Printed Pages: 02 **Sub Code:KOE-066**

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B.TECH
(SEM VI) THEORY EXAMINATION 2022-23
GIS & REMOTE SENSING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a. List out the various elements of remote sensing.
b. Describe the working principle of remote sensing.
c. Explain the role of Sensors in Remote Sensing?
d. State the various types of platforms available for Remote Sensing.
e. Explain the term stereoscopy?
f. State the fundamental steps involved in Digital Image Processing.
g. Describe the application of microwave remote sensing in Defence system.
h. State the reason which makes microwave remote sensing as all-weather technique.
i. Explain the term TIN elevation model.
j. State the use of 'clip' tool in GIS operation.

SECTION B

2. Attempt any *three* of the following: **10x3=30**

a. Explain the process of energy interaction with earth surface feature and state the general energy balance equation.
b. A line AB, 3000 m long, lying at an elevation of 600 m measures 10 cm on a vertical photograph for which focal length is 20 cm. Determine the scale of the photograph in an area the average elevation of which is about 900m.
c. Describe the term stereoscopic parallax and state the process to calculate height of object using stereoscopic parallax.
d. Explain the UTM geographic coordinate system.
e. Describe the various methods of data input for a GIS.

SECTION C

3. Attempt any *one* part of the following: **10x1=10**

a. Describe the fundamental of electromagnetic spectrum and label the various types of electromagnetic radiations with help of a neat sketch.
b. Illustrate the significant observations from spectral reflectance curve of vegetation & water using a neat sketch.

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4. Attempt any *one* part of the following: 10x1=10

a. Describe the following terms by labelling them on a neat sketch of aerial photograph: (i) Angle of Tilt (ii) Photo Principal Point (iii) Photo Nadir point (iv) Principal Plane (v) Horizon Point

b. The scale of an aerial photograph is 1 cm = 150 m. The photograph size is 30cm x 30cm. If the longitudinal lap is 65% and side lap is 25%, calculate the number of photographs required to cover an area of

(i) 100 km^2

(ii) 10 km x 10 km

5. Attempt any *one* part of the following: 10x1=10

a. Differentiate Push broom &Whisk broom technique of data recording by a sensor.

b. Explain the fundamental of Image Classification and illustrate the process of supervised & unsupervised classification.

6. Attempt any *one* part of the following: 10x1=10

a. Describe the important bands of microwave remote sensing stating their applications and wavelength ranges.

b. Explain the procedure of map projection and three principal map projection techniques.

7. Attempt any *one* part of the following: 10x1=10

a. Explain the various types of spatial data models along with their advantages & disadvantages.

b. Describe the process of map overlay along with any 2 tools which can be used for it.

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