

# موضوعات امتحان تأهيلي دكتوراه (مادة الرسم بالحاسب ومعالجة

## الإشارات الرقمية)

### **Digital Signal Processing and Computer Graphics**

#### **Part I: Digital Signal Processing**

Discrete time signals, Discrete time systems, Discrete time linear and time invariant systems, Discrete time convolution, Discrete time Fourier transform., Discrete Fourier Series, Discrete Fourier transform, Sampling theory, down sampling and up sampling of discrete time signals, z-transform, Signal Flow graphs, Discrete Filter Structures, Digital Filter Design

#### **Part II: Computer Graphics**

Scan conversion algorithms of simple shapes: lines, circles, and ellipses., Curves and splines: Cubic, Hermite curves, Cubic Bezier curves, Cardinal and B-Splines, Filling algorithms: Flood Fill, Convex Polygon Fill, General Polygon Fill, Clipping algorithms for lines and Polygons., 2D and 3D, transformations, Camera models, Illumination models, Shading, Ray tracing algorithm