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Question Paper Code: BCCB01



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER-I

M.Tech I Semester End Examinations, January - 2020

Regulations: IARE - R18

ADVANCED COMPUTER AIDED DESIGN

(CAD / CAM)

Time: 3 hours

Max. Marks: 70

Answer ONE Question from Each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT-I

1. (a) Explain Bresenham's algorithm for circle drawing. [7M]
(b) Describe the applications of computer graphics. And also discuss its advantages. [7M]
2. (a) Locate the new position of a triangle [A (5, 4), B (8, 3), C (8, 8)] after its rotation by 90^0 clockwise about the origin. [7M]
(b) Rotate the point (5,5,5) about Z axis with an angle of 30^0 [7M]

UNIT-II

3. (a) What are Bezier curves? Explain the parametric representation for Bezier curves. [7M]
(b) Compare and contrast the differences between approximation and interpolation of curves. [7M]
4. (a) The end points of line are P1(1,3,7) and P2(-4, 5, -3). Determine i) Tangent vector of the line . [7M]
ii) Length of the line . iii) Unit vector of the line
(b) Explain briefly about GKS systems. How it will be implement to data exchange in CAD. [7M]

UNIT-III

5. (a) What are the requirements of a graphic database? Explain them in detail. [7M]
(b) Explain briefly about the parametric properties of tabulated cylinder and its industrial applications. [7M]
6. (a) Describe in detail various characteristics of Bezier curves. [7M]
(b) What are the advantages of Bezier curves over B spline curves. [7M]

UNIT-IV

7. (a) Explain the parametric representation for B-spline surface. [7M]
(b) What is surface modeling? Discuss in detail the advantages and disadvantages of surface modelling. [7M]
8. (a) How synthetic surfaces are better than analytical surfaces. Explain in detail with examples if any. [7M]
(b) Plot a Bezier surface using the following control points (4,0), (5,3),(6,2),(4,-2),(5,-3) and (6,-2). [7M]

UNIT-V

9. (a) Explain about the capabilities of a typical general purpose FEA package? [7M]
(b) Describe the step by step procedure in solving a design problem using a FEA package. [7M]
- 10 (a) Discuss about CSG representation in solid modeling? Explain the importance in the construction of the topology models with examples. [7M]
(b) Explain the following: i) IGES ii) STEP iii) ACIS iv) DXF [7M]



INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)

COURSE OBJECTIVES (COs):

The course should enable the students to:

I	Understand of basic trends in design and modeling applicable to CAD/CAM.
II	Applying the CAD tools for designing.
III	Create surface and geometric models.

COURSE OUTCOMES (COs):

CO1	Understand the principles of computer graphics with mathematical simulation
CO2	Understand the coordinate systems and transformation in graphics
CO3	Understand representations of surface modelling
CO4	Development of synthetic surface and its transformations
CO5	Analyze 3D - Geometric models to solve real time problems

COURSE LEARNING OUTCOMES (CLOs):

Students, who complete the course, will have demonstrated the asking to do the following:

BCCB01.01	Understand the basic concepts of Computer graphics
BCCB01.02	Understand the basic primitives algorithms
BCCB01.03	Apply the 2D and 3D transformations
BCCB01.04	Understand the various CAD tools
BCCB01.05	Understand the various graphic standards associated to CAD
BCCB01.06	Understand the representation of curves
BCCB01.07	Understand the mathematical representation of analytical surfaces
BCCB01.08	Understand the parametric representation of analytical surfaces
BCCB01.09	Apply the analytical surfaces in CAD modeling
BCCB01.10	Understand the mathematical representation of synthetic surfaces
BCCB01.11	Understand the parametric representation of synthetic surfaces
BCCB01.12	Apply the synthetic surfaces in CAD modeling
BCCB01.13	Understand boundary representation and Constructive Solid Geometry
BCCB01.14	Apply the data exchange formats for data transfer
BCCB01.15	Design and analyze the engineering problems

MAPPING OF SEMESTER END EXAMINATION TO COURSE LEARNING OUTCOMES

SEE Question No	Course Learning Outcomes (CLOs)		Course Outcomes	Blooms Taxonomy Level	
1	a	BCCB01.01	Understand the basic concepts of Computer graphics	CO 1	Remember
	b	BCCB01.02	Understand the basic primitives algorithms	CO 1	Remember
2	a	BCCB01.01	Apply the 2D and 3D transformations	CO 1	Remember
	b	BCCB01.02	Understand the various CAD tools	CO 1	Remember
3	a	BCCB01.04	Understand the various graphic standards associated to CAD	CO 2	Remember
	b	BCCB01.03	Understand the representation of curves	CO 2	Remember
4	a	BCCB01.04	Understand the mathematical representation of analytical surfaces	CO 2	Understand
	b	BCCB01.07	Understand the parametric representation of analytical surfaces	CO 2	Understand
5	a	BCCB01.06	Apply the analytical surfaces in CAD modeling	CO 3	Remember
	b	BCCB01.07	Understand the mathematical representation of synthetic surfaces	CO 3	Remember
6	a	BCCB01.06	Understand the parametric representation of synthetic surfaces	CO 3	Understand
	b	BCCB01.07	Apply the synthetic surfaces in CAD modeling	CO 3	Understand
7	a	BCCB01.08	Understand boundary representation and Constructive Solid Geometry	CO 4	Understand
	b	BCCB01.09	Apply the data exchange formats for data transfer	CO 4	Understand
8	a	BCCB01.10	Design and analyze the engineering problems	CO 4	Understand
	b	BCCB01.11	Understand the basic concepts of Computer graphics	CO 4	Understand
9	a	BCCB01.12	Understand the basic primitives algorithms	CO 5	Understand
	b	BCCB01.13	Apply the 2D and 3D transformations	CO 5	Understand
10	a	BCCB01.14	Understand the various CAD tools	CO 5	Remember
	b	BCCB01.15	Understand the various graphic standards associated to CAD	CO 5	Remember

Signature of Course Coordinator

HOD, ME