Pokhara University

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| Level: Bachelor | Semester: Fall | Year : 2015 |
| Programme: BE | | Full Marks: 100 |
| Course: Computer Graphics | | Pass Marks: 45 |
| Time : 3hrs. |

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| *Candidates are required to give their answers in their own words as far as practicable.* |
| *The figures in the margin indicate full marks.* |
| Attempt all the questions. |

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|  | 1. Give your opinion on why interactive graphics has been able to gain such an immense amount of popularity in diversified fields like business, engineering, medicine etc. 2. In case of two raster systems with resolutions of 640 by 480 and 1024 by 600, how many pixels could be accessed per second in each of these systems by a display controller that refreshes the screen at a rate of 75 frames per second? What is the access time per pixel in each system? | 7  8 |
|  | 1. Differentiate between Random scan display and Raster scan display. 2. What is DDA? Derive the Bresenham's line drawing algorithm for the slope greater than one. | 8  7 |
|  | 1. Find the raster position along the region 1 of the ellipse path in first quadrant. The semi major and semi minor axes are 8 & 7 respectively and the center is (0, 0). 2. Explain Sutherland-Hodgeman ploygon cliping algorithm with example. | 7  8 |
|  | 1. Define window and view port? Derive the matrix that is responsible for placing an object from a window to viewport. 2. Derive the expression and matrix representation for perspective projection. | 7  8 |
|  | 1. Why is it required to take care of issues like removal of hidden surfaces in 3D viewing? Differentiate between A Buffer and Depth Sorting Approach for detecting visible surfaces in 3D? 2. Differentiate between 2-D and 3-D graphics? In graphics which dimensional is more applicant. | 7  8 |
|  | 1. Define lighting model and ambient light Differentiate phong Shading and gouraud Shading method. 2. How does the Gouraud Shading algorithm interpolate intensities at different points of a polygon surface to give a smooth shading effect? What are its drawbacks? | 7  8 |
|  | Write short notes on: (**Any two**)   1. Color models and its types. 2. Back face detection. 3. Fractal geomectry method. | 2×5 |