OR iii. Draw the isometric view of a sphere of diameter 60 mm truncated by a horizontal plane at a height of 20 mm from the centre plane. **6**

Q.6 Attempt any two:

i. What are the impacts of computer technology on graphical communication? Highlight the main advantages of a CAD system in design and drafting. **5**

ii. Explain any five ways of drawing circles in AutoCAD. **5**

iii. Name and explain five edit commands used in CAD. **5**

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

EN3ES02 Engineering Graphics

Programme: B.Tech. 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.

Q.1 i. The scale used for measuring in two systems of units is **1**

(a) Plain scale (b) Diagonal scale
(c) Vernier scale (d) Comparative scale

ii. The geometrical name of the curvature of the coil used in spiral binding is **1**

(a) Cycloid (b) Involute (c) Spiral (d) Helix

iii. If a line is inclined at 30º to the H.P. and 60º to the V.P., its front and top views are inclined at an angle of **1**

(a) 30º and 60º to xy (b) Between 0º and 60º to xy
(c) Both at 90º to xy (d) Between 30º and 90º to xy

iv. In orthographic views, the height dimension on an object is seen in **1**

(a) Front and top (b) Front and side
(c) Top and left side (d) Front, top and side

v. Number of faces in a dodecahedron are **1**

(a) 4 (b) 8 (c) 12 (d) 20

vi. 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

vii. The value of isometric scale is taken equals to **1**

(a) $\frac{2}{11}$ (b) $\frac{4}{11}$ (c) $\frac{9}{11}$ (d) $\frac{10}{11}$

viii. While making isometric projections the ellipse is preferably drawn by **1**

(a) Four centre method (b) Oblong method
(c) Concentric Circles method (d) Parallelogram method

P.T.O.

ix. In AutoCAD, the offset command helps user to draw **1**
(a) Infinite long lines (b) Parallel lines and curves
(c) Intersecting lines (d) Perpendicular bisectors

x. The term used by most CAD systems for "rounding corners" is **1**
(a) Fillet (b) Chamfer (c) Curve (d) Smooth

Q.2 i. Draw an involute of triangle having all side 20 mm long. **4**

ii. A rectangular field of 0.54 hectares is represented on a map by a rectangle of 3 cm × 2 cm. Calculate the RF. Draw a diagonal scale to read up to a single metre and long enough to measure up to 500 metres. Show a distance of 438 m on it. **6**

OR iii. The major axis of an ellipse is 110 mm and minor axis is 70 mm long. Draw an ellipse by concentric circle method. **6**

Q.3 i. The top view of a 80 mm long line *AB* measures 65 mm, while the length of its front view is 55 mm. Its one end *A* is in the HP and 12 mm in front of the VP. Draw the projections of *AB* and determine its inclination with the HP and VP. **4**

ii. Pictorial view of an object is shown in Fig. 1. Using first angle projection, draw its **6**
(a) Front view (b) Top view (c) Side view.

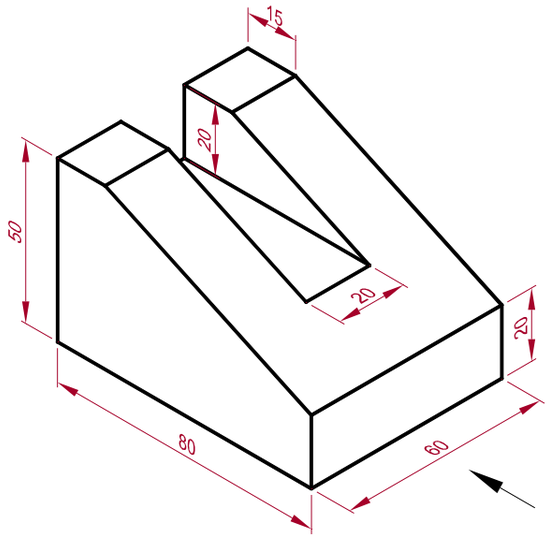

Fig. 1

OR iii. Pictorial view of an object is shown in Fig. 2. Using first angle projection, draw its **6**
(a) Front view (b) Top view (c) Side view.

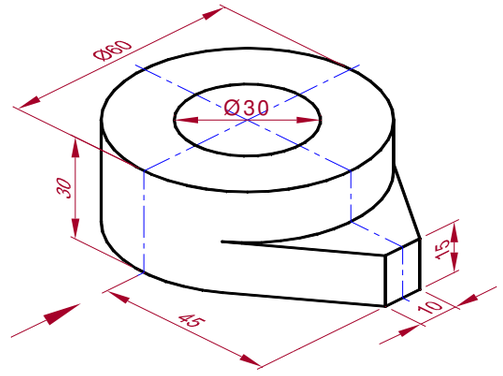

Fig. 2

Q.4 i. A rectangular plane of sides 70 mm and 35 mm is resting on a side on the HP. The surface is inclined to the HP and perpendicular to the VP such that the top view appears as a square. Draw its projections and determine inclination of the plane with the HP. **4**

ii. A square pyramid of base side 40 mm and axis 55 mm is resting on one of its triangular faces on the HP. A vertical plane containing the axis is inclined at 45° to the VP. Draw its projections. **6**

OR iii. A square pyramid of base side 40 mm and axis 60 mm is resting on its base on the HP. with all the sides of the base equally inclined to the VP. It is cut by an auxiliary inclined plane (AIP) inclined at 60° to the HP and bisecting the axis. Draw its sectional views and true shape of the section. **6**

Q.5 i. Draw the freehand sketching of following objects: **4**
(a) Square prism (b) Cone
(c) Cylinder (d) Pentagonal pyramid

ii. A cone of base diameter 30 mm and axis 50 mm rests centrally over a square prism of base side 50 mm and axis 30 mm. Draw the isometric projection of the arrangement. **6**

Marking Scheme
EN3ES02 Engineering Graphics

Q.1	i.	The scale used for measuring in two systems of units is (d) Comparative scale	**1**
	ii.	The geometrical name of the curvature of the coil used in spiral binding is (d) Helix	**1**
	iii.	If a line is inclined at 30º to the H.P. and 60º to the V.P., its front and top views are inclined at an angle of (c) Both at 90º to xy	**1**
	iv.	In orthographic views, the height dimension on an object is seen in (b) Front and side	**1**
	v.	Number of faces in a dodecahedron are (c) 12	**1**
	vi.	A triangular prism resting on a rectangular face in the H.P. It is cut by a horizontal plane. Its sectional top view is (c) Rectangle	**1**
	vii.	The value of isometric scale is taken equals to (c) $\frac{9}{11}$	**1**
	viii.	While making isometric projections the ellipse is preferably drawn by (a) Four centre method	**1**
	ix.	In AutoCAD, the offset command helps user to draw (b) Parallel lines and curves	**1**
	x.	The term used by most CAD systems for "rounding corners" is (a) Fillet	**1**
Q.2	i.	Draw an involute of triangle having all side 20 mm long.	**4**
		Dimensioning — 1 mark	
		Construction — 1 mark	
		Curve — 2 marks	
	ii.	Calculate the RF= 1/3000 & LOS= 16.67 cm — 2 marks Drawing — 3 marks Show distance — 1 mark	**6**
OR	iii.	Draw an ellipse by concentric circle method.	**6**
		Curve — 2 marks	
		Construction — 3 marks	
		Dimensioning — 1 mark	
Q.3	i.	Draw the projections of *AB*	**4**
		Inclination with the HP — 0.5 mark	
		Inclination with the VP — 0.5 mark	
		Construction — 2 marks	
		Dimensioning — 1 mark	
	ii.	Pictorial view of an object is shown in Fig. 1. Using first angle projection, draw its	**6**
		(a) Front view — 2 marks	
		(b) Top view — 2 marks	
		(c) Side view. — 1 mark	
		Dimensioning — 1 mark	
OR	iii.	Pictorial view of an object is shown in Fig. 2. Using first angle projection, draw its	**6**
		(a) Front view — 2 marks	
		(b) Top view — 2 marks	
		(c) Side view. — 1 mark	
		Dimensioning — 1 mark	
Q.4	i.	Draw its projections and determine inclination of the plane with the HP.	**4**
		1st Step — 1 mark	
		2nd step — 2 marks	
		Dimensioning — 1 mark	
	ii.	Draw its projections.	**6**
		1st Step — 1 mark	
		2nd step — 1 mark	
		3rd step — 3 marks	
		Dimensioning — 1 mark	
OR	iii.	Draw its sectional views and true shape of the section.	**6**
		Front view — 1 mark	
		Sectional top view — 2 marks	
		True shape — 2 marks	
		Dimensioning — 1 mark	
Q.5	i.	Draw the freehand sketching of following objects:	**4**

		1 mark for each object	(1 mark * 4)	
	ii.	Draw the isometric projection of the arrangement.		**6**
		Construction work	3 mark	
		Finding dimensions through isometric scale	2 marks	
		Dimensioning	1 mark	
OR	iii.	Draw the isometric view of a sphere		**6**
		Construction work	3 marks	
		Finding dimensions through isometric scale	2 marks	
		Dimensioning	1 mark	
Q.6		Attempt any two:		
	i.	Impacts of computer technology on graphical communication		**5**
			3 marks	
		Any four advantages of a CAD system in design and drafting		
		0.5 mark for each (0.5 mark * 4)	2 marks	
	ii.	Any five ways of drawing circles in AutoCAD		**5**
		1 mark for each way	(1 mark * 5)	
	iii.	Name and explain five edit commands used in CAD.		**5**
		1 mark for each edit commands	(1 mark * 5)	

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