Ref No. Ex/PG/ETCE/T/129H/2024

M. E. ELECTRONICS AND TELE-COMMUNICATION ENGINEERING 1ST YEAR 2ND SEMESTER EXAMINATION, 2024

Subject: Remote Sensing **Time: 3.0 Hours** **Full Marks: 100**

No. of questions	Answer any **FOUR (4)** question: 4×25	Marks
1	a) What do you mean by remote sensing? What are the differences between active and passive remote sensing process. b) Mention the area of applications of remote sensing. c) Describe with suitable block diagram the principle and process of remote sensing. d) Describe Satellite Remote Sensing Process.	5+5+8+7
2	a) Describe with suitable diagram the entire electromagnetic spectrum and specify which bands are used or not used in remote sensing purpose. b) Mention the advantages of microwave remote sensing. c) How permittivity of a dielectric material is measured using microstrip patch sensor.	10+5+10
3	a) What do you ment by GIS? Explain three views of a GIS. b) What is the function of GPS in remote sensing? Gives basic concept of GPS. c) Mention how GIS is implemented in civil engineering?	8+7+10
4	a) Describe the acoustic and near acoustic remote sensing process. b) How the RADAR can be used to accurately map rain forest area? c) How the resolution of an image obtained from RADAR is increased using Synthetic Aperture RADAR?	8+ 10+7
5	a) Give the basic concept of LIDAR. b) Mention the major component of LIDAR system. c) Briefly describe the applications of LIDAR.	6+7+12
6.	a) Describe the process of measuring the latent heat using radiometer. b) Describe with suitable diagram how the remote sensing technique is used in hydrology and hydrogeology	10+15
7	a) How a satellite can be used to observe the Earth as they go round in predictable orbit? b) Consider a satellite image which gives the information regarding the reflectance with wavelength. From this image how we can identify an object? c) Determine the power received from by a satellite located at **40000** km from an object which reflects all the power transmitted by the satellite. Satellite is operating at a frequency of **11** GHz and has effective isotropic radiated power (EIRP) of **21** dBW. The gain of a receiving antenna is **50.5** dB. Derive the necessary relations you used.	5+6+14