Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

## Question Paper Code: U1101

### M.E. DEGREE EXAMINATION, DEC 2025

Professional Elective

CAD/CAM

21PCD101 – COMPUTER APPLICATIONS IN DESIGN

(Regulations 2021)

Duration: Three hours　　　　　　　　　　　　　　　　Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Apply the concept of raster-scan and random-scan systems to explain how image generation differs in these two display systems with neat sketches.　　CO2-App　(20)

Or

   (b) Apply the concept of clipping transformations to perform line and polygon clipping for given window and object coordinates. Demonstrate with diagrams.　　CO2-App　(20)

2. (a) Apply the characteristics of B-spline curves to reshape only a local segment of a model without affecting the entire geometry.　　CO2-App　(20)

Or

   (b) Apply the B-spline curve technique to design a flexible and continuous curve. Illustrate how knot vectors influence the curve shape.　　CO2-App　(20)

3. (a) Analyze the advantages and limitations of sweep representation by comparing linear sweep, rotational sweep, and path-based sweep techniques.　　CO3-Ana　(20)

Or

   (b) Analyze a complex 3D CAD model and identify how different solid modeling representations contribute to rendering efficiency, accuracy, and edit ability.　　CO3-Ana　(20)

4. (a) Analyze a shaded CAD model and discuss how different shading techniques highlight or obscure features.　　CO3-Ana　(20)

Or

(b) Analyze the efficiency of hidden line vs hidden surface removal algorithms for a complex CAD model. CO3-Ana (20)

5. (a) Apply assembly modeling techniques to assemble a piston– connecting rod mechanism and list the steps followed. CO4-App (20)

Or

(b) Apply data exchange standards to import a surface model into a different CAD software and explain the mapping of geometric entities. CO4-App (20)

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