GUJARAT TECHNOLOGICAL UNIVERSITY

BE-1 SEMESTER – OLD PAPER – S22 TO W24 – QUESTION BANK

Subject Name & Code:

Engineering Graphics & Design- 3110013

(**NOTE:** For Only any question involving a diagram (figure) or specific numerical values, please cross-verify the diagram and data directly with the original question paper, as they may not be fully accurate or complete in the text-based list.)

Module 1: Introduction to Engineering Graphics (Scales & Instruments)

Repeated Questions:

1. **Construct a plain/diagonal scale for a given R.F. or to measure a specific distance.**
   - (Summer 2023 - Q1b - 04 Marks)
   - (Winter 2022 - Q1a - 03 Marks)
   - (Winter 2023 - Q1b - 04 Marks)
   - (Summer 2022 - Q1a - 03 Marks, Q2b - 04 Marks)
   - (Summer 2025 - Q1b - 04 Marks)
   - (Winter 2024 - Q1c - 07 Marks)
   - (Summer 2024 - Q1b - 04 Marks)
   - (Winter 2024 (Jan) - Q1c - 07 Marks)
2. **Define Representative Fraction (R.F.) and classify scales based on it.**
   - (Winter 2022 - Q1a - 03 Marks)
   - (Winter 2023 - Q1a - 03 Marks)
   - (Summer 2025 - Q5a - 03 Marks)

Other Important Questions:

- (Winter 2024 (Jan) - Q1a - 03 Marks) - Explain reducing scale and its applications.
- (Winter 2024 (Jan) - Q1b - 04 Marks) - Draw symbols for Cutting plane, Dimension, Break, and Section lines.
- (Summer 2024 - Q3b - 04 Marks) - Uses of drawing instruments (Mini drafter, Divider, etc.).

Module 2 & 3: Loci of Points & Engineering Curves

Repeated Questions:

1. **Construction of Involute of a polygon or circle.**
    - (Summer 2023 - Q1c)
    - (Winter 2022 - Q1c)
    - (Winter 2024 (Jan) - Q2c)
2. **Construction of an Ellipse (by Oblong/Rectangle or Concentric Circle method).**
    - (Summer 2022 - Q2c - 07 Marks)
    - (Winter 2022 - Q2c - 07 Marks)
    - (Winter 2024 - Q2c - 07 Marks)
    - (Winter 2024 (Jan) - Q2c (OR) - 07 Marks)
3. **Construction of an Archimedean Spiral.**
    - (Summer 2023 - Q2c - 07 Marks)
    - (Summer 2025 - Q1c - 07 Marks)
4. **Locus of a point on a mechanism (Slider Crank, Four Bar, Rolling Circle).**
    - (Winter 2022 - Q1b)
    - (Summer 2022 - Q1c, Q2c (OR))
    - (Summer 2024 - Q2c)
    - (Winter 2023 - Q1c)

Other Important Questions:

- (Summer 2023 - Q2b) - Trace curvature path (likely a parabola).
- (Summer 2023 - Q2c) - Path of a point on a rolling wheel (cycloid).
- (Summer 2022 - Q3a) - Draw a cycloid.
- (Summer 2022 - Q3b) - Define conic terminology (Focus, Directrix, etc.).
- (Winter 2023 - Q4a) - Define Parabola, Ellipse, Hyperbola.
- (Winter 2024 - Q2a) - Define ellipse and eccentricity.
- (Winter 2024 - Q2b) - Name conic sections from a cut cone.
- (Summer 2025 - Q3a) - Define Involute, Ellipse, Cycloid.

Module 4: Projections of Points and Lines

Repeated Questions:

1. **Draw projections of points in different quadrants.**
    - (Summer 2023 - Q2a - 03 Marks)
    - (Winter 2022 - Q2a - 03 Marks)
    - (Winter 2023 - Q4b - 04 Marks)
    - (Summer 2025 - Q2a - 03 Marks)
    - (Winter 2024 - Q3a - 03 Marks)
    - (Winter 2024 (Jan) - Q3a (OR) - 03 Marks)
2. **Draw projections of a line inclined to both HP and VP (Given True Length & Inclinations).**
    - (Summer 2023 - Q3a - 07 Marks) *[Also in Q3(a) of a different paper]*
    - (Winter 2022 - Q2c - 07 Marks)
    - (Summer 2022 - Q4c - 07 Marks)
    - (Summer 2025 - Q2c - 07 Marks)
3. **Find True Length (TL), True Inclinations (θ & φ), and lengths of views from projections.**
    - (Winter 2022 - Q2c - 07 Marks)
    - (Summer 2022 - Q4b - 04 Marks)
    - (Winter 2024 - Q2c (OR) - 07 Marks)
    - (Winter 2024 (Jan) - Q3c - 07 Marks)
    - (Summer 2024 - Q3c - 07 Marks)

Other Important Questions:

- (Winter 2022 - Q2b) - Projections of a line in VP.
- (Winter 2023 - Q3b) - Projections of a line parallel to PP.
- (Winter 2024 - Q1b) - Projections of a line with ends in VP and HP.

Module 5: Projections of Planes

Repeated Questions:

1. **Projections of a regular polygon (Pentagon/Hexagon) inclined to both HP and VP.**
    - (Winter 2022 - Q3a - 07 Marks)
    - (Winter 2023 - Q3c - 07 Marks)
    - (Summer 2025 - Q3c - 07 Marks)
    - (Winter 2024 (Jan) - Q3c - 07 Marks)
    - (Summer 2024 - Q4c - 07 Marks)
2. **Projections of a circular plate/disk inclined to HP/VP.**
    - (Winter 2022 - Q3b - 07 Marks)
    - (Summer 2022 - Q3c - 07 Marks) *[Similar concept]*
    - (Summer 2025 - Q3c - 07 Marks)
    - (Winter 2024 (Jan) - Q3a - 03 Marks)
3. **Projections of a lamina (square, rectangle) to find its inclination.**
    - (Winter 2023 - Q3b - 04 Marks)
    - (Winter 2024 - Q4b - 07 Marks)
    - (Winter 2024 (Jan) - Q3b - 04 Marks)

Other Important Questions:

- (Summer 2023 - Q3b) - Hexagonal plane inclined to VP.
- (Winter 2023 - Q3a) - Difference between aligned & unidirectional dimensioning.
- (Winter 2024 - Q4c) - Real distance between two points (application of projections).

Module 6: Projections of Solids, Section of Solids & Development

Repeated Questions:

1. **Projections of a Pyramid (Square/Hexagonal/Pentagonal) in various positions.**
    - (Summer 2023 - Q4b - 04 Marks)
    - (Winter 2023 - Q4c - 07 Marks)
    - (Summer 2022 - Q4c - 07 Marks)
    - (Winter 2024 - Q4c - 07 Marks)
    - (Summer 2024 - Q4c - 07 Marks)
2. **Section of a solid (Cone, Pyramid, Prism) by an AIP/AVP and drawing sectional views & true shape.**
    - (Winter 2022 - Q3c - 07 Marks)
    - (Summer 2022 - Q4b - 07 Marks)
    - (Winter 2024 - Q4c - 07 Marks)
3. **Development of lateral surfaces of simple solids (Prism, Pyramid, Cylinder).**
    - (Summer 2023 - Q4c - 07 Marks)
    - (Summer 2022 - Q4a - 03 Marks) *[Development of prism]*
    - (Winter 2024 - Q4b - 07 Marks)
    - (Summer 2024 - Q2b - 04 Marks) *[Theoretical question on development]*

Other Important Questions:

- (Summer 2023 - Q4a) - Classify solids.
- (Winter 2023 - Q4a) - Benefits of AutoCAD over conventional drawing.
- (Winter 2024 (Jan) - Q4a) - Define solids of revolution.
- (Winter 2024 (Jan) - Q4a (OR)) - Differentiate between prism and pyramid.
- (Summer 2025 - Q4a) - Differentiate between aligned and unidirectional dimensioning.

Module 7: Orthographic Projections

Repeated Questions:

1. **Draw orthographic views (Front, Top, Side) using First Angle Projection method from a given pictorial view.**
    - (Winter 2022 - Q4b, Q4c - 07 Marks)
    - (Summer 2022 - Q5c - 07 Marks)
    - (Winter 2024 - Q5b - 07 Marks)
    - (Summer 2024 - Q5b - 07 Marks)
    - (Winter 2024 (Jan) - Q5b - 07 Marks)
2. **Draw a sectional view (usually front view).**
    - (Summer 2022 - Q5c - 07 Marks)
    - (Winter 2024 - Q5a - 07 Marks)
    - (Summer 2024 - Q5b - 07 Marks)
3. **Difference between First Angle and Third Angle projection methods.**
    - (Summer 2022 - Q5b - 04 Marks)
    - (Summer 2025 - Q5b - 04 Marks)

Other Important Questions:

- (Summer 2024 - Q4a) - Draw symbols for 1st and 3rd angle projection.

Module 8: Isometric Projections/Views

Repeated Questions:

1. **Draw an isometric view of an object given its orthographic views.**
    - (Summer 2023 - Q5c - 07 Marks)
    - (Summer 2022 - Q5c - 07 Marks)
    - (Winter 2022 - Q5c - 07 Marks)
    - (Winter 2024 (Jan) - Q5c - 07 Marks)
2. **Draw an isometric scale.**
    - (Winter 2022 - Q5b - 04 Marks)
    - (Summer 2022 - Q5b - 04 Marks)
    - (Winter 2024 (Jan) - Q5a - 03 Marks)
    - (Summer 2024 - Q5b - 04 Marks)

Other Important Questions:

- (Winter 2022 - Q5c) - Isometric projection using four-centre method for a circle.
- (Summer 2024 - Q4b) - Draw isometric views of basic shapes.

Module 9: Computer Aided Drawing (AutoCAD)

Repeated Questions:

1. **Explain various AutoCAD commands and their uses.**
    - (Winter 2022 - Q5a - 03 Marks)
    - (Summer 2022 - Q5a - 03 Marks)
    - (Winter 2023 - Q5a - 04 Marks)
    - (Summer 2024 - Q5a - 03 Marks)
    - (Winter 2024 (Jan) - Q5a - 04 Marks)
2. **Advantages of AutoCAD over conventional drawing.**
    - (Winter 2023 - Q4a - 03 Marks)
    - (Winter 2024 (Jan) - Q5b - 04 Marks)

Other Important Questions:

- (Summer 2023 - Q5a) - Importance of AutoCAD.
- (Summer 2023 - Q5b) - Importance of file extensions.
- (Summer 2024 - Q5a) - What is ARRAY command.