GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

B. Sc. (Ag.) (Sixth Semester) Examinations, April – 2025
AG-329– Geo-informatics and Nano-Technology for Precision Farming

Time: 2 hrs   Maximum : 50 Marks

The figures in the right hand margin indicate marks.

PART – A

Q.1. Fill in the blanks with suitable word / figure.   **(0.5 x 10 = 5 Marks)**

a. Science and technology that deals with geography, geosciences and cartography towards understanding of geospatial features of the earth surface is known as …………….

b. Adjustment of the system parameters so that simulation results reach a predetermined level is …………..

c. ……………….. are the good indicators of in-season N status in field crop.

d. STCR stands for ………………

e. GIS stands for ………………..

f. The geospatial software used for digital image processing and mapping is …………….

g. Number of GPS satellites currently in orbit around earth are ……………………

h. Name of the Indian GPS satellite system is ………………..

i. The word "nano" came from ……………..

j. 1 nano meter equals to ……………….

Q. 2. Define (or) Explain the following in one or two sentences.   **(1 x 5 = 5 Marks)**

a. 5-R concept of Precision agriculture

b. Geodesy

c. Remote Sensing

d. Variable Rate Technology

e. GPS

Q3. Match the following   **(0.5 x 10 = 5 Marks)**

	Column – A		Column – B
(a)	Ramped Calibration Strip (RCS)	(i)	0.4 to 0.7 μm
(b)	NDVI	(ii)	Crop simulation model
(c)	SPAD meter	(iii)	Maximum possible yield
(d)	Negative value of NDVI indicates	(iv)	Dehradun
(e)	Implement used in yield monitoring and mapping	(v)	Crop N requirement
(f)	Collection of data from aerial distance can be done by	(vi)	Green seeker
(g)	Visible wavelengths	(vii)	Leaf chlorophyll index
(h)	DSSAT	(viii)	Water bodies
(i)	Potential yield of a crop	(ix)	GPS receiver
(j)	Indian Institute of Remote Sensing	(x)	Remote sensing

Q4. Write True or False against each statement (0.5 x 10 = 5 Marks)

a. Healthy vegetation in a CIR image appears as Red.

b. High NDVI value of healthy plants is due to Low reflectance of infrared light.

c. The source of remote sensing data is Electro-magnetic radiation.

d. Detection of crop stress at early vegetative stages is due to increased near infrared reflectance.

e. DIP stands for Digital Image Processing.

f. To estimate ones accurate position on earth, at least four satellites need to compute.

g. GLONASS is Indian Satellite System.

h. The clock used by GPS satellite is atomic clock.

i. Model Validation involves the confirmation that the calibrated model closely represents the real situation.

j. In STCR equation, fertilizer phosphorus and potassium are considered in Elemental form.

PART – B

Attempt *ANY FIVE* questions. All question carries equal marks (6 x 5 = 30 Marks)

5. Explain Various Tools and Techniques of Precision Farming.

6. Explain advantages of Geoinformatics. Enlist various applications of Geoinformatics.

7. What is GIS. Explain various components of GIS.

8. Explain Spectral characteristics of soil, water and vegetation with help of neat sketch.

9. Explain Components of GPS with help of neat sketch.

10. Explain various Terminologies related to crop simulation model.

--- End of Paper ---