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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Computer Vision and Image Processing - Fundamentals and Applications (course)



Register for
Certification
exam

(https://examform.nptel.ac.in/2023_01/swam_form/dashboard)

Course outline

**How does an
NPTEL online
course work?
()**

**Week 0 :
Prerequisite
()**

**Week 1 :
Introduction
to Computer
Vision and
Basic
Concepts of
Image
Formation ()**

● **Lec 1 :
Introduction to
Computer**

Assignment 1

Assignment not submitted

Due date: 2023-02-08, 23:59 IST.

1) Of the following, _____ has the maximum frequency.

1 point

- ☐ UV Rays
- ☐ Gamma Rays
- ☐ Microwaves
- ☐ Radio Waves

2) The difference in intensity between the highest and the lowest intensity levels in an image is _____

1 point

- ☐ Noise
- ☐ Saturation
- ☐ Contrast
- ☐ Brightness

3) Images quantized with insufficient brightness levels will lead to the occurrence of _____

1 point

- ☐ Pixilation
- ☐ Blurring
- ☐ False Contours
- ☐ None of the Mentioned

Vision (unit?
unit=17&lesson=18)

☐ Lec 2 :
Introduction to
Digital Image
Processing
(unit?
unit=17&lesson=19)

☐ Lec 3 : Image
Formation:
Radiometry
(unit?
unit=17&lesson=20)

☒ Lecture notes
(unit?
unit=17&lesson=21)

☐ Quiz:
Assignment 1
(assessment?
name=123)

☐ Weekly
feedback form
(unit?
unit=17&lesson=22)

**Week 2:
Fundamental
Concepts of
Image
Formation ()**

**Week 3:
Fundamental
Concepts of
Image
Formation ()**

4) What is the phenomenon one encounters when a lens fails to converge all the wavelength of light on a single focal plane?

1 point

- ☐ Vignetting effect
- ☐ Chromatic aberration
- ☐ Non-collinear vanishing points
- ☐ Distorted image

5) Gray values of an image are

- i. proportional to scene radiance and foreshortening factor.
- ii. inversely related to the distance between the object and the lens.
- iii. inversely proportional to the distance between the lens and the image plane.
- iv. proportional to total irradiance and unaffected by foreshortening factor.

1 point

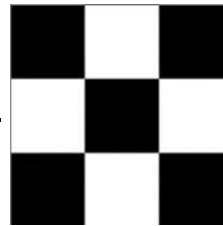
The correct option is

- ☐ (i) and (iii)
- ☐ Only (iv)
- ☐ (ii) and (iv)
- ☐ (iii) and (iv)

6) Find the euclidian, city block, and chessboard distances between the two extreme

1 point

diagonal squares for the given patch.



- ☐ 1.41,2,1
- ☐ 2.82,2,4
- ☐ 2.82,4,2
- ☐ 1.41,1,2

7) Brightness of a Lambertian surface is indicated by

1 point

- ☐ BRDF, which is constant, and $1/\pi$ times of reflectance coefficient.
- ☐ BRDF, which changes according to the outgoing radiance.
- ☐ BRDF, which varies inversely to changes in reflectance coefficient.
- ☐ none of the above

8) Your night light has a radiant flux of 10 watts, what is the irradiance on your radiometry notes which fell 2 meters from the light when you fell asleep (assuming your notes were perpendicular to the night light)? (Wm^{-2})

1 point

- ☐ 0.299
☐ 0.25
☐ 0.199
☐ 0.55

9) Given the 5-watt source coming in from $\frac{2\pi}{3}$ solid angle (in sr) of a radius 3 meter, the **1 point** corresponding source of energy carried by the ray is

- ☐ $\frac{5}{4\pi^2}$
☐ $\frac{1}{2\pi^2}$
☐ π^2
☐ 1

10) Suppose a source with an area of $4m^{-2}$ is viewed at an angle of 30 degree and has a **1 point** radiance of $0.3Wm^{-2}sr^{-1}$. Calculate the radiant intensity of the source?

- ☐ $2.78Wsr^{-1}$
☐ $1.65Wsr^{-1}$
☐ $1.04Wsr^{-1}$
☐ $2.11Wsr^{-1}$

You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers