Computer Graphics Question Bank:

1) Explain and differentiate Raster scan system and Random scan system.
2) DDA Algorithm. (Derivation and Numerical)
3) Bresenham's Line drawing algorithm. (Derivation and Numerical)
4) Bresehnam's Circle Algorithm. (Derivation and Numerical)
5) Midpoint Circle Algorithm. (Derivation and Numerical)
6) Midpoint Ellipse Algorithm.
7) Write a note on Inside Outside method OR Even odd method.
8) Explain in brief Winding number protocol OR Non Zero Winding number method.
9) Discuss any two methods of Polygon filling. (Answer : Seed fill and Scan fill)
10) Compare Boundary fill and Flood fill algorithm.
11) Write a procedure to fill region bounded by different color use 8 connected approach. (answer : bounded by different color means flood fill algo).
12) Scan line algorithm with example. (theory and numerical)
13) What is 2D Translation, Rotation and Scaling with example? (Theory and Numerical)
14) What is 3D Translation, Rotation and Scaling with example? (Theory and Numerical)
15) What is homogeneous coordinates? Why do we need homogeneous coordinates?
16) What is Reflection? (Theory and Numerical)
17) Reflection with respect to : (all types)
18) What is shearing? Explain shearing with respect to x-axis and y-axis. (Theory and Numerical)
19) What are the properties of curve? What is Bezier curve? Derive Parametric equation of Bezier curve? (Numerical on Bezier curve, Midpoint approach of Bezier curve—given in A.P. Godse textbook atleast read once)
20) What is Clipping? Point clipping?
21) Explain Sutherland Line clipping algorithm? (Numerical)
22) Explain Sutherland Hodgeman Polygon clipping algorithm? (Numerical)
23) Discuss the implementation issues of Sutherland Hodgeman and Polygon clipping algorithm? (Answer: since Sutherland Hodgeman algo is applicable only for convex polygon and not for concave polygon)
24) Define Window and Viewport? Derive the window to viewport transformation?
25) Numerical on Window to Viewport transformation.
26) Explain 3D object representation Methods. (Answer: Sweep representation Method, Constructive Solid Geometry Method and Boundary Representation Method).
27) Write a note on Halftone and Dithering?
28) What is Projection? Explain various types of Projection? (Parallel and Perspective Projection and their subtypes. Vanishing point)
29) Compare and contrast parallel and Perspective projection.
30) What is Fractal? Types of Fractal? Fractal Dimension?
31) Explain Koch curve?
32) What is Digital Image Processing?
33) What are the steps of Image Processing?

34) What are the components of Image Processing?
35) Write short note Digitization. (Digitization = Sampling+Quatization).

OR How Image Sampling and Quantization done? Explain with example?

36) Explain Image Enhancement in Spatail domain (Basic Intensity Transformation functions and Piecewise linear transformation functions).
37) What are the Basic Intensity Transformation functions? (Digital Negative, Log transformation and Power law Transformation). (Theory and Numerical)
38) What are Power law transformation functions? (Contrast Stretching, Thresholding, Grey level slicing, Bit plane slicing) (Theory and Numerical)
39) What is Histogram?
40) Explain Histogram Equalization. (Theory and Numerical)
41) What are Image Subtraction and Image Averaging with example? (Theory and Numerical)

Questions Read at least once:

1) What is Inverse Transformation?
2) What is x-Shear with Y reference line and Y shear with X reference line. (See A.P. Godse Book)

X shear with Y reference line = $\begin{bmatrix} 1 & 0 & 0 \\ shx & 1 & 0 \\ -shx * yref & 0 & 1 \end{bmatrix}$

X shear with Y reference line = $\begin{bmatrix} 1 & shy & -shy * xref \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$