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Code No. : 16504 N


VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Mech. Engg. : CBCS) VI-Semester Main Examinations, May-2019

Geometric Modelling

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
Part-A (10 × 2 = 20 Marks)					
1.	What is synthesis in design process?	2	2	1	1
2.	Draw interpolation and approximation curves.	2	2	1	1
3.	Why homogeneous matrix is used in transformations?	2	3	2	1
4.	Write the 2D transformation matrices for translation, rotation, reflection and scaling.	2	1	2	2
5.	What are the applications of the Multiple planes?	2	2	3	1
6.	Express mathematically the parametric representation of the surface.	2	1	3	2
7.	Represent the solid in Euler's method.	2	3	4	2
8.	What is octree encoding method in solid modeling?	2	1	4	1
9.	Draw the history tree of a simple assembly.	2	2	5	1
10.	Mention the usages of the top down and bottom up assembly.	2	2	5	1
Part-B (5 × 10 = 50 Marks)					
11. a)	Develop a Bezier curve for the four control points [10 10] [10 20] [20 10] and [40 60].	5	5	1	2
b)	Solve the knot vector for a quadratic B-spline curve with six control points.	5	5	1	3
12. a)	Derive the concatenated matrix for the reflection of an object with respect to an arbitrary line	5	4	2	2
b)	Perform a 75 degrees rotation of a triangle ABC and scaling a factor by 5. Coordinates of the triangle are A(20 20) B(30 30) and (40 20)	5	3	2	3
13. a)	Draw and explain the different synthetic entities of the surface modeling	5	2	3	1
b)	Explain a case study for the development of surface of revolution with suitable mechanical application	5	2	3	1
14. a)	For the solid shown in Figure, draw the C-rep tree.	5	3	4	1
					
b)	Why a solid model is complete compare with surface and wire frame modeling.	5	2	4	1

15. a)	List the different assembly constrains used in CAD ,and mention its applications	5	2	5	1
b)	Consider a simple assembly and draw assembly tree with depth and hierarchy	5	3	5	1
16. a)	Summarize the advantages of approximation curves over interpolation curves.	5	2	1	1
b)	What is concatenation and mention the application of it.	5	2	2	2
17.	Answer any <i>two</i> of the following:				
a)	Why a surface modeling is better than the wire frame modeling	5	2	3	1
b)	Explain sweeping approach of solid modelling.	5	2	4	1
c)	What are the roles of CAD, CAM and CAE in industry?	5	3	5	3

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	59
2	Knowledge on application and analysis (Level-3 & 4)	30.5
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10.5

