



DP-003-1204005

Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2022

Physics : ET-9

(Remote Sensing & Applications)

Faculty Code : 003

Subject Code : 1204005

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) The figure on right indicates marks.

- 1** Answer ANY SEVEN of the following. **14**
- (a) Define the term "Reflectance".
 - (b) How the photo scale is derived?
 - (c) Explain the term film exposure.
 - (d) Explain how the color system is implemented.
 - (e) Briefly describe the concept of "Black-body".
 - (f) List the advantages with digital images.
 - (g) Explain how the deciduous and coniferous trees can be identified.
 - (h) How the ground resolution is derived?
 - (i) List the advantages with aerial photography.
 - (j) Define the opacity and transmittance of the film.
- 2** Answer ANY TWO of the following :
- (a) Write the Stefan-Boltzmann law and explain each terms. **7**
What do you mean by dominant wavelength? Describe the scattering by atmosphere.
 - (b) Discuss the specular and diffuse reflector. Define spectral **7**
signature of vegetation, water and soil. How the different class of trees can be identified?
 - (c) Explain the working principle of Global Position System. **7**

- 3 Answer the following.
- (a) Describe the working of a simple camera. Explain how the shutter and Diaphragm will control the exposure. 7
- (b) A film in a camera with a 40mm focal length lens is properly exposed with a lens opening diameter of 5 mm and exposure time of 1/125 sec. 7
- If the lens opening is increased to 10 mm and the scene brightness does not change, what exposure time should be used to maintain proper exposure?

OR

- 3 Answer the following :
- (a) Describe the color film. How the color mixing is done? Discuss the types of filters and its applications. 7
- (b) Explain the methods of electronic imaging system. How the aerial Videography is implemented? 7
- 4 Answer ANY TWO of the following :
- (a) Discuss each points of photogrammetric activities in details. 7
- (b) Explain the geometric types and elements of aerial photographs. Derive the Expression for the photo scale. 7
- (c) Assume that two road intersections on a photo can be located on a 1:25000 scale topographic map. The measured distance between the intersections is 47.2 mm on the map and 94.3 mm on the photograph. What is the scale of photograph? At that scale what will be the length of fence of 42.9 mm on the photograph? 7
- 5 Answer ANY TWO of the following. 14
- (a) Describe the working of along track and across track camera.
- (b) Write a note on "Digital Image Processing"
- (c) Give the overview of LANDSAT satellite program
- (d) Explain the relief displacement and height measurement.