



Seat No. _____

H-003-1204005

M. Sc. (Physics) (Sem. IV) Examination

April - 2023

ET-9 : Remote Sensing & Applications

Faculty Code : 003

Subject Code : 1204005

Time : $2\frac{1}{2}$ Hours / Total Marks : 70

Instruction : All questions are compulsory. The figure on right indicate marks.

- 1 Answer any seven of the following : 14
- (a) Define the ground resolution.
 - (b) Define the term “Reflectance”
 - (c) Explain the photo scale?
 - (d) Explain the term “film exposure”
 - (e) List the primaries of additive and subtractive color system.
 - (f) Define relief displacement.
 - (g) Explain how the deciduous and coniferous trees can be identified.
 - (h) List the advantages with aerial photography.
 - (i) Briefly describe the concept of “Black-body”?
 - (j) List the advantages with digital images.
- 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 firm in a camera with a 40 mm focal length lens is properly exposed with a lens opening diameter of 5mm and exposure time of 1/125 sec. 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? 7

OR

- 3 Answer the following :
- (a) Explain how the black and white image and photographs are generated. 7
 - (b) Define the term “film exposure”. Describe the geometric factors influencing the film exposure and its corrective measures. 7
- 4 Answer any two of the following :
- (a) Define the relief displacement of vertical features. Derive the expression for the height measurement. 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 4.29 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 image interpretation parameters.