Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering / Science
End Sem Examination May-2024
EN3ES26 / BC3ES11 / SC3ES05 Engineering Graphics
Programme: B.Tech./ B.Sc. Branch/Specialisation: All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. In orthographic projections, the visual rays are assumed to- **1**
(a) Diverge from station point (b) Converge from station point
(c) Be parallel (d) None of these

ii. If both the front and the top views of a point lie on the opposite side of the reference line, the point is situated in which of the following angles? **1**
(a) First or second (b) First or third
(c) Second or fourth (d) Third or fourth

iii. If both the principal views of a plane object are ellipse of the same size, the side view is- **1**
(a) Horizontal line (b) Vertical line
(c) Inclined line (d) Ellipse

iv. A cube is resting on H.P. with a solid diagonal perpendicular to it. The top view will appear as- **1**
(a) Square (b) Rectangle
(c) Irregular hexagon (d) Regular hexagon

v. A triangular prism resting on a rectangular face in the H.P. It is cut by a horizontal plane. Its sectional top view is- **1**
(a) Equilateral triangle (b) Isosceles triangle
(c) Rectangle (d) None of these

vi. Sector of a circle of radius 60 mm and angle 120° represents development of the lateral surface of a cone. The top view of the cone is a circle of diameter- **1**
(a) 20 mm (b) 40 mm (c) 60 mm (d) 80 mm

vii. Offset command can be used for drawing- **1**
(a) Infinite long lines (b) Parallel lines
(c) Intersecting lines (d) Perpendicular bisectors

viii. Units command of AutoCAD is not used to set- **1**
(a) Units for linear measurement
(b) Units for angular measurement
(c) Limits of drawing
(d) Direction in which angle is to be measured

ix. Which one of the following command in AutoCAD is a transparent imaginary plane on which a drawing is created? **1**
(a) Plane (b) Command (c) Layer (d) Overlay

x. A command which is used to insert multiline text is- **1**
(a) Units (b) Trim (c) Join (d) mtext

Q.2 i. Draw the projections of the following points on a common reference line keeping the distance between their end projectors are 25 mm apart. **4**
(a) Point A is 40 mm above the H.P. and 25 mm in front of the V.P.
(b) Point B is 40 mm above the H.P. and in the V.P.
(c) Point C is 25 mm in front of the V.P. and in the H.P.
(d) Point D is 25 mm above the H.P. and 30 mm behind the V.P.

ii. A line PQ 100 mm long is inclined at 30° to the H.P.and at 45° to the V.P. Its mid-point is in the V.P. and 20 mm above the H.P. Draw its projections, if its end P is in the third quadrant and Q in the first quadrant. **6**

OR iii. The end P of a line PQ is 20 mm above the H.P. and 30 mm in front of the V.P. The end Q is 15 mm below the H.P. and 45 mm behind the V.P. If the end projectors are 50 mm apart, draw the projections of line PQ and determine the true length, traces and inclination with the reference planes. **6**

Q.3 i. A square lamina ABCD of side 40 mm is suspended from a point O such that its surface is inclined at 30° to the V.P. The point O lies on the side AB 12 mm away from A. Draw its projections. **4**

ii. A cone of base diameter 50 mm and axis 60 mm has one of its generators in the V.P. and inclined at 30° to the H.P. Draw its projections when the apex is 15 mm above the H.P. **6**

OR iii. A tetrahedron of edge 70 mm is resting on one of its edges in the H.P. which is inclined at 45° to the V.P. and a face contained by that edge is inclined at 30° to the H.P. Draw its projections. **6**

Q.4 i. Explain in brief the methods of development of surfaces. **4**

ii. A pentagonal pyramid of base side 30 mm and axis 60 mm is on a triangular face in the H.P. with its axis parallel to the V.P. It is cut by an Auxiliary inclined plane inclined at 60° to the H.P. and passing through the highest point of the base. Draw its front view sectional top view and true shape of the section. **6**

OR iii. A hexagonal prism of base side 30 mm and axis 70 mm is resting on its base on the ground with a side of base inclined at 45° to the V.P. It is cut by an auxiliary inclined plane inclined at 45° to the H.P. and passes through a point 15 mm below the top end of the axis. Draw the development of the lateral surface of the truncated prism. **6**

Q.5 i. Explain the difference between model space and paper space in AutoCAD. **4**

ii. What are the reasons for implementation a CAD system? **6**

OR iii. Explain the following commands in brief: **6**
(a) Array (b) Chamfer (c) Extend (d) Fillet
(d) Trim (e) Stretch

Q.6 Attempt any two:

i. Explain the purpose of layers in AutoCAD. **5**

ii. How can you create a dimension in AutoCAD? What do you understand by aligned dimension? **5**

iii. What is multiline text in AutoCAD? **5**

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Marking Scheme

EN3ES26 / BC3ES11 / SC3ES05 Engineering Graphics

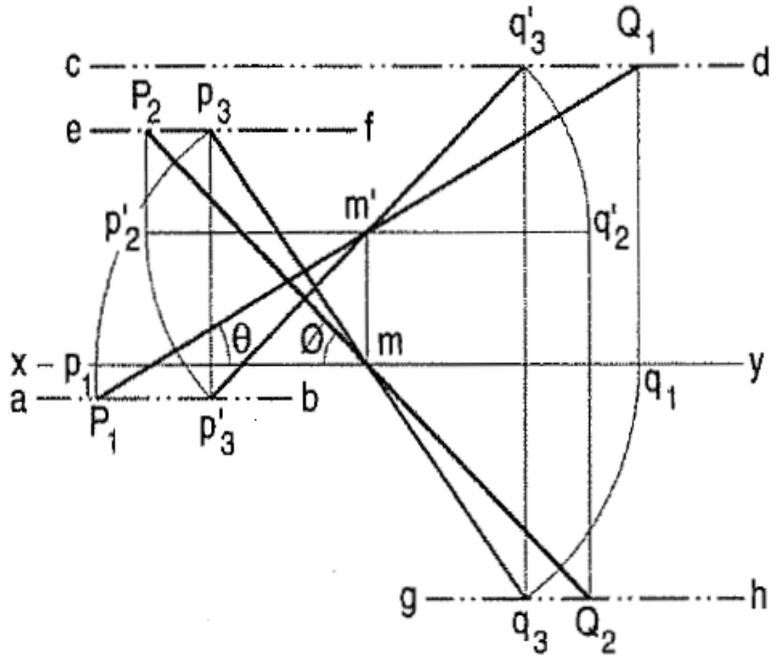
Q.1	i)	C	**1**
	ii)	B	**1**
	iii)	C	**1**
	iv)	D	**1**
	v)	C	**1**
	vi)	B	**1**
	vii)	B	**1**
	viii)	C	**1**
	ix)	C	**1**
	x)	D	**1**

Q.2 i. Draw the projections of the following points on a common reference line keeping the distance between their end projectors 25 mm apart. **4**

- **a. 1 mark**
- **b. 1 mark**
- **c. 1 mark**
- **d. 1 mark**

ii. A line PQ 100 mm long is inclined at 30° to the H.P.and at 45° to the V.P. Its mid-point is in the V.P. and 20 mm above the H.P. Draw its projections, if its end P is in the third quadrant and Q in the first quadrant. **6**

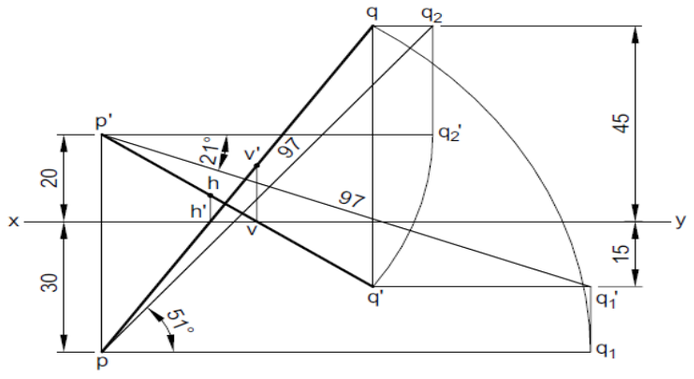
- **Locating position of mid-point 2 mark**
- **Final Front view 1.5 marks**
- **Final Top view 1.5 marks**
- **Dimensioning 1 mark**



OR iii. The end P of a line PQ is 20 mm above the H.P. and 30 mm in front of the V.P. The end Q is 15 mm below the H.P. and 45 mm behind the V.P. If the end projectors are 50 mm apart, draw the projections of line PQ and determine the true length, traces and inclination with the reference planes. **6**

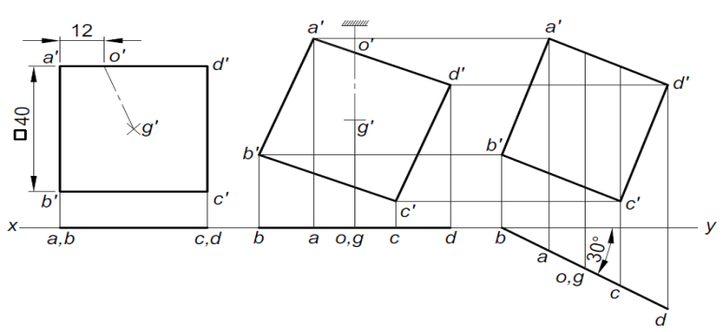
- **Locating position of points 2 mark**
- **True length Front view with true angles 1 mark**
- **True length Top view with true angles 1 mark**
- **Traces 1 mark**
- **Dimensioning 1 mark**

[2]



Q.3 i. A square lamina ABCD of side 40 mm is suspended from a point O such that its surface is inclined at 30° to the V.P. The point O lies on the side AB 12 mm away from A. Draw its projections. **4**

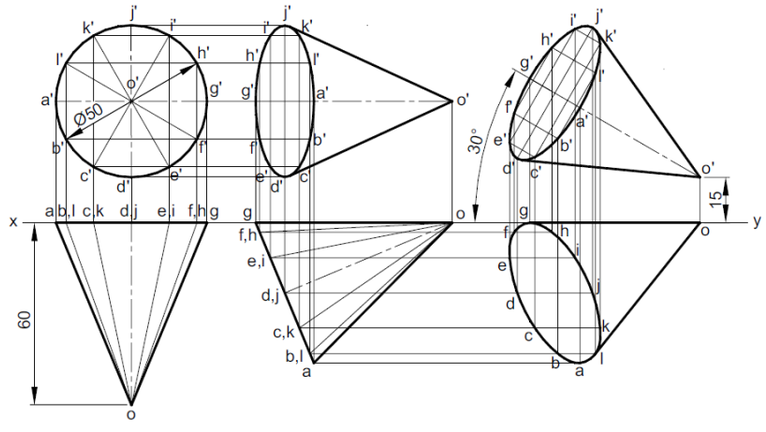
- **First stage 1 marks**
- **Second stage 1 marks**
- **Third stage 1.5marks**
- **Dimensioning 0.5 marks**



ii. A cone of base diameter 50 mm and axis 60 mm has one of its generators in the V.P.and inclined at 30° to the H.P. Draw its projections when the apex is 15 mm above the H.P. **6**

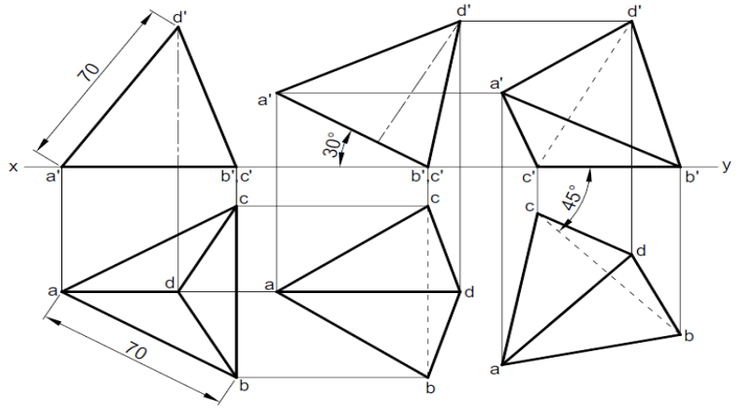
- **First stage 2 mark**
- **Second stage 1.5 marks**
- **Third stage 1.5 marks**
- **Dimensioning 1 marks**

[3]



OR iii. A tetrahedron of edge 70 mm is resting on one of its edges in the H.P. which is inclined at 45° to the V.P. and a face contained by that edge is inclined at 30° to the H.P. Draw its projections. **6**

- **First stage 2 marks**
- **Second stage 1.5 marks**
- **Third stage 1.5 marks**
- **Dimensioning 1 marks**



Q.4 i. Explain in brief the methods of development of surfaces. **4**

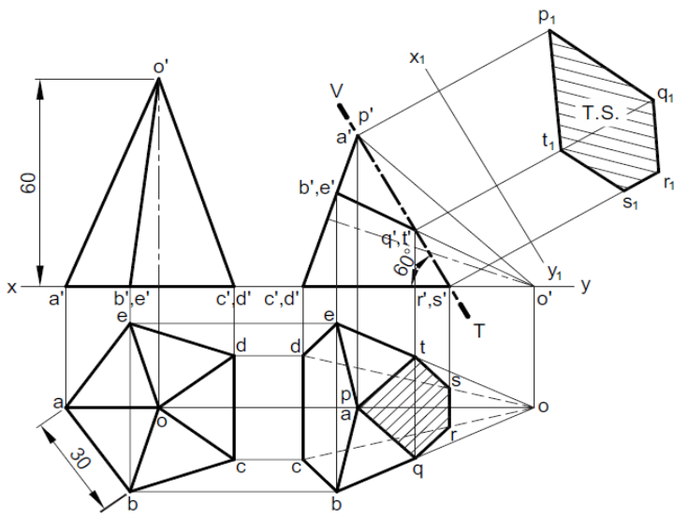
Four Methods of Developments of Surfaces 1 Marks each

ii. A pentagonal pyramid of base side 30 mm and axis 60 mm is on a triangular face in the H.P. with its axis parallel to the V.P. It is cut by an Auxiliary inclined plane inclined at 60° to the H.P. and passing through the highest point of the base. Draw its front view sectional top view and true shape of the section. **6**

- **First Stage(Front view & top view) 2 marks**

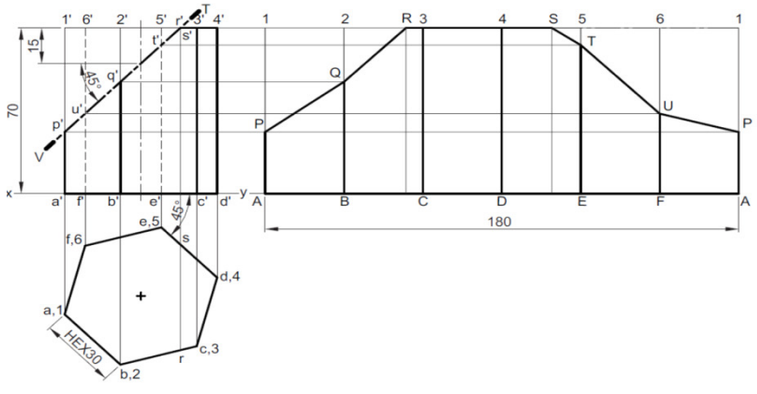
P.T.O.

- **Second Stage(Front view & Sectional Top view) 2 marks**
- **True shape of the section 1 marks**
- **Dimensioning 1 marks**



OR iii. A hexagonal prism of base side 30 mm and axis 70 mm is resting on its base on the ground with a side of base inclined at 45° to the V.P. It is cut by an auxiliary inclined plane inclined at 45° to the H.P. and passes through a point 15 mm below the top end of the axis. Draw the development of the lateral surface of the truncated prism. **6**

- **First Stage(Front view & top view) 2 marks**
- **Development of truncated prism 2 mark**
- **Dimensioning 2 marks**



Q.5 i. Explain the difference between Model space and Paper space in AutoCAD. **4**

Four Differences between Model space and Paper space
1 marks each

ii. What are the reasons for implementation a CAD system? **6**

Six reasons for implementation a CAD system 1 marks each

OR iii. Explain the following commands in brief: **6**
(a) Array (b) Chamfer (c) Extend (d) Fillet (d) Trim (e) Stretch

Brief explanations of each command with suitable sketch
1 marks each

Q.6 **Attempt any two:**

i. Explain the Purpose of layers in AutoCAD. **5**

Explanations of Purpose of layers in AutoCAD 5 marks

ii. How can you create a dimension in AutoCAD? What do you understand by aligned dimension? **5**

Brief explanations of create a dimension in AutoCAD 3 marks

Brief explanations of aligned dimension 2 marks

iii. What is multiline text in AutoCAD? **5**

Brief explanations of multiline text 5 marks

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