

CBCS 2025- SCHEME

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1BCEDC/M/EC/E/S103

First Semester B.E Degree Examination, Dec.2025/Jan.2026

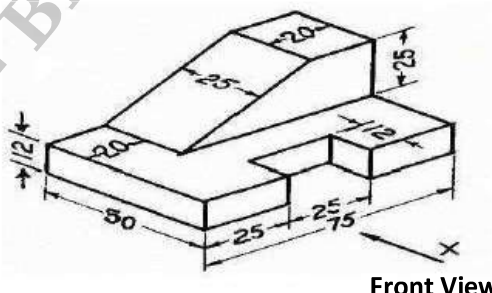
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point S is in the first quadrant and equidistant of 50 mm from all the three principal planes. Draw the projections of the point	10
1 (b)	A line AB 100 mm long is inclined to HP at 45° and inclined to VP at 30° . The end A touches both HP and VP. Determine their lengths. Also determine the perpendicular distance of end B from both HP and VP.	10
OR		
2	Draw the projections of a circular plate of negligible thickness of 50 mm diameter resting on HP on a point on the circumference, with its plane inclined at 45° to HP and the top view of the diameter passing through the resting point makes 60° with VP.	20
Module – II		
3	A square prism 35mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
OR		
4	A square pyramid 35 mm sides of base and 65 mm axis length rests on HP on one of its edges of the. Draw the projections of the pyramid when the axis is inclined to HP at 45° and to VP at 30°	30
Module – III		
5	A square pyramid of side of base 45mm, altitude 70mm is resting with its base on HP with two sides of the base parallel to VP. The pyramid is cut by a section plane which is perpendicular to VP and inclined at 40° to the HP. The cutting plane bisects the axis of the pyramid. Obtain the development of the lateral surfaces of the truncated pyramid.	25
OR		
6	Draw the development of the frustum of square pyramid 40 mm base side and 20 mm top side having a height of 60 mm. One of the base edge is perpendicular to VP	25
Module – IV		
7	A sphere of diameter 60 mm is placed centrally on the top face of a hexagonal prism side 35 mm height 50 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View	25

Name & Signature of Examiner 1

Name & Signature of Examiner 2

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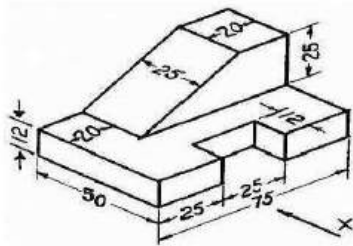
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point A is 20 mm above HP and is in the first Quadrant. Its shortest distance from the line of intersection of X1Y1 and XY line is 40 mm. Draw its projections. Find the distance of point from VP	10
1 (b)	The top view of a 75 mm long line AB measures 65 mm, while the front view is 50 mm. Its one end A is in HP and 12 mm in front of VP. Draw the projections of AB and determine its inclinations with HP and the VP.	10
OR		
2	A hexagonal lamina of sides 30 mm has one of its comers in VP and its surface inclined at an angle of 30° with VP. The diagonal passing through that corner which is in VP appears to be inclined at 45° to HP. Draw the projections of the lamina	20
Module – II		
3	A pentagonal prism 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30°. Draw the projections of the prism when the axis is inclined to HP at 40°.	30
OR		
4	A pentagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at 40° and appears to be inclined to VP at 45°.	30
Module – III		
5	A pentagonal prism of base sides 30mm and axis length 60mm rests with its base on HP and an edge of the base inclined at 45° to VP. It is cut by plane perpendicular to VP, inclined at 40° to HP and passing through a point on axis, at distance of 30mm from the base. Develop the remaining surfaces of the truncated prism.	25
OR		
6	A square pyramid of 25mm base edge and 50mm height rests with its base on HP with its all base edges equally inclined to VP. It is cut by plane perpendicular to VP and inclined to HP at 60°, passing through the extreme right corner of base. Draw the development of lateral surface of the pyramid.	25
Module – IV		
7	A rectangular pyramid of base 40 mm x 25 mm and height 50 mm is placed centrally on a rectangular slab of sides 100 mm x 60 mm and thickness 20 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View	25

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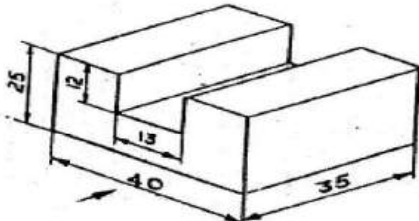
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	The point A is 25 mm behind VP and its shortest distance from the line of intersection of VP and HP is 50 mm. Draw its projections and find the distance of the point from HP	10
1 (b)	A line has its end A 10 mm above HP and 15 mm in front of VP. The end B is 55 mm above HP and line is inclined at 30° to HP. The distance between the projectors is 50 mm. Draw the projections of the line. Determine the true length of the line and its inclination with VP.	10
OR		
2	A Pentagonal lamina having sides 25 mm is placed on one of its corners on VP such that the surface makes an angle of 30° with VP and perpendicular bisector of the side passing through that corner on which the lamina rests appears to be inclined at 30° to HP. Draw the top and front views of the lamina.	20
Module – II		
3	A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its edges. Draw the projections of the prism when the axis is inclined to HP at 45° to VP at 30° .	30
OR		
4	A hexagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis is inclined to VP at 45° .	30
Module – III		
5	A frustum of a pentagonal pyramid, smaller base sides of 16mm and bigger top face sides of 32mm and height of 40 mm, is resting on the HP on its smaller face, with one of its sides parallel to VP. Draw the projections of the frustum and develop the lateral surface of it.	25
OR		
6	A rectangular prism of base size 25mm $\times$ 40mm and axis length 65mm is resting on HP on its base with the longer side of the base inclined at 30° to VP. It is cut by a plane inclined at 40° to HP and perpendicular to VP and passes through extreme left corner of base. Draw the development of the lateral surface of the remaining portion of the prism.	25
Module – IV		
7	A triangular prism of base side 30 mm and length 70 mm is resting on its rectangular face on the top of a square slab side 70 mm and 25 mm thick. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View Figure 7	25

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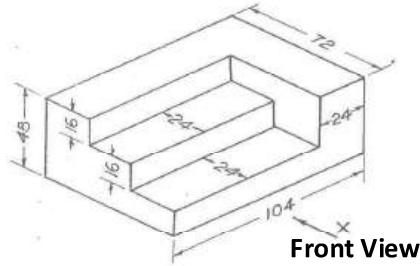
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Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	Draw the projections of the following points on the same XY line. Also, state the Quadrant in which they lie: i) A – 30 mm below HP and on VP and ii) B – 30 above HP and 40 in front of VP.	10
1 (b)	A line AB measuring 70 mm has its end A 15 mm in front of VP and 20 mm above HP and the other end B is 60 mm in front of VP and 50 mm above HP. Draw the projections of the line and find their inclinations with both the reference planes of projections.	10
OR		
2	A pentagonal lamina of sides 25 mm is having a side both on HP and VP. The corner opposite to the side on which it rests is 15 mm above HP. Draw the top and front views of the lamina.	20
Module – II		
3	A square prism 35mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30° . Draw the projections of the prism when the axis is inclined to HP at 45° .	30
OR		
4	A square pyramid 35mm sides of base and 60 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis appears to be inclined to VP at 45° .	30
Module – III		
5	A rectangular prism of base 30mm x 20 mm and height 60mm rests on HP on its base with the longer base side inclined at 40° to VP. It is cut by plane inclined at 45° to HP, perpendicular to VP and bisects the axis. Draw the development of the lateral surface of prism.	25
OR		
6	A square pyramid of side of base 45mm, altitude 70mm is resting with its base on HP with two sides of the base parallel to VP. The pyramid is cut by a section plane which is perpendicular to VP and inclined at 40° to the HP. The cutting plane bisects the axis of the pyramid. Obtain the development of the lateral surfaces of the truncated pyramid.	25
Module – IV		
7	A cone of base diameter 30 mm and height 40 mm rests centrally over a cube of side 50 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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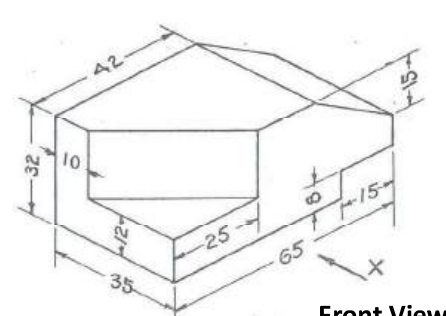
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Time: 3 Hours

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Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point A is 20 mm above HP and in the first Quadrant. Its shortest distance from the intersection of X1Y1 and XY line is 40 mm. Draw the projections. Determine its distance from VP.	10
1 (b)	A line AB has its end A 20 mm above the HP and 30 mm in front of VP. The other end B is 60 mm above HP and 45 mm in front of VP. The distance between end projectors is 70 mm. draw its true length and apparent inclinations.	10
OR		
2	A hexagonal lamina of sides 25 mm rests on one of its sides on HP. The lamina makes 45° to HP and the side on which it rests makes 30° to VP. Draw its projections.	20
Module – II		
3	A pentagonal prism 25 mm sides of base and 60 mm axis length rests on HP on one of its edges. Draw the projections of the prism when the axis is inclined to HP at 40° and to VP at 30° .	30
OR		
4	A pentagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis is inclined to VP at 45° .	30
Module – III		
5	A square pyramid of 25mm base edge and 50mm height rests with its base on HP with its entire base edges equally inclined to VP. It is cut by a plane perpendicular to VP and inclined to HP at 60° , passing through the extreme right corner of the base. Draw the development of the lateral surface of pyramid.	25
OR		
6	A regular pentagonal prism of height 60 mm and base edge 30mm rests with its base on HP. The vertical face closest to VP is 30° to it. Draw the development of truncated prism with its truncated surface inclined at 60° to its axis and bisecting it.	25
Module – IV		
7	A triangular pyramid of base side 40 mm and height 50 mm is placed centrally on a square slab of side 80 mm and 20 mm thick. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View	25

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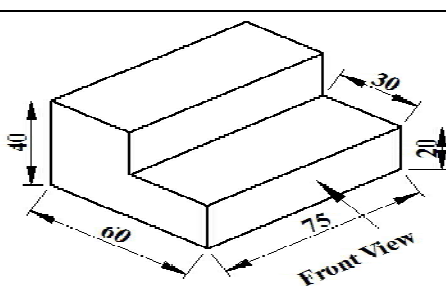
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Time: 3 Hours

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Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
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Q. No.	Module – I	Marks
1(a)	Draw the projections of the point G, which is in first Quadrant such that it is equidistant from HP and VP. The point is 25 mm from RPP. Determine its distances from HP and VP.	10
1 (b)	A line AB has its end A 20 mm above the HP and 30 mm in front of VP. The other end B is 60 mm above HP and 45 mm in front of VP. The distance between end projectors is 70 mm. Draw its true length and apparent inclinations.	10
OR		
2	A square plate of 40 mm sides rests on HP such that one of the diagonals is inclined 30° to HP and 45° to VP. Draw its projection.	20
Module – II		
3	A pentagonal prism 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30° . Draw the projections of the prism when the axis is inclined to HP at 40° .	30
OR		
4	A hexagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis is inclined to VP at 45° .	30
Module – III		
5	A square prism of base side 40mm and axis length 65mm is resting on HP on its base with all the vertical faces being equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through a point on the axis at distance 15mm from the top face. Draw the development of the lower portion of the prism.	25
OR		
6	A pentagonal pyramid 30mm edges of base and 60mm height rests vertically with one of its base edges parallel to VP and nearer to it. It is cut by section plane inclined at 45° to the base and bisecting the axis. Draw the development of the lateral surfaces of the bottom portion of the pyramid.	25
Module – IV		
7	A sphere of diameter 30 mm rests on the top plane surface of the frustum of a square pyramid of base side 30 mm, top face 18 mm side and height 50 mm, such that their axis are coaxial. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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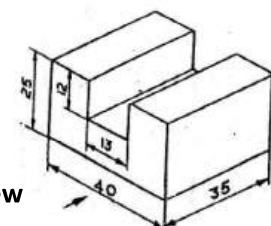
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Time: 3 Hours

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Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point P is 30 mm in front of VP, 40 mm above HP and 50 mm from RPP. Draw its projections.	10
1 (b)	Draw the projections of a straight line AB, 100 mm long, inclined at 45° to HP and 30° to VP. The end A is in HP and the end B is in VP. Find the shortest distance between the straight line AB and the line of intersection of planes of projection.	10
OR		
2	A regular hexagonal lamina of sides 25 mm is lying in such a way that one of its sides on HP while the side opposite to the side on which it rests is on VP. If the lamina makes 60° to HP. Draw the projections of the lamina.	20
Module – II		
3	A cone of base diameter 40 mm and axis length 50 mm is resting on a point on the circumference of its base such that its apex is at 40 mm above HP and the top view of the axis is inclined at 60° to VP. Draw the top and front views of the solid. Also, determine the inclination of the axis with HP.	30
OR		
4	A square pyramid 35mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
Module – III		
5	A pentagonal prism of 30mm side of base and height 50mm lies with its base on HP such that one of the rectangular faces is inclined at 40° to VP. It is cut to the shape of a truncated pyramid with the truncated surface inclined at 30° to the axis so as to pass through a point on it 30mm above the base. Develop the truncated portion of the prism.	25
OR		
6	A hexagonal pyramid 25mm side of base and axis 65mm long is resting on its base on HP with one of the edges of the base parallel to VP. It is cut by a vertical section plane at a distance of 8mm from the axis towards right side. Develop the lateral surface of the left part of pyramid	25
Module – IV		
7	A rectangular pyramid of base 40 mm x 25 mm and height 50 mm is placed centrally on a cylindrical slab of diameter 100 mm and thickness 30 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View Figure 7	25

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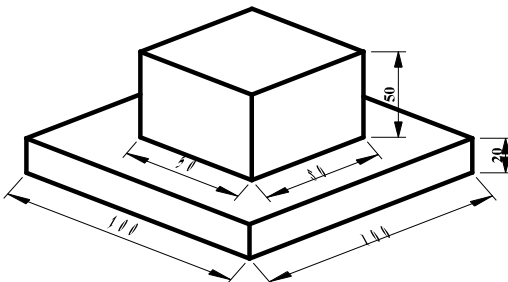
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Time: 3 Hours

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Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point G is 25 mm below HP and situated in the third quadrant. Its shortest distance from the intersection of XY and X1Y1 is 45 mm. Draw its projections and find its distance from VP.	10
1 (b)	The front view of a 90 mm long line which is inclined at 45° to the XY line, measures 65 mm. End A is 15 mm above the XY line and is in VP. Draw the projections of the line and find its inclinations with HP and VP.	10
OR		
2	A hexagonal lamina of 30mm sides rests on HP with one of its corners touching VP and surface inclined at 45° to it. One of its sides is inclined to HP at 30° . Draw the front and top views of the lamina in its final position.	20
Module – II		
3	A hexagonal prism 25mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and to VP at 30° .	30
OR		
4	A hexagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
Module – III		
5	A regular pentagonal pyramid of side of base 35mm and altitude 65mm has its base on HP with a side of base perpendicular to VP. The pyramid is cut by section plane which is perpendicular to VP and inclined at 30° to HP. The cutting plane meets the axis of the pyramid at a point 30mm below the vertex. Obtain the development of the remaining part of the pyramid.	25
OR		
6	A rectangular prism of base $40\text{mm} \times 25\text{mm}$ and height 65mm rests on HP on its base with the longer side of base is inclined at 30° to VP. It is cut by a plane inclined at 40° to HP and perpendicular to VP cuts the axis at its mid height. Draw the development of the remaining portion of the prism.	25
Module – IV		
7	The frustum of a square pyramid of sides 40 mm and height 60 mm rests on the centre of the top of a square block of side 60 mm and height 20 mm. The base edges of the pyramid are parallel to the top edges of the square block. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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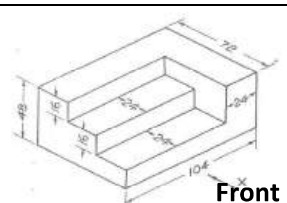
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Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
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Q. No.	Module – I	Marks
1(a)	A point A is 20 mm above HP and in the first Quadrant. Its shortest distance from the line of intersection of X_1Y_1 and XY line is 40 mm. Draw its projections. Find the distance of point from VP	10
1 (b)	A straight-line PQ 65 mm long is inclined at 45° to HP and 30° to VP. The point P is 70 mm from both the reference planes and the point Q is towards the reference planes. Draw the projections.	10
OR		
2	A hexagonal lamina of sides 25 mm rests on one of its corners on HP. The corner opposite to the corner on which it rests is 35mm above HP and the diagonal passing through the corner on which it rests is inclined at 30° to VP. Draw its projections. Find the inclination of the surface with HP.	20
Module – II		
3	A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its edges. Draw the projections of the prism when the axis is inclined to HP at 45° and appears to be inclined to VP at 40° .	30
OR		
4	A hexagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
Module – III		
5	A pentagonal prism of base sides 30mm and axis length 60mm rests with its base on HP and an edge of the base inclined at 45° to VP. It is cut by plane perpendicular to VP, inclined at 40° to HP and passing through a point on axis, at a distance of 30mm from the base. Develop the remaining surfaces of the truncated prism.	25
OR		
6	A square pyramid base 40mm side and axis 65mm long has its base on HP and all the edges of the base are equally inclined to VP. It is cut by an inclined section plane so as the truncated surface is at 45° to its axis, bisecting it. Draw the development of the truncated pyramid.	25
Module – IV		
7	A square prism of base side 40 mm and height 50 mm is placed centrally on a rectangular slab of sides 100 mm x 60 mm and thickness 20 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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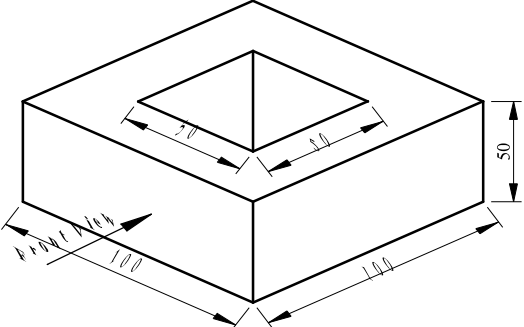
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Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
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Q. No.	Module – I	Marks
1(a)	A point G is in third quadrant and it is 50 mm from all the three principal planes of projections. Draw its projections	10
1 (b)	The distance between the end projectors through the end points of a line AB is 60 mm. the end A is 10 mm above HP and 15 mm in front of VP. The end B is 35 mm in front of VP. The line AB appears 70 mm long in the front view. Complete the projections. Find the true length of the line and its inclinations with HP and VP.	10
OR		
2	A Circular lamina of 50 mm diameter rests on HP such that one of its diameters is inclined at 30° to VP and 45° to HP. Draw its top and front views in this position.	20
Module – II		
3	A square prism 35mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30°. Draw the projections of the prism when the axis is inclined to HP at 45°.	30
OR		
4	A pentagonal pyramid 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base. Draw the projections of the pyramid when the axis is inclined to HP at 45° and to VP at 30°.	30
Module – III		
5	Draw the development of the truncated portion of the lateral faces of a pentagonal prism of 20mm sides of base and 50mm height standing vertically with one of its rectangular faces parallel to VP and nearer to it. The cutting plane of truncated prism is 30° to its axis and passes through the right extreme corner of the top face of the prism.	25
OR		
6	A hexagonal prism of base side 20mm and height 50mm is resting on HP on its base, such that one of its base edge is parallel to VP. The prism is cut by a section plane inclined at 45° to the base and bisecting the axis. Draw the development of lateral surface of prism	25
Module – IV		
7	A sphere of diameter 60 mm is placed centrally on the top face of a square prism of side 60 mm height 70 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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1BCEDC/M/EC/E/S103

First Semester B.E Degree Examination, Dec.2025/Jan.2026

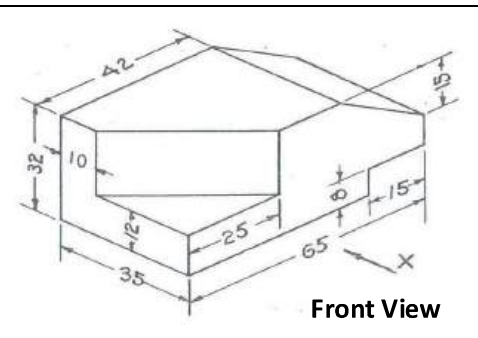
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	Draw the projections of the following points on the same XY line, keeping convenient distance between each projector and state the Quadrants in which they lie. P – 10 mm above HP and 15 mm in front of VP and Q – 40 mm below HP and 50 mm behind VP	10
1 (b)	A line AB 65 mm long has its end A 20 mm above HP and 25 mm in front of VP. The end B is 40 mm above HP and 65 mm in front of VP. Draw the projections of AB and show its inclinations with HP and VP.	10
OR		
2	A hexagonal lamina of sides 25 mm rests on one of its corners on HP. The lamina makes 45° to HP and the diagonal passing through the corner on which it rests appears to be inclined at 30° to VP. Draw its projections.	20
Module – II		
3	A pentagonal prism 25mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
OR		
4	A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30° . Draw the projections of the pyramid when the axis is inclined to HP at 45° .	30
Module – III		
5	A regular pentagonal prism of height 60mm and base edge 30mm rests with its base on HP. The vertical face closest to VP is 30° to it. Draw the development of the truncated prism with its truncated surface inclined at 60° to its axis and bisecting it.	25
OR		
6	A frustum of a square pyramid has its base 40mm sides, top 16mm sides and height 60mm having a side of its base parallel to VP. Draw the projections of the frustum and show the development of lateral surfaces of it.	25
Module – IV		
7	A square prism base side 40 mm and height 50 mm is placed centrally on a cylindrical slab of diameter 100 mm and thickness 30 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View	25

Name & Signature of Examiner 1

Name & Signature of Examiner 2

CBCS 2025- SCHEME

USN									
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1BCEDC/M/EC/E/S103

First Semester B.E Degree Examination, Dec.2025/Jan.2026

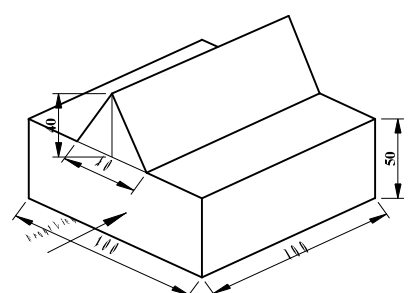
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point P is 30 mm in front of VP, 40 mm above HP and 50 mm from RPP. Draw its projections.	10
1 (b)	A line AB 80 mm long has its end A 20 mm above HP and 30 mm in front of VP. It is inclined at 30° to HP and 45° to VP. Draw the projections of the line and find apparent lengths and apparent inclinations.	10
OR		
2	A hexagonal lamina of sides 25 mm rests on one of its corners on HP. The lamina makes 45° to HP and the diagonal passing through the corner on which it rests appears to be inclined at 30° to VP. Draw its projections.	20
Module – II		
3	A square prism 35mm sides of base and 60 mm axis length rests on HP on one of its edges of the base. Draw the projections of the prism when the axis is inclined to HP at 45° and to VP at 30° .	30
OR		
4	A pentagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis appears to be inclined to VP at 45° .	30
Module – III		
5	A frustum of a square pyramid has its base 40 mm sides, top 16mm sides and height 60mm, its axis is vertical and a side of its base is parallel to VP. Draw the projections of the frustum and show the development of lateral surfaces of it.	25
OR		
6	A pentagonal prism of 30mm side of base and height 50mm lies with its base on HP such that one of the rectangular faces is inclined at 40° to VP. It is cut to the shape of a truncated pyramid with the truncated surface inclined at 30° to the axis so as to pass through a point on it 30mm above the base. Develop the truncated portion of the prism so as to produce a one-piece development.	25
Module – IV		
7	A sphere of diameter 40 mm is placed centrally on the flat face of a hemisphere of diameter 60 mm. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

Name & Signature of Examiner 1

Name & Signature of Examiner 2

CBCS 2025- SCHEME

USN

1BCEDC/M/EC/E/S103

First Semester B.E Degree Examination, Dec.2025/Jan.2026

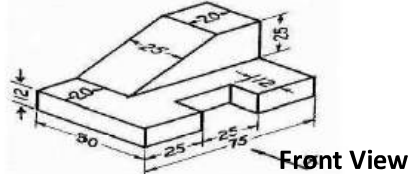
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	Draw the projections of the point G, which is in first Quadrant such that it is equidistant from HP and VP. The point is 25 mm from RPP. Determine its distances from HP and VP.	10
1 (b)	A point P is 40 mm above HP and 20 mm in front of VP another point Q is 20 mm above HP and 50 mm in front of VP. The top view of line PQ is inclined at 30° to XY. Draw the projections.	10
OR		
2	A hexagonal lamina of sides 25 mm rests on one of its sides on VP. The side opposite to the side on which it rests is 30 mm in front of VP and the side on which it rests makes 45° to HP. Draw its projections. Also, determine the inclination of the lamina with the reference plane.	20
Module – II		
3	A square prism 35mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and to VP at 30° .	30
OR		
4	A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at 40° and to VP at 30° .	30
Module – III		
5	A square pyramid base 40mm side and axis 65mm long has its base on HP and all the edges of the base are equally inclined to VP. It is cut by an inclined section plane so as the truncated surface is at 45° to its axis, bisecting it. Draw the development of the truncated pyramid.	25
OR		
6	A pentagonal prism of base sides 30mm and axis length 60mm rests with its base on HP and an edge of the base inclined at 45° to VP. It is cut by plane perpendicular to VP, inclined at 40° to HP and passing through a point on axis, at distance of 30mm from the base. Develop the remaining surfaces of the truncated prism.	25
Module – IV		
7	A square pyramid base 25 mm and height 65 mm is placed on a rectangular slab 100 mm x 60 mm and 20 mm thick. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure  Front View	25

Name & Signature of Examiner 1

Name & Signature of Examiner 2

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Differential Calculus and Linear Algebra : CV Stream

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks, L: Bloom's level, C: Course outcomes.
3. VTU Handbook is permitted.*

Module – 1			M	L	C
Q.1	a.	With usual notations, prove that $\tan \phi = r \frac{d\theta}{dr}$.	6	L2	CO1
	b.	Find the angle of intersection of the curves $r^2 \sin 2\theta = 4$ and $r^2 = 16 \sin 2\theta$	7	L2	CO1
	c.	Show that for the curve $r(1 - \cos \theta) = 2a$, ρ^2 varies as r^3 .	7	L2	CO1
OR					
Q.2	a.	With usual notations, prove that $\frac{1}{p^2} = \frac{1}{r^2} + \frac{1}{r^4} \left(\frac{dr}{d\theta} \right)^2$.	6	L2	CO1
	b.	Find the pedal equation of the polar curve $r^m = a^m (\cos m\theta + \sin m\theta)$	7	L2	CO1
	c.	Show that the radius of curvature at (a,0) on the curve $y^2 = \frac{4a^2(2a-x)}{x}$ is 'a'.	7	L2	CO1
Module – 2					
Q.3	a.	Expand $\log(\sec x + \tan x)$ in powers of x as far as the term in x^5 .	6	L2	CO1
	b.	If $u = f\left\{\frac{x}{y}, \frac{y}{z}, \frac{z}{x}\right\}$ then show that $\sum x \frac{\partial u}{\partial x} = 0$	7	L2	CO1
	c.	If $u = \frac{yz}{x}$, $v = \frac{xz}{y}$, $w = \frac{xy}{z}$, show that $\frac{(u,v,w)}{(x,y,z)} = 4$.	7	L2	CO1
OR					
Q.4	a.	Evaluate i) $\lim_{x \rightarrow 0} \left[\frac{a^x + b^x + c^x}{3} \right]^{\frac{1}{x}}$ ii) $\lim_{x \rightarrow 0} \left[\frac{\sin x}{x} \right]^{\frac{1}{x^2}}$	6	L2	CO1
	b.	If $u = f(y-z, z-x, x-y)$ then show that $\sum \frac{\partial u}{\partial x} = 0$	7	L2	CO1
	c.	Find the extreme value of the function $f = x^4 + y^4 - 2(x - y)^2$	7	L2	CO1
Module – 3					
Q.5	a.	Solve $\frac{dy}{dx} + \frac{y \cos x + \sin y + y}{\sin x + x \cos y + x} = 0$	6	L2	CO1
	b.	$[4xy + 3y^2 - x]dx + x(x + 2y)dy = 0$	7	L2	CO1
	c.	A bacterial culture growing exponentially increases from 100 to 400 grams in 10 hours. How much was present after 1 hour	7	L3	CO1

OR					
Q.6	a.	Solve $xy(1+xy^2)\frac{dy}{dx} = 1$	6	L2	CO1
	b.	Find the Orthogonal trajectories of the family of curve $r = a(1 + \sin\theta)$	7	L2	CO1
	c.	In a certain chemical reaction the rate of conversion of a substance at time 't' is proportional to the quantity of the substance still untransformed at that instant. At end of 1hour 60grams remains and at the end of 4hours 21grams.how many grams of the first substance was there initially	7	L3	CO1
Module – 4					
Q.7	a.	Solve $\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 25y = e^{2x} + \sin x + x$	6	L2	CO1
	b.	Solve by variation of parameter method $\frac{d^2y}{dx^2} + 4y = \tan 2x$	7	L2	CO1
	c.	Solve $(x+1)^2 \frac{d^2y}{dx^2} + (x+1)\frac{dy}{dx} + y = 2\sin\{\log(1+x)\}$	7	L2	CO1
OR					
Q.8	a.	Solve $\frac{d^3y}{dx^3} - 2\frac{d^2y}{dx^2} + 4\frac{dy}{dx} - 8y = 0$	6	L2	CO1
	b.	Solve $x^2 \frac{d^2y}{dx^2} - 4x \frac{dy}{dx} + 6y = x$	7	L2	CO1
	c.	Solve by variation of parameter method $\frac{d^2y}{dx^2} + y = \sec x$	7	L2	CO1
Module – 5					
Q.9	a.	Find the rank of the matrix $\begin{bmatrix} 4 & 0 & 2 & 1 \\ 2 & 1 & 3 & 4 \\ 2 & 3 & 4 & 7 \\ 2 & 3 & 1 & 4 \end{bmatrix}$	6	L2	CO2
	b.	Solve the following system of equation by Gauss elimination method $x - 2y + 3z = 2, 3x - y + 4z = 4, 2x + y - 2z = 10.$	7	L3	CO2
	c.	Find the Eigen values and Eigen vectors of the following matrix by using Rayleigh's power method. $A = \begin{bmatrix} 4 & 1 & -1 \\ 2 & 3 & -1 \\ -2 & 1 & 5 \end{bmatrix}$	7	L2	CO2
OR					
Q.10	a.	Investigate the values of λ and μ such that $2x + y + 4z = 12, x + 2y + 3z = 10, x + 2y + \lambda z = \mu.$ (i) Unique Solution (ii) Infinite Solution (iii) No Solution	6	L3	CO2
	b.	Solve by Gauss-seidel iteration method: $83x + 11y - 4z = 9, 3x + 8y + 29z = 71, 7x + 52y + 13z = 104$	7	L3	CO2
	c.	Find the eigen values and eigen vectors of the matrix $A = \begin{bmatrix} -19 & 7 \\ -42 & 16 \end{bmatrix}$	7	L2	CO2

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Differential Calculus and Linear Algebra : EEE Stream

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.
3. VTU Handbook is permitted.*

Module – 1			M	L	C
Q.1	a.	With usual notations, prove that $\tan\phi = r \frac{d\theta}{dr}$.	6	L2	CO1
	b.	Find angle between the following curves $r = a \log \theta$ & $r = \frac{a}{\log \theta}$.	7	L2	CO1
	c.	Show that the radius of curvature of the curve $r^n = a^n \cos n\theta$ varies inversely as r^{n-1} .	7	L2	CO1
OR					
Q.2	a.	Find the radius of curvature of the curve $x^3 + y^3 = 3axy$ at the point $(3a/2, 3a/2)$.	6	L2	CO1
	b.	Show that the following pair of curves cut orthogonally: $r = a(1 + \sin \theta)$ & $r = a(1 - \sin \theta)$	7	L2	CO1
	c.	Find the pedal equation $r^2 = a^2 \sec 2\theta$.	7	L2	CO1
Module – 2					
Q.3	a.	Expand $\log(\sec x)$ in powers of x up to the term containing x^4 .	6	L2	CO1
	b.	Evaluate i) $\lim_{x \rightarrow 0} \left(\frac{a^x + b^x + c^x}{3} \right)^{1/x}$ ii) $\lim_{x \rightarrow \pi/2} (\sec x)^{\cot x}$.	7	L2	CO1
	c.	Discuss the maxima and minima of the function $f(x, y) = x^3 + y^3 - 3x - 27y + 24$.	7	L3	CO1
OR					
Q.4	a.	If $u = f\left(\frac{x}{y}, \frac{y}{z}, \frac{z}{x}\right)$, prove that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z} = 0$.	6	L2	CO1
	b.	If $u = x^2 + y^2 + z^2, v = xy + yz + zx, w = x + y + z$ evaluate Jacobian of u, v, w with respect to x, y, z .	7	L3	CO1
	c.	If $u = x^2 + y^2 + z^2, x = e^{2t}, y = \cos 3t, z = \sin 3t$. Find $\frac{du}{dt}$.	7	L2	CO1
Module – 3					
Q.5	a.	Solve $(y \cos x + \sin y + y)dx + (\sin x + x \cos y + x)dy = 0$.	6	L2	CO1
	b.	Find a solution for the non-linear differential equation $xyp^2 - (x^2 + y^2)p + xy = 0$.	7	L2	CO1
	c.	Solve $(px - y)(py + x) = 2p$ by reducing into Clairaut's form, taking the substitutions $x^2 = X, y^2 = Y$.	7	L2	CO1
OR					
Q.6	a.	Solve $\frac{dy}{dx} + y \tan x = y^3 \sec x$.	6	L2	CO1

	b.	Solve $(xy + y^2 + y)dx + (x^2 + 3xy + 2x)dy = 0$.	7	L2	CO1
	c.	Find the orthogonal trajectories of curve $r^n = a^n \sin n\theta$.	7	L3	CO1
Module – 4					
Q.7	a.	Solve $\frac{d^3y}{dx^3} - \frac{d^2y}{dx^2} + 4\frac{dy}{dx} - 4y = 0$.	6	L2	CO1
	b.	Solve $x^2 \frac{d^2y}{dx^2} - 2y = x^2 + \frac{1}{x}$.	7	L2	CO1
	c.	Solve by the method of variation of parameters $\frac{d^2y}{dx^2} + y = \tan x$.	7	L2	CO1
OR					
Q.8	a.	Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 12x^2$.	6	L2	CO1
	b.	Solve $y'' - 6y' + 9y = 5e^{3x} - \sin 2x$.	7	L2	CO1
	c.	Solve $(3x + 2)^2 y'' + 3(3x + 2)y' - 36y = 8x$.	7	L2	CO1
Module – 5					
Q.9	a.	Determine the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 & 2 \\ 2 & 3 & 5 & 1 \\ 1 & 3 & 4 & 5 \end{bmatrix}$	6	L2	CO2
	b.	Solve the following system of equations by Gauss seidal $10x + y + z = 12$, $x + 10y + z = 12$, $x + y + 10z = 12$, Carry out three iteration.	7	L2	CO2
	c.	Find the dominant eigen value and the corresponding eigen vector of the matrix $A = \begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$ by power method. With initial Eigen vector $[1 \ 0 \ 0]'$. Carry out four iterations.	7	L3	CO2
OR					
Q.10	a.	Solve by Gauss elimination method $x + y + z = 9$, $x - 2y + 3z = 8$, $2x + y - z = 3$.	6	L2	CO2
	b.	Investigate the values of λ and μ , such that the system of equations $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = \mu$ have i) Unique solution ii) No solution iii) Infinitely many solution.	7	L3	CO2
	c.	Find the Eigen values and Eigen vectors of the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$.	7	L2	CO2

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Differential Calculus and Linear Algebra : ME Stream

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.
3. VTU Handbook is permitted.*

Module – 1			M	L	C
Q.1	a.	With the usual notation prove that $\tan \phi = r \frac{d\theta}{dr}$.	6	L2	CO1
	b.	Find the angle between the curves $r = a(1 + \cos\theta)$ and $r = b(1 - \cos\theta)$.	7	L2	CO1
	c.	Find the radius of curvature for the curve $r^n = a^n \cos n\theta$.	7	L2	CO1
OR					
Q.2	a.	Find the angle between the radius vector and tangent to the curve $\frac{2a}{r} = (1 - \cos\theta)$.	6	L2	CO1
	b.	Find the Pedal equation for the curve $r(1 - \cos\theta) = 2a$.	7	L2	CO1
	c.	Find the radius of curvature for the curve $x^3 + y^3 = 3axy$ at the point $(3a/2, 3a/2)$.	7	L2	CO1
Module – 2					
Q.3	a.	Apply Maclaurin's series to prove that $\sqrt{1 + \sin 2x} = 1 + x - \frac{x^2}{2} - \frac{x^3}{6} + \dots$	6	L3	CO1
	b.	Evaluate $\lim_{x \rightarrow 0} \left(\frac{\tan x}{x} \right)^{1/x}$.	7	L2	CO1
	c.	Determine the extreme value of the function $f = x^3 + y^3 - 3x - 12y + 20$.	7	L2	CO1
OR					
Q.4	a.	If $u = x^3 - 3xy^2 + x + e^x \cos y + 1$ show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$	6	L2	CO1
	b.	If $u = F(x-y, y-z, z-x)$ then prove that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$	7	L2	CO1
	c.	If $u = \frac{yz}{x}, v = \frac{zx}{y}, w = \frac{xy}{z}$ Prove that $\frac{\partial(u, v, w)}{\partial(x, y, z)} = 4$	7	L2	CO1

Module – 3					
Q.5	a.	Solve $\frac{dy}{dx} + \frac{y}{x} = y^2 x$	6	L2	CO1
	b.	Solve the differential equation $y(2xy + 1) dx - xdy = 0$.	7	L2	CO1
	c.	The number N of bacteria in a culture grew at a rate proportional to N. The value of N was initially 100 and increased to 332 in one hour. What would be the value of N after $1\frac{1}{2}$ hours?	7	L3	CO1
OR					
Q.6	a.	Solve $r \sin \theta - \cos \theta \frac{dr}{d\theta} = r^2$	6	L2	CO1
	b.	Apply the concept of differential equations to find the orthogonal trajectories $\frac{x^2}{a^2} + \frac{y^2}{b^2 + \lambda} = 1$	7	L3	CO1
	c.	Solve the differential equation $(x^2 + y^2 + x)dx + xydy = 0$	7	L2	CO1
Module – 4					
Q.7	a.	Find the Rank of the matrix $A = \begin{bmatrix} 4 & 0 & 2 & 1 \\ 2 & 1 & 3 & 4 \\ 2 & 3 & 4 & 7 \\ 2 & 3 & 1 & 4 \end{bmatrix}$	6	L2	CO2
	b.	Apply Gauss - Seidel method to approximate the solution of the system $20x + y - 2z = 17$, $3x + 20y - z = -18$, $2x - 3y + 20z = 25$ by choosing initial solution (0,0,0). Perform three iterations.	7	L3	CO2
	c.	Test for consistency and solve $x + 2y + 3z = 14$, $4x + 5y + 7z = 35$, $3x + 3y + 4z = 21$	7	L2	CO2
OR					
Q.8	a.	Apply Gauss-elimination method to find the solution of system equations $x + y + z = 9$, $x - 2y + 3z = 8$, $2x + y - z = 3$.	6	L3	CO2
	b.	Apply Jordan method. To find inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 4 \\ 5 & 6 & 0 \end{bmatrix}$	7	L3	CO2
	c.	Apply LU decomposition method to find the solution of the system $AX = b$, where $A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$, $b = \begin{bmatrix} 8 \\ 14 \end{bmatrix}$	7	L3	CO2

Module – 5					
Q.9	a.	Apply Moore Penrose Pseudo inverse method to find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \\ 1 & -1 \end{bmatrix}$	6	L3	CO2
	b.	Reduce the matrix $A = \begin{bmatrix} -2 & 5 \\ -3 & 6 \end{bmatrix}$ into diagonal form.	7	L2	CO2
	c.	Apply Rayleigh power method to find the largest eigen value and the corresponding eigen vector of the matrix $\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$ by taking the initial eigen vector as $[1 \ 1 \ 1]'$	7	L3	CO2
OR					
Q.10	a.	Apply Cayley Hamilton theorem to find the inverse of the matrix $A = \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$	6	L3	CO2
	b.	Determine the eigen values and the corresponding eigen vectors for the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$	7	L2	CO2
	c.	Find the characteristic and minimal polynomial of the block matrix $A = \begin{bmatrix} 2 & 1 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 5 \end{bmatrix}$	7	L2	CO2

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Calculus and Linear Algebra : CSE Stream

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.
3. VTU Handbook is permitted.*

Module – 1			M	L	C
Q.1	a.	Find the total derivative when $u = x^3y^2 + x^2y^3$ where $x = at^2$, $y = 2at$	6	L2	CO1
	b.	If $u = \log(\tan x + \tan y + \tan z)$ then, show that $\sin 2x \frac{\partial u}{\partial x} + \sin 2y \frac{\partial u}{\partial y} + \sin 2z \frac{\partial u}{\partial z} = 2$	7	L2	CO1
	c.	Expand $e^x \sin y$ in the powers of x and y as far as terms of third term using Maclaurin's series.	7	L3	CO1
OR					
Q.2	a.	If $u = x + y + z$, $v = x^2 + y^2 + z^2$, $w = xy + yz + zx$. Evaluate the Jacobian of (u, v, w) with respect to (x, y, z).	6	L2	CO1
	b.	If $u = f\left(\frac{x}{y}, \frac{y}{z}, \frac{z}{x}\right)$ then prove that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z} = 0$	7	L2	CO1
	c.	Examine the function for the extreme values, given $f(x, y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$	7	L3	CO1
Module – 2					
Q.3	a.	Find the directional derivative of $\phi = x^2yz + 4xz^2$ at the point (1,-2,-1) in the direction $2\hat{i} - \hat{j} - 2\hat{k}$.	6	L2	CO1
	b.	Show that $\vec{F} = (y+z)\hat{i} + (z+x)\hat{j} + (x+y)\hat{k}$ is irrotational and find the scalar potential.	7	L2	CO1
	c.	With usual notation, Prove that cylindrical polar coordinate system is orthogonal.	7	L3	CO1
OR					
Q.4	a.	Given $\vec{F} = \nabla(xy^3z^2)$, Find $\text{div}(\vec{F})$ and $\text{curl}(\vec{F})$ at (1,-1,1).	6	L2	CO1
	b.	Show that $\vec{F} = \frac{x\hat{i} + y\hat{j}}{x^2 + y^2}$ is both solenoidal and irrotational.	7	L2	CO1
	c.	Express $2y\hat{i} - z\hat{j} + 3x\hat{k}$ in terms of spherical polar coordinates.	7	L3	CO1

Module – 3					
Q.5	a.	Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & -1 & 3 \\ 1 & 2 & 4 & 3 \\ 3 & 6 & 12 & 9 \\ 3 & 3 & 3 & 6 \end{bmatrix}$	6	L2	CO2
	b.	Using Gauss Jordan method, solve the system of equations $x + y + z = 9, x - 2y + 3z = 8, 2x + y - z = 3.$	7	L2	CO2
	c.	Diagonalize the matrix $\begin{bmatrix} -1 & 3 \\ -2 & 4 \end{bmatrix}$.	7	L3	CO2
OR					
Q.6	a.	Investigate the value of μ and λ such that the equations, $x + y + z = 6, x + 2y + 3z = 10, x + 2y + \lambda z = \mu$, may have (i) unique solution (ii) infinite solution (iii) no solution	6	L2	CO2
	b.	Using Gauss Elimination method, solve the system of equations $x + 2y + z = 3, 2x + 3y + 3z = 10, 3x - y + 2z = 13$	7	L2	CO2
	c.	Find the eigen value and eigen vectors of the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$	7	L3	CO2
Module – 4					
Q.7	a.	Determine whether the vectors $(8,0,5)$ is a linear combination of the vectors $(1,2,3), (0,1,4), (2,-1,1)$	6	L2	CO3
	b.	Find the basis and dimension of the subspace spanned by the vectors $(2,4,2), (1,-1,0), (1,2,1), (0,3,1)$ in $V_3(R)$.	7	L2	CO3
	c.	Find the basis and dimension of the row space, column space and null space of the matrix $\begin{bmatrix} 1 & -1 & 1 & 3 & 2 \\ 2 & -1 & 1 & 5 & 1 \\ 0 & 1 & -1 & -1 & -3 \end{bmatrix}$.	7	L3	CO3
OR					
Q.8	a.	Find the coordinates of the vector $v = (0,1,3)$ with respect to the basis $B = \{(1,1,0), (0,1,1), (1,0,1)\}$.	6	L2	CO3
	b.	Define inner product space. Given $u = (1,2,4), v = (2,-3,5), w = (4,2,-3)$ in R^3 . Find (i) $\langle u, v \rangle$ (ii) $\langle v, w \rangle$ (iii) $\langle u, w \rangle$ (iv) $\ u\ $ (v) $\ v\ $	7	L2	CO3
	c.	What is a subspace? Prove that the subset $W = \{(x,y,z)/x - 3y + 4z = 0\}$ of the vector space R^3 is a subspace.	7	L3	CO3
Module – 5					
Q.9	a.	Show that the transformation $T: R^2 \rightarrow R^3$ defined by $T(x,y) = (x+y, x-y, y)$ is a linear transformation.	6	L2	CO3

	b.	Prove that the transformation $T: R^2 \rightarrow R^2$ is singular and find its kernel, if the transformation is given by $T(x, y) = (2x + 4y, x + 2y)$.	7	L2	CO3
	c.	Verify Rank- Nullity theorem for the transformation $T: R^3 \rightarrow R^3$ defined by $T(x, y, z) = (x + 2y, y - z, x + 2z)$	7	L3	CO3
OR					
Q.10	a.	Find the matrix representing the linear transformation $T: R^3 \rightarrow R^4$ defined by $T(x, y, z) = (x + y + z, 2x + z, 2y - z, 6y)$	6	L2	CO3
	b.	If $T: R^3 \rightarrow R^3$ is a linear transformation defined by $T(x, y) = (x + z, x - z, y)$ Show that T is invertible and find T^{-1}	7	L2	CO3
	c.	Verify Rank- Nullity theorem for the transformation $T: R^3 \rightarrow R^2$ defined by $T(x, y, z) = (x + y, z)$	7	L3	CO3

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1BCEDC/M/EC/E/S103

First Semester B.E Degree Examination, Dec.2025/Jan.2026

COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	Draw the projections of the following points on the same XY line and state the Quadrants in which they lie: P – 10 mm above HP and 15 mm in front of VP and Q on HP and 50 mm behind VP	10
1 (b)	A line has its end A 10 mm above HP and 15 mm in front of VP. The end B is 55 mm above HP and line is inclined at 30° to HP. The distance between the projectors is 50 mm. Draw the projections of the line and determine their true length and true inclination with VP.	10
OR		
2	A rectangular plate of negligible thickness of size 35 mm x 20 mm has one of its shorter edges in VP with that edge inclined at 40° to HP. Draw the top view if its front view is a square of side 20 mm.	20
Module – II		
3	A hexagonal prism 25mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and appears to be inclined to VP at 45°	30
OR		
4	A square pyramid 35mm sides of base and 60 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis is inclined to VP at 45° .	30
Module – III		
5	A square prism of base side 35mm & height 55mm rests with its base on HP and two of its rectangular faces equally inclined to VP. Draw the development of lateral surfaces of the bottom portion of the cut prism if the cutting plane passes through top right extreme corner and bottom left extreme corner of the base.	25
OR		
6	A hexagonal pyramid 25mm side of base and axis 65mm long is resting on its base on HP with one of the edges of the base parallel to VP. It is cut by a vertical section plane at a distance of 8mm from the axis towards right side. Develop the lateral surface of the left part of pyramid.	25
Module – IV		
7	A sphere of diameter 30 mm rests on the top plane surface of the frustum of a square pyramid of base side 30 mm, top face 18 mm side and height 50 mm, such that their axis are coaxial. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure	25

Name & Signature of Examiner 1

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CBCS 2025- SCHEME

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First Semester B.E Degree Examination, Dec.2025/Jan.2026

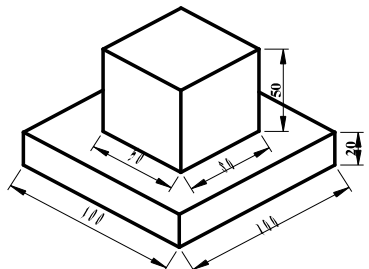
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point G is 25 mm below HP and situated in the third quadrant. Its shortest distance from the intersection of XY and X1Y1 is 45 mm. Draw its projections and find its distance from VP.	10
1 (b)	The front view of a 90 mm long line which is inclined at 45° to the XY line, measures 65 mm. End A is 15 mm above the XY line and is in VP. Draw the projections of the line and find its inclinations with HP and VP.	10
OR		
2	A pentagonal lamina of side 25 mm is placed on one of its corners on HP such that the surface makes an angle 30° with HP and perpendicular bisector of the edge passing through the corner on which the lamina rests appears to be inclined at 30° to VP. Draw the top and front views of the lamina.	20
Module – II		
3	A pentagonal prism 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30° . Draw the projections of the prism when the axis is inclined to HP at 40° .	30
OR		
4	A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at 40° and to VP at 30° .	30
Module – III		
5	A rectangular prism of base size 25mm x 40mm and axis length 65mm is resting on HP on its base with the longer side of the base inclined at 30° to VP. It is cut by a plane inclined at 40° to HP and perpendicular to VP and passes through extreme left corner of base. Draw the development of the lateral surface of the remaining portion of the prism.	25
OR		
6	A square pyramid base 40mm side and axis 65mm long has its base on HP and all the edges of the base are equally inclined to VP. It is cut by an inclined section plane so as the truncated surface is at 45° to its axis, bisecting it. Draw the development of the truncated pyramid.	25
Module – IV		
7	A sphere of diameter 45 mm rests centrally over a frustum of cone of base diameter 60 mm, top diameter 40 mm and height 60 mm. Draw its isometric views.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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First Semester B.E Degree Examination, Dec.2025/Jan.2026

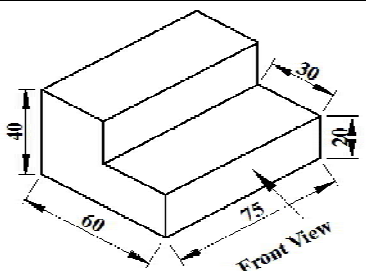
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point S is in the first quadrant and equidistant of 50 mm from all the three principal planes. Draw the projections of the point. Draw all the three views of the point.	10
1 (b)	A line AB 80 mm long is inclined to HP at 30° and inclined to VP at 45° . Draw front and top views of line and determine their lengths. Also, measure the perpendicular distance of end B from both HP & VP.	10
OR		
2	A 30° - 60° setsquare of 60 mm longest side, is so kept such that the longest side is in HP, making an angle of 30° with VP. The set square itself is inclined at 45° to HP. Draw the projections of the setsquare.	20
Module – II		
3	A square prism 35mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
OR		
4	A hexagonal pyramid 25mm sides of base and 50 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis appears to be inclined to VP at 45° .	30
Module – III		
5	A square prism of base side 30mm and axis length 60mm is resting on HP on its base with all the vertical faces being equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through a point on the axis at a distance 15mm from its top face. Draw the development of the lower portion of the prism.	25
OR		
6	A Pentagonal Pyramid of base edge 30 mm and axis 65 mm is resting on HP such that one of the base edge is parallel to VP. Draw its top and front view and then develop the lateral surfaces of pyramid	25
Module – IV		
7	The frustum of a square pyramid of base side 40 mm, top side 20 mm and height 60 mm rests on the center of the top of a square block of side 60 mm and height 20 mm. One of the base edges of the frustum is parallel to the top edges of the square block. Draw the isometric view of the combination of solids.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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1BCEDC/M/EC/E/S103

First Semester B.E Degree Examination, Dec.2025/Jan.2026

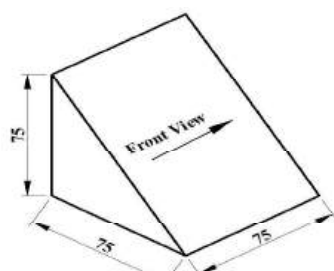
COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours

COMMON TO ALL BRANCHES

Max. Marks: 100

Note: i) Answer one full question from each Module, ii) Grid sheet may be provided for Sketching and
iii) CAD must be in A4 Sheet only

Q. No.	Module – I	Marks
1(a)	A point S is in the first quadrant and equidistant of 50 mm from all the three principal planes. Draw the projections of the point.	10
1 (b)	The distance between the end projectors of a line AB is 40 mm. The end A is 20 mm above HP and 15 mm in front of VP. The end B is 45 mm in front of VP and above HP. The line AB appears 50 mm long in top view. Complete the projections. Find the true length of the line and its inclinations with HP and VP.	10
OR		
2	Pentagonal lamina of side 25 mm is placed on one of its corners on VP such that the surface makes an angle 30° with VP and perpendicular bisector of the edge passing through the corner on which the lamina rests appears to be inclined at 30° to HP. Draw the top and front views of the lamina.	20
Module – II		
3	A cone of 50 mm base diameter and 60 mm axis length rests on HP on one of its generators. Draw its projections when the axis is inclined to VP at 30° .	30
OR		
4	A square pyramid 35 mm sides of base and 65 mm axis length rests on HP on one of its edges of the base which is inclined to VP at 30° . Draw the projections of the pyramid when the axis is inclined to HP at 45° .	30
Module – III		
5	Draw the development of the truncated portion of the lateral faces of a pentagonal prism of 20mm sides of base and 50mm height standing vertically with one of its rectangular faces parallel to VP and nearer to it. The inclined face of truncated prism is 30° to its axis and passes through the right extreme corner of the top face of the prism.	25
OR		
6	A frustum of a square pyramid has its base 40mm sides, top 16 mm sides and height 60mm, with an edge of base parallel to VP. Draw the projections of the frustum and show the development of lateral surfaces of it.	25
Module – IV		
7	A hemisphere of diameter 50 mm is centrally resting on top of a square prism of base side 60 mm and height 30 mm such that the curved surface of hemisphere is touching the top face of the prism. Draw its isometric views.	25
OR		
8	Draw the top view, front view and side view of the following figure 	25

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First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026**COMPUTER AIDED ENGINEERING DRAWING****Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100**

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A regular hexagonal lamina of sides 30mm is lying in such a way that one of its sides touches both the reference planes. If the lamina makes 60° with HP, draw the projections of the lamina.	20
Module – 2		
2	A cube of 40 mm sides rests on HP on an edge which is inclined to VP at 30° . Draw the projections when the lateral square face containing the edge on which it rests makes an angle of 50° to HP.	30
Module – 3		
3	A cone of base diameter 30 mm and height 40 mm rests centrally over a cube of side 50 mm. Draw the isometric projection of the combination of solids.	25
Module - 4		
4	A square prism of base sides 30 mm and axis length 60 mm is resting on HP with all the vertical faces equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through a point on the axis at a distance of 50 mm from the base. Obtain the development for the truncated portion of the solid.	25

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First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026

COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A hexagonal lamina of sides 25 mm rests on one of its corners on HP. The corner opposite to the corner on which it rests is 35 mm above HP and the diagonal passing through the corner on which it rests is inclined at 30° VP. Draw its projections. Find the inclination of the surface with HP.	20
Module – 2		
2	A cube of 30 mm sides is resting on one of its corners on HP such that one of its solid diagonals is perpendicular to VP. Draw the projections of the solid.	30
Module – 3		
3	A sphere of 60 mm is placed centrally on the top face of a hexagonal prism side 35 mm and height 50 mm. Draw the isometric projection of the combination.	25
Module - 4		
4	A square prism of base sides 30 mm and axis length 60 mm is resting on HP with all the vertical faces equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through a point on the axis at a distance of 50 mm from the base. Obtain the development for the truncated portion of the solid.	25

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First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026**COMPUTER AIDED ENGINEERING DRAWING****Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100**

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	An equilateral triangular lamina of 25 mm side lies with one of its edges on HP such that the surface of the lamina is inclined to HP at 60° . The edge on which it rests is inclined to VP at 60° . Draw the projections.	20
Module – 2		
2	A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its edges of the base. Draw the projections of the prism when the axis is inclined to HP at 45° and appears to be inclined to VP at 40° .	30
Module – 3		
3	The frustum of a square pyramid of base sides 40 mm and top face side 20 mm and height 60 mm rest on the center of the top of a square block of side 60 mm and height 20 mm. The base edges of the pyramid are parallel to the top edges of the square block. Draw the isometric projection of the combination of the solids.	25
Module - 4		
4	A square prism of base side 40 mm and axis length 65 mm is resting on HP on its base with all the vertical faces being equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through the point on the axis at a distance 15 mm from the top face. Draw the development of the lower portion of the prism.	25

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BCEDK103/203**First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026****COMPUTER AIDED ENGINEERING DRAWING****Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100**

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A pentagonal lamina of edges 25 mm is resting on HP with one of its sides such that the surface makes an angle of 60° with HP. The edge on which it rests is inclined at 45° to VP. Draw its projections.	20
Module – 2		
2	A square prism 35 mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and appears to be inclined to VP at 45° .	30
Module – 3		
3	The frustum of a square pyramid of base sides 40 mm and top face side 20 mm and height 60 mm rest on the center of the top of a square block of side 60 mm and height 20 mm. The base edges of the pyramid are parallel to the top edges of the square block. Draw the isometric projection of the combination of the solids.	25
Module - 4		
4	A cube of its side 40 mm is resting on HP with its base on HP such that one of its vertical faces is inclined at 30° to the VP. It is cut by a section plane perpendicular to VP, inclined to HP at an angle 45° and passes through the midpoint of the axis. Draw the development of the lower lateral surface of the cube.	25

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BCEDK103/203**First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026****COMPUTER AIDED ENGINEERING DRAWING****Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100**

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A square lamina of 40 mm side rests on one of its sides on HP. The lamina makes 30° to HP and the side on which it rests makes 45° to VP. Draw its projections.	20
Module – 2		
2	A cone of base diameter 40 mm and axis length 50 mm is resting on HP on a point on the circumference of its base such that its apex is at 40 mm above the HP and its top view of the axis is inclined at 60° to VP. Draw the top and front views of the solid. Also, determine the inclinations of the axis with HP when the base is nearer to the observer.	30
Module – 3		
3	A hemisphere diameter 70 mm is placed on the ground on its curved surface. A cone of base diameter 70 mm and height 70 mm is placed centrally on it. Draw the isometric projection of the combination.	25
Module - 4		
4	A rectangular prism of base 30 mm x 20 mm and height 60 mm rests on HP on its base with the longer base side inclined at 40° to VP. It is cut by a plane inclined at 45° to HP, perpendicular to VP and bisects the axis. Draw the development of lateral surface of the prism.	25

Examiner 1:
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First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026

COMPUTER AIDED ENGINEERING DRAWING

Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A hexagonal lamina of sides 25 mm rests on one of its corners on HP. The corner opposite to the corner on which it rests is 35 mm above HP and the diagonal passing through the corner on which it rests is inclined at 30° VP. Draw its projections. Find the inclination of the surface with HP.	20
Module – 2		
2	A cube of 30 mm sides is resting on one of its corners on HP such that one of its solid diagonals is perpendicular to VP. Draw the projections of the solid.	30
Module – 3		
3	A sphere of 60 mm is placed centrally on the top face of a hexagonal prism side 35 mm and height 50 mm. Draw the isometric projection of the combination.	25
Module - 4		
4	A square prism of base sides 30 mm and axis length 60 mm is resting on HP with all the vertical faces equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through a point on the axis at a distance of 50 mm from the base. Obtain the development for the truncated portion of the solid.	25

Examiner 1:
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BCEDK103/203

First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026**COMPUTER AIDED ENGINEERING DRAWING****Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100**

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A regular hexagonal lamina of sides 30mm is lying in such a way that one of its sides touches both the reference planes. If the lamina makes 60° with HP, draw the projections of the lamina.	20
Module – 2		
2	A cube of 40 mm sides rests on HP on an edge which is inclined to VP at 30° . Draw the projections when the lateral square face containing the edge on which it rests makes an angle of 50° to HP.	30
Module – 3		
3	A cone of base diameter 30 mm and height 40 mm rests centrally over a cube of side 50 mm. Draw the isometric projection of the combination of solids.	25
Module - 4		
4	A square prism of base sides 30 mm and axis length 60 mm is resting on HP with all the vertical faces equally inclined to VP. It is cut by an inclined plane 60° to HP and perpendicular to VP and is passing through a point on the axis at a distance of 50 mm from the base. Obtain the development for the truncated portion of the solid.	25

Examiner 1:
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BCEDK103/203**First / Second Semester B.E. Degree Examination, Dec.2025/Jan.2026****COMPUTER AIDED ENGINEERING DRAWING****Time: 3 Hours (COMMON TO ALL BRANCHES) Max.Marks:100**

- Note:** 1. Answer all four full question
2. Grid sheets may be provided for making preparatory sketches

Module – 1		
Q. No.		Marks
1	A square lamina of 40 mm side rests on one of its sides on HP. The lamina makes 30° to HP and the side on which it rests makes 45° to VP. Draw its projections.	20
Module – 2		
2	A cone of base diameter 40 mm and axis length 50 mm is resting on HP on a point on the circumference of its base such that its apex is at 40 mm above the HP and its top view of the axis is inclined at 60° to VP. Draw the top and front views of the solid. Also, determine the inclinations of the axis with HP when the base is nearer to the observer.	30
Module – 3		
3	A hemisphere diameter 70 mm is placed on the ground on its curved surface. A cone of base diameter 70 mm and height 70 mm is placed centrally on it. Draw the isometric projection of the combination.	25
Module - 4		
4	A rectangular prism of base 30 mm x 20 mm and height 60 mm rests on HP on its base with the longer base side inclined at 40° to VP. It is cut by a plane inclined at 45° to HP, perpendicular to VP and bisects the axis. Draw the development of lateral surface of the prism.	25

Examiner 1:
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