# Lecture 7

***Origin42***

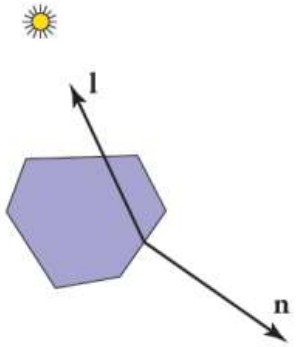
**6.** Lecture -07

(b) State the limitations of the Lambertian shading model. [2]

**6. b. Id-70**

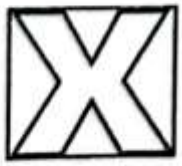
## Lambertian Shading Model (8/10)

- Light intensity:
  - an RGB color
- it can produce RGB components for *c* that are outside the range [0, 1]
  - because the dot product can be negative.

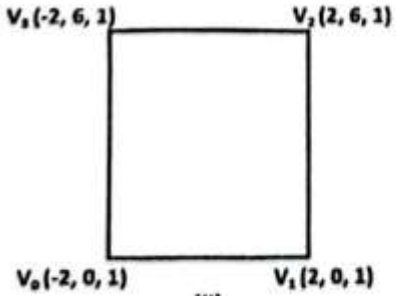



**6.**

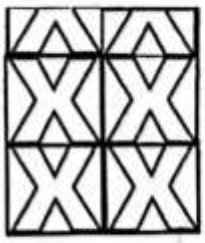
(c) In the following figure, (i) is a texture, (ii) is a rectangular face $V_0V_1V_2V_3$ to be mapped with the texture, and (iii) is the output after texture mapping. List the texture coordinates for corresponding xyz-coordinates to perform texture lookup. (assume any data if necessary) [4]



(I)




(II)



(III)

**6. c. Solution:** ch4

## *Enigma41*

**5.** Lecture -07

(b) State the drawbacks of vertex-based diffuse shading. Propose a solution to overcome the issue. [3]

**5. b. Solution:** ***ID - 082***

# Vertex-Based Diffuse Shading (4/5)

- Problem:
  - Many models will come with normals.
  - compute normals by a variety of heuristic methods.

# Vertex-Based Diffuse Shading (5/5)

- Solution:
  - average the normals of the triangles that share each vertex and use this average normal at the vertex.
  - should convert it to a unit vector before using it for shading.

**7. Lecture -06**

(c) State the disadvantages of the Lambertian shading model [2]

**7. c. Solution:**id-70

# Disadvantages of Diffuse Shading (1/2)

- One problem with the diffuse shading:
  - any point whose normal faces away from the light will be black.
- In real life, light is reflected all over, and some light is incident from every direction.

***Recursive40***

**6.**

b) Show that, in case of Phong Shading model, $r = 2(l \cdot n)n - l$, where symbol holds the conventional meaning.

**6. b. Solution:** ch7