Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(An Autonomous Institute Affiliated to University of Mumbai)

ESE	
23-May-2021	
Max. Marks: 60	**Duration:** 2 Hr. 10 Min.
Class: F.E. (A&B)	**Semester**: I
Course Code: AS104	**Branch:** ETRX & EXTC
Name of the Course: Engineering Graphics	
Instructions:	
(1) All questions are compulsory	
(2) Write Your UCID, Name and Page Number on each page. It is compulsory.	
(3) Draw solutions on A3 size drawing paper using drawing instruments and upload the solutions in single pdf format	
(4) PDF should be clear, readable vertically from bottom of the page and pages should be in sequence.	
(5) PDF should be free from any shadow, and showing full A3 size page with proper cropped image of solution.	
(6) Late submission will not be accepted.	
(7) File name format for submission is as follow	
(Branch_last two-digit Numbers of UCID_ESE_your name) e.g., EXTC_11_ESE_name.pdf	
(8) Assume suitable data if necessary	

Q. No.		Max. Marks	CO-BL-PI
Q.1	A circle of 60mm diameter, rolls on a horizontal line for half a revolution towards right and then on a vertical line in upward direction for another half revolution, without slipping. Draw the curve traced by point P, lying on the circumference of a circle, considering initial position of point P on extreme left side of the rolling circle. Also draw tangent and normal to the curve at 35mm above horizontal line and name the curve.	15	**CO1**-3-1.3.1
Q.2	A rod PQ, 110mm long is resting horizontally on the circumference of a semicircular disc of 70mm diameter at the midpoint. Rod PQ rolls without slipping on the circumference to the full extent on both sides. Draw locus of P & Q. Also draw tangent & normal to the curve at 50mm from center of semicircle and name the curve.	15	**CO1**-3-1.3.1

Q.3	a) Draw projections of points A, B, C & D placed in first, second, third and fourth quadrant respectively and situated at 30mm from VP and 20mm from HP. Also draw the projection of point E lying in both planes. Take distance between end projectors as 25mm.	5	**CO3**-3-1.3.1
	b) The line PQ has its end P 15mm above HP and 25mm in front of VP. The line makes an angle of 20^0 with HP and its plan measures 90mm. The end Q is in the second quadrant and is equidistant from both the reference planes. Obtain the projections of the line and find its inclination with VP.	10	
Q.4	a) A cone of 50mm diameter and 55mm length of an axis has one of its generators in the VP and inclined at 30^0 to HP. Draw the projections of a cone when apex is pointing downwards.	9	**CO4**-3-1.3.1
	OR		
	a) A pentagonal prism, side of base 30mm and axis length 65mm is kept on the VP on one of its base edges such that the rectangular face containing that base edge makes an angle of 30^0 with VP. Draw the projections of the prism when the base edge in VP makes an angle of 30^0 with HP.	9	**CO4**-3-1.3.1
	b) A tetrahedron of 50mm long edge is resting on one of its edges on HP such that a triangular face containing that edge appears as right-angle triangle in top view. Draw the projections of the tetrahedron and determine the axis inclination with HP.	6	**CO4**-3-1.3.1
	OR		
	b) A hexagonal pyramid, side of base 40mm and axis length 80mm is kept on HP, on an edge of its base, such that an apex is 60mm above HP. Draw the projections of the pyramid and determine the axis inclination with HP.	6	**CO4**-3-1.3.1