

Full Marks - 10.

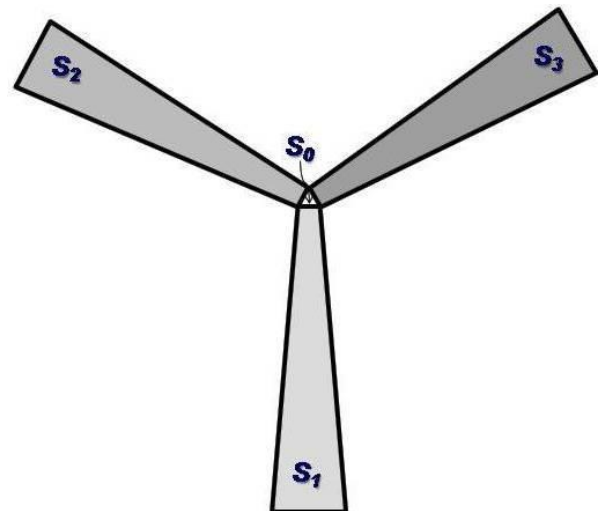
Time - 1.5hrs.

Answers should be brief and to the point. Marks will be deducted for unnecessary writing. Calculators are allowed. Write your 1) Name 2) Roll No 3) Signature on each page you upload.

1. Write down DDA and Bresenham's line algorithm. A grid of 50*50 is given. A line needs to be drawn from (20,10) to (30,18). Draw the straight line using both the algorithms showing the detailed implementation. Write down the codes and Find out the pixels to be selected for drawing the line.

[4]

2. A Helicopter Propeller needs to be designed using 3 equal isosceles trapezoids as shown in the figure. The dimensions of each trapezoid are height=100



and the bases are 10 and 30. A vector \vec{r} formed from the vertex $(x_1=20, y_1=30, z_1=25)$ and $(x_2=170, y_2=180, z_2=175)$ is the axis of rotation of the propeller. The center of the propeller is placed at (x_2, y_2, z_2) . The propeller is rotated by an angle

ωt around \vec{r} .

- a) Describe and generate all the vertices of the propeller and then make the data structure of the vertices, the edges and the surfaces S_1 , S_2 , S_3 and S_0 in a hierarchical manner.
- b) Derive the transformations to rotate the propeller. Define the Transformation matrix and then use short notation only. (Hint: It is easier to represent this transformation as a product of multiple transformations).

[2+4=6]

Online Fixed Time Assessment (FTA) of Graphics and Visual Computing (IGVC-5222C) will be held as scheduled on September 18, 2021 from 11:00hours to 13:00hours (11:00AM to 1:00PM) for B.Tech-IT V Semester.

This FTA will be of 10marks out of 30. The remaining 20 marks will be for the online assignments that you have been submitting. This ratio of 10:20 may be varied in favor of the performance by the students so that the performance of the students could be maximized.

The question can be viewed at 11:00 AM on September 18, on your GVC Google Classroom.

The questions will be Subjective/Descriptive problem-solving type and will be conducted through "Google Classroom". MAXIMUM Marks: 10. The Link will appear on your Google Classroom at 11:00AM on September 18, 2021. Answers to these questions should be written on Paper with your PEN/ PENCIL.

On the Top margin of each paper Students should write their

i) Question No, ii) Roll No, iii) Name and iv) Signature.

These pages should be scanned and uploaded. Please install Adobe Scan to take the pictures of your answer pages for uploading it (Preferably in PDF). Do not Scan at high resolution so that the file size is large and it becomes difficult to upload it from your end.

Do not share your login and password of your IITA e-mail. Any Malpractice of uploading through a single IP no, Uploading someone else's answer Sheet IS A CRIME. THE STUDENT will automatically fail the course.

These are difficult times. Your sincerity towards learning and ethical practice is expected from all of you.

Best wishes and stay safe indoors, eat healthy food and (vitamins) to keep yourself immunized. Wear a mask outdoors and unsure indoor regions. Take good precautions of yourself and the elders in your family.

Pavan Chakraborty