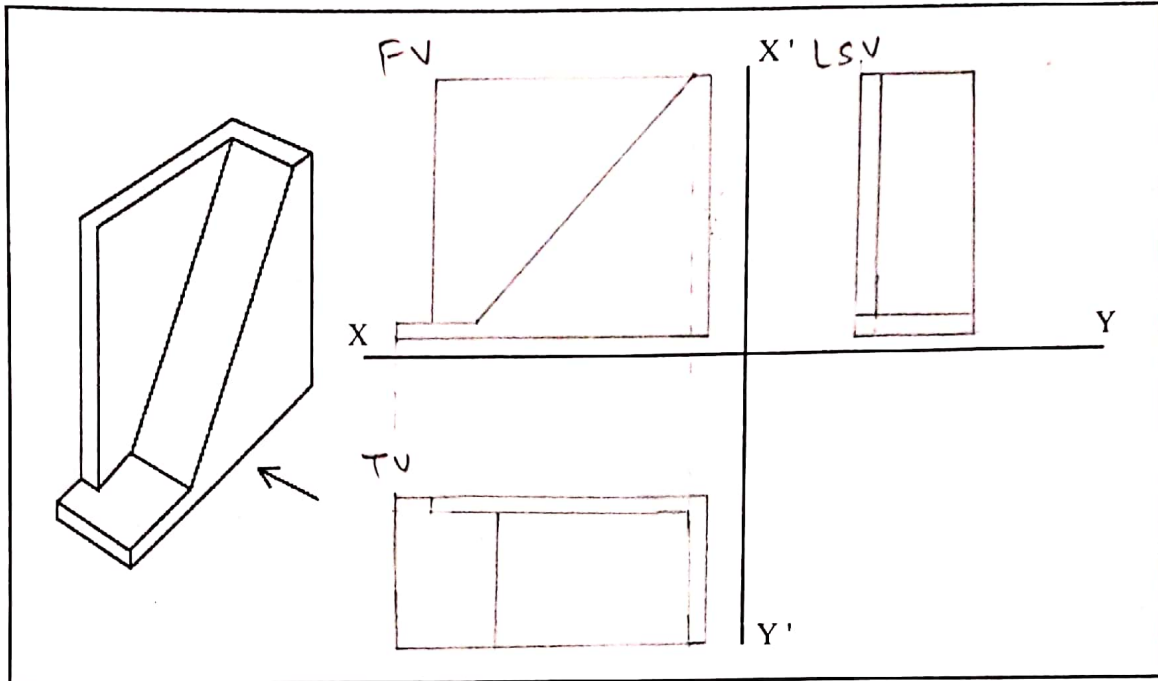
27. Consider the object as shown in the figure. Make free-hand sketch of the TV of the object.
Exact representation of dimension is not required.



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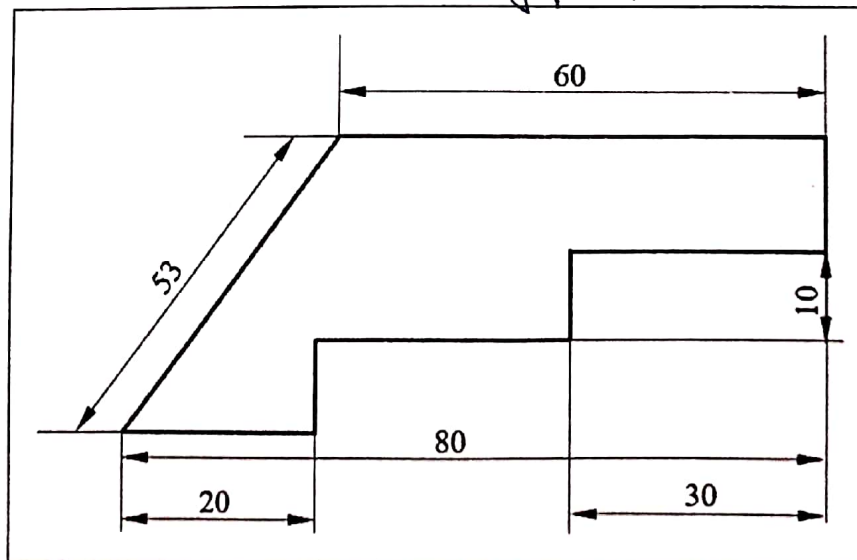
3-marks Questions

28. Using the first angle projection method for the object as shown in the figure, make free-hand sketch and properly mark the views as FV, TV and LSV.

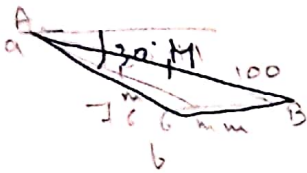


29. Identify any three mistakes regarding dimensioning of the given object.

- 3 /
- (a) Extension lines are cutting each other creating confusion
 - (b) Larger (longer) dimensions should be placed outwards (but they are not).
 - (c) While dimensioning to extension line is not drawn.
 - There is not a visible gap b/w boundary lines & extension lines



SHEET FOR ROUGH WORK
(WILL NOT BE CONSIDERED FOR EVALUATION)



$$76.6$$

$$50 \cos 30^\circ$$

$$\frac{50 \times \sqrt{3}}{2}$$

$$25$$

$$\frac{76.6}{100} \times 50$$

$$\frac{5 \times 14}{2.85} \times 10^{-5}$$