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| **P.V.P SIDDHARTHA INSTITUTE OF TECHNOLOGY** |
| **BRANCH : Computer Science & Engineering** | **REGULATION : PVP20** |
| **Course: B.Tech** | **SUBJECT : DATA VISUALIZATION-Honors** |
| **SubjectCode:20CS6621** | **Year and Semester: III-II** |
| **QUESTION BANK**  |

**UNIT -I**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** | **MARKS** |
| 1 | 1. Illustrate the schematic diagram of the visualization process.
2. Explain the forms of data- data values and data structures
 |  1 | 2 | 14 |
| 2 | a)How Gibson Affordance theory is useful in Visualization?b)Explain the limitations of Gibson Affordance theory | 1 | 2 | 14 |
| 3 | Develop a model with different stages of perceptual processing | 1 | 3 | 14 |
| 4 | a)How entities are related to data in real worldb)Illustrate the types of relationships  | 1 | 3 | 14 |
| 5 | Develop a model a conceptual framework for information processing model of human visual perception | 1 | 3 | 14 |
| 6 | 1. Outline the advantages of visualization
2. Explain the applications of visualization
 | 1 | 2 | 14 |
| 7 | a) For given image recorded by echo sounder system illustrate the benefits of visualization.b) In what way visualization is applicable to the real world data  | 1 | 2 | 14 |
| 8 | a)Explain the quality of attributes for entities or relationshipsb) Discuss the operations on entities and relationships | 1 | 2 | 14 |
| 9 | With a neat sketch illustrate the three-stage model of human visual information processing. | 1 | 2 | 14 |
| 10 | Discuss the schematic diagram of the visualization process | 1 | 2 | 14 |

**UNIT-2**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** | **MARKS** |
| 1 | Illustrate Functional view on the visualization pipeline. | 2 | 3 | 14 |
| 2 | 1. Apply conceptual perspective on visualization pipeline.
2. What goals are included to design effective colour map?
 | 1 | 2 | 14 |
| 3 | a) Describe visual dataflow programmingb) Explain direct and inverse mapping in the visualization process. | 1 | 2 | 14 |
| 4 | a) How to apply different colour maps for visualizing the objectsb) Apply visualization pipeline on network of objects | 2 | 2 | 14 |
| 5 | Illustrate the conceptual framework on the visualization pipeline with a neat diagram | 2 | 3 | 14 |
| 6 | a)Apply the dataflow design on visualization pipeline in implementation perspectiveb)how to classify the visualization algorithms | 2 | 3 | 14 |
| 7 | a)How contouring is utilised in visualization processb)Apply contour properties on scalar data | 2 | 3 | 14 |
| 8 | a)Illustrate Height plot variations for the datasetb) Apply (b–d) Enridged height-plot to display scalar values of the dataset  | 2 | 3 | 14 |
| 9 | Analyze the variations for designing the effective colour maps | 3 | 4 | 14 |
| 10 | Implement the colour mapping for scalar visualisation with various colour maps. | 3 | 4 | 14 |

**UNIT-3**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** | **MARKS** |
| 1 | 1. Make use of vector glyphs technique for visualizing vector fields and its variations
2. Choose an appropriate vector glyphs for better visualization
 | 2 | 3 | 14 |
| 2 | 1. Which methods are used to construct the objects from scattered points?
2. In what way color coding is applied on 2D surfaces
 | 2 | 3 | 14 |
| 3 | 1. Illustrate the variants about vector glyphs in 2D
2. How color coding is performed on 3D surfaces
 | 2 | 3 | 14 |
| 4 | 1. How cutting method is utilised as domain modeling technique
2. Illustrate displacement plot in a 3D vector field surface with an example
 | 1 | 3 | 14 |
| 5 | 1. How line integral convolution is applied for texture based vector visualization
2. In what way color coding methods are utilised on 2D surfaces
 | 2 | 3 | 14 |
| 6 | How to make use of variants of the cutting operation: extracting a brick, slicing, cutting with an implicit function, and generalized cutting | 2 | 3 | 14 |
| 7 | Compare and contrast the selection methods to extract the data from source dataset | 3 | 4 | 14 |
| 8 | 1. How Triangulation methods are utilised for constructing grids from scattered point
2. Distinguish Delaunay triangulation and Voronoi diagrams in grid construction
 | 3 | 4 | 14 |
| 9 | Analyse the variations of Delaunay triangulation method to construct grid from scattered points | 3 | 4 | 14 |
| 10 | Analyse the variants vector glyphs are used for vector visualization | 3 | 4 | 14 |

**UNIT-4**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** | **MARKS** |
| 1 | 1. How to extract data from any given color image?
2. How data is represented from a monochrome image
 | 2 | 2 | 14 |
| 2 | 1. In what way advanced segmentation techniques are utilised Shape analysis
2. How image processing is related to Visualization pipeline process
 | 2 | 3 | 14 |
| 3 | 1. How basic segmentation is related to shape analysis of objects
2. In what way transfer functions are utilized for image enhancement operation
 | 2 | 3 | 14 |
| 4 | 1. Describe the normalized cuts technique for segmentation in shape analysis
2. How luminance based segmentation is applied in shape analysis
 | 1 | 2 | 14 |
| 5 | 1. How image-processing operations can be applied at earlier stages of the visualization pipeline
2. How to make use of normalized cuts in image segmentation process
 | 2 | 3 | 14 |
| 6 | Distinguish image forecasting transform and normalized cuts methods for image segmentation. | 3 | 4 | 14 |
| 7 | Implement the connected components detection from an image dataset. | 3 | 4 | 14 |
| 8 | 1. How operations in shape analysis extracts the shapes from a given input image using Histogram-based image thresholding method.
2. How to make use of image foresting transform method
 | 2 | 3 | 14 |
| 9 | 1. Make of use snakes and Image foresting transform methods for segmentation of image for shape representation
2. Illustrate the techniques in advanced segmentation of shape analysis
 | 2 | 3 | 14 |
| 10 | Distinguish the segmentation methods like mean shift, normalized cuts and image foresting transform | 3 | 4 | 14 |

**UNIT-5**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** | **MARKS** |
| 1 | 1. Apply the methods to the users in understanding all that abstract data?
2. In what way printing contents is used to visualize the table data
 | 4 | 3 | 14 |
| 2 | 1. Describe the techniques in tree visualization
2. Explain the design issues of table visualization
 | 1 | 2 | 14 |
| 3 | 1. Make use of different techniques for table visualization of stock exchange data
2. In what way mapping values enhances the table visualization
 | 4 | 3 | 14 |
| 4 | 1. How dimensionality reduction is applied on multivariate data
2. Identify the sampling issues in text-based table visualization
 | 2 | 3 | 14 |
| 5 | 1. Illustrate with an example to visualize the table data
2. Identify the techniques in content based visualization
 | 4 | 3 | 14 |
| 6 | Apply tree visualization technique on File hierarchy of the FFmpeg software distribution | 2 | 3 | 14 |
| 7 | Idntify the issues in using Parallel Coordinate Plots for analyzing the distribution and correlation of positions of a set of K-dimensional points | 4 | 3 | 14 |
| 8 | Apply various methods of Content-Based Visualization for Text Visualization | 4 | 3 | 14 |
| 9 | How to make use of techniques to visualize software source code | 2 | 3 | 14 |
| 10 | Differentiate the methods involved in visualizing the text document. | 4 | 3 | 14 |