

# JK LAKSHMIPAT UNIVERSITY, JAIPUR

## INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), November 2017  
M.Tech + B. Tech. in Computer Science & Engineering, Semester IX

Roll No.....

Advance Computer Graphics : MTCS433

Time: 3 hours

Max. Marks: 100

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**Instructions to students:**

1. Do not write anything other than your roll number on question paper.
  2. Assume suitable data wherever required and mention it clearly.
  3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
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Q.1A Objective type multiple choice questions (10 questions @ 1 mark) 10

- i. Smallest size object that can be displayed on a monitor is called .....  
a) Picture element b) Point c) Dot Pitch d) aspect ratio
- ii. On a monochromatic monitor, the frame buffer is known as .....  
a) Display file b) Pixmap c) Bitmap d) Refresh buffer
- iii. .... refers to pixel spacing.  
a) Pixmap b) Resolution c) Pixel depth d) Persistence
- iv. The maximum number of points that can be displayed without overlap on a CRT  
a) Aspect Ratio b) Resolution c) Brightness d) Pixel
- v. .... is the ratio of horizontal points to vertical points necessary to produce equal length lines in both direction.  
a) Dot Pitch b) Resolution c) Aspect Ratio d) Height-Width Ratio
- vi. Identify the colors produced in beam penetration method.  
a) Red, Green, Blue, White b) Red, Orange, Yellow, Green  
c) Red, Green, Blue d) Green, Red, White, Orange
- vii. RGB model are used for  
a. Computer display b. Printing c. Painting d. None of these
- viii. The intersection of three primary RGB color produces  
a. White color b. Black color c. Magenta color d. Blue color
- ix. The phenomenon of having a continuous glow of a beam on the screen even after it is removed is called as ?  
a) Fluorescence b) Persistence c) Phosphorescence d) Incandescence
- x. .... is known as standard graphics objects  
a) Octree b) Quadtree c) Polygon surfaces d) Ellipsoid

Q.2 Short answer type questions (4 questions @ 2.5 marks) 10

- A. Define two input and two output devices pertaining to computer graphics.
- B. Define refreshing concept of frame buffer.
- C. Explain fractals.
- D. Discuss area subdivision method.

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|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Q.3A | Explain additive and subtractive color models in detail.                                                                                                                                                                          | 05 |
| Q.3B | Describe significance of rendering, shading, lighting, and intensity in various kinds of light models.                                                                                                                            | 05 |
| Q.4A | Describe Client and Server Model in detail by using suitable example.                                                                                                                                                             | 05 |
| Q.4B | Explain the significance of Phong shading over flat shading.                                                                                                                                                                      | 05 |
| Q.5A | Briefly discuss the relationship between the RGB models and the CMY models. When is the CMY model useful?                                                                                                                         | 05 |
| Q.5B | Describe the requirement for generating models with three primary colors?                                                                                                                                                         | 05 |
| Q.6A | Derive the iterative Gouraud shading algorithm. What are its limitations?                                                                                                                                                         | 05 |
| Q.6B | Explain the significance of using the HSV model instead of the RGB or CMY models.                                                                                                                                                 | 05 |
| OR   |                                                                                                                                                                                                                                   |    |
| Q.6B | Discuss the purpose of using shading models. What are the key differences between shading and lighting models?                                                                                                                    | 05 |
| Q.7A | For a 21.5 inch monitor having screen resolution 1920 X 1080, calculate pixels per inch (ppi).                                                                                                                                    | 05 |
| Q.7B | Discuss the broad issues in Multimedia. Explain various stages of a multimedia production cycle.                                                                                                                                  | 05 |
| OR   |                                                                                                                                                                                                                                   |    |
| Q.7B | Write a short note on the relation between signal processing and handling of multimedia audio and video contents.                                                                                                                 | 05 |
| Q.8A | Explain Bezier Curve. What are its properties? The four vertices of a Bezier polygon are (1,1), (2,3), (4,3) and (3,1). Find the equation of Bezier curve in the parametric form.                                                 | 10 |
| Q.9A | Differentiate between interpolation and approximation splines. Describe and plot blending function of splines.                                                                                                                    | 10 |
| Q.9B | Suppose a printer of 300 X 300 dpi resolution producing 7.5 X 10.5 inch printed area on an 8.5 X 11 inch page. Calculate number of pages printed per minute, if a sustained data rate to the laser print engine of 1 megabit/sec. | 10 |
| OR   |                                                                                                                                                                                                                                   |    |
| Q.9B | (i) Explain the importance of hidden surface removal in a 3D graphics pipeline. Describe the Z-buffer algorithm in detail.<br>(ii) Explain multimedia standards. Name 10 multimedia standards.                                    | 10 |