WORK SHEET
UNIT-II

1. Surface modeling is primarily used to represent:
   A) Internal structure only
   B) Outer shape of an object
   C) Manufacturing cost
   D) Material properties only

Answer: B) Outer shape of an object

2. In surface modeling, a surface can be represented in:
   A) Algebraic form only
   B) Geometric form only
   C) Both algebraic and geometric forms
   D) Matrix form only

Answer: C) Both algebraic and geometric forms

3. The parametric space of a surface is generally defined by:
   A) One parameter
   B) Two parameters
   C) Three parameters
   D) Four parameters

Answer: B) Two parameters

4. Blending functions are used to:
   A) Store data
   B) Define the shape of curves and surfaces
   C) Create databases
   D) Generate machine codes

Answer: B) Define the shape of curves and surfaces

5. A surface patch is defined through:
   A) Parametrization
   B) Programming
   C) Optimization
   D) Interpolation only

Answer: A) Parametrization

6. Subdividing a surface means:
   A) Deleting a surface
   B) Dividing a surface into smaller patches

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C) Increasing thickness
D) Changing material properties

Answer: B) Dividing a surface into smaller patches

7. A cylindrical surface is generated by moving a:
   A) Circle along a straight line
   B) Point along a circle
   C) Sphere along a line
   D) Line about an axis

Answer: A) Circle along a straight line

8. A ruled surface is generated by:
   A) Rotating a curve
   B) Joining corresponding points of two curves with straight lines
   C) Sweeping a sphere
   D) Combining solid objects

Answer: B) Joining corresponding points of two curves with straight lines

9. A surface of revolution is obtained by:
   A) Translating a curve
   B) Rotating a curve about an axis
   C) Extruding a surface
   D) Scaling a curve

Answer: B) Rotating a curve about an axis

10. A spherical surface is generated from:
    A) A circle rotated about its diameter
    B) A line translated along a path
    C) Two intersecting planes
    D) A ruled surface

Answer: A) A circle rotated about its diameter

11. Bezier surfaces are controlled by:
    A) Control points
    B) Pixels
    C) Nodes only
    D) Vectors only

Answer: A) Control points

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12. B-spline surfaces offer:
    A) No flexibility
    B) Global control only
    C) Local control and smoothness
    D) Limited applications

Answer: C) Local control and smoothness

13. Constructive Solid Geometry (CSG) creates solids using:
    A) Surface patches only
    B) Boolean operations on primitive solids
    C) Wireframe entities only
    D) Control polygons only

Answer: B) Boolean operations on primitive solids

14. Sweep representation creates a solid by:
    A) Rotating a point
    B) Moving a 2D profile along a path
    C) Combining surfaces only
    D) Using Boolean subtraction only

Answer: B) Moving a 2D profile along a path

15. Boundary Representation (B-Rep) describes a solid using:
    A) Volume elements only
    B) Edges, vertices, and faces
    C) Mathematical equations only
    D) Primitive solids only

Answer: B) Edges, vertices, and faces

Fill in the Blanks

1. Surface modeling represents the _____ shape of an object.
   Answer: External
2. A surface is generally defined using two _____ in parametric representation.
   Answer: Parameters
3. Functions used to define the shape of a surface are called _____ functions.
   Answer: Blending
4. Dividing a surface into smaller patches is known as _____.
   Answer: Subdividing
5. A cylindrical surface is generated by moving a circle along a straight _____.
   Answer: Line

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6. A ruled surface is formed by joining points with straight _____.
   Answer: Lines
7. A surface generated by rotating a curve about an axis is called a surface of _____.
   Answer: Revolution
8. _____ surfaces are defined by control points and Bernstein polynomials.
   Answer: Bezier
9. In Constructive Solid Geometry, solids are combined using _____ operations.
   Answer: Boolean
10. Boundary Representation describes solids using faces, edges, and _____.
    Answer: Vertices

Answer Key

MCQs: 1-B, 2-C, 3-B, 4-B, 5-A, 6-B, 7-A, 8-B, 9-B, 10-A, 11-A, 12-C, 13-B, 14-B, 15-B

Fill in the Blanks:

1. External
2. Parameters
3. Blending
4. Subdividing
5. Line
6. Lines
7. Revolution
8. Bezier
9. Boolean
10. Vertices