Name of Student: Roll No:

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|  | | | **T.K.M COLLEGE OF ENGINEERING** | | | | | | |
| **Department** | | Computer Science & Engineering | | | | |
| **Programme** | | B. Tech | | | | |
| **Semester** | | VI | | | | |
| **Course code &**  **Name** | | 22CST602 | | | | |
| Computer Graphics & Image Processing | | | | |
| **Second Series - ANSWER SCHEME** | | | | | | |
| **Max Marks** | | | **50** |  | | **Total Time** | | **2 Hours** | |
| **COURSE OUTCOMES[CO] to be assessed** | | | | | | | | | |
| CO 3 | | Demonstrate geometric representations, transformations on 2D & 3D objects, clipping algorithms  and projection algorithms (Apply) | | | | | | | |
| CO 4 | | Summarize visible surface detection methods (Understand) | | | | | | | |
| CO 5 | | Summarize the concepts of digital image representation, processing and demonstrate pixel  relationships (Apply) | | | | | | | |
| CO 6 | | Solve image enhancement and segmentation problems using spatial domain techniques (Apply) | | | | | | | |
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| **No.** | **PART A (Answer All Questions)** | | | | | | **Mark** | **CO** | **BL** |
| 1. | Transformation matrix for x=0 plane (1 mark)  Orthographic projection (1 mark) | | | | | | 2 | CO3 | L2 |
| 2. | Derivation of scaling & translation (2 mark) | | | | | | 2 | CO3 | L2 |
| 3. | Sampling & Quantization (1 mark),  Reason (1 mark) | | | | | | 2 | CO5 | L2 |
| 4. | Gamma correction ( 1mark)  Formulae (1 mark) | | | | | | 2 | CO6 | L2 |
| 5. | Any suitable technique (1 mark)  Explanation (1 mark) | | | | | | 2 | CO6 | L2 |
| **PART B (Each full question carries 10 marks)** | | | | | | | | | |
| 6.a)  6.b) | Algorithm (3 marks), data structures (3 marks)  Algorithm (4 marks) | | | | | | 6  4 | CO4  CO4 | L2  L2 |
| 7.a)  7.b) | Explanation of 4 adjacency, 8 adjacency, m adjacency (1 mark each)  4 path = 6, 8 path =4, m path =6 (1 mark each)  Steps (1 mark)  Any 3 applications (1 mark each) | | | | | | 7  3 | CO5  CO5 | L2  L1 |
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| 8 a)  b)    c) | Histogram equalization , Inference before & after equalization (4 mark)  Applying filter & finding median (2 mark)  [10, 25, 30, 50, 60, 80, 100, 120, 150] (1 mark)  Explanation (1.5 mark)  Filters (1.5 mark) | 4 | CO6 | L2 |
| **PART C [Challenging Question]** | | | | |
| 9. | a) transformation matrix (2 mark)  b)applying transformation to project given 3D to 2D  Finding endpoints (2 mark)  c)Applying algorithm & Clipping calculation (5 mark)  final answer (1 mark) | 10 | CO5 | L3 |
| **OR** | | | | |
| 10. | * 1. Role & Justification of challenges ( 4 mark)   2. Fundamental difference (2 mark). Laplacian is more sensitive to noise (1 mark)   3. Techniques , Pros & Cons ( 3 mark) | 10 | CO6 | L3 |

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