Total No. of Questions: 22

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Engineering

End Semester Examination May 2025

OE00038 Remote Sensing & GIS

Programme	:	B.Tech.	**Branch/Specialisation**	:	All
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

		Marks	CO	BL
Q1.	How long does it takes a GPS satellite to orbit the Earth?	1	1	1
	○ 2 hours ○ 8 hours ◉ 12 hour ○ 24 hour			
Q2.	Who developed the GPS system?	1	2	2
	○ NASA ◉ U.S. Department of Defense ○ European Space Agency ○ Russian Federal Space Agency			
Q3.	The Sun is the primary source of energy for which type of remote sensing?	1	1	1
	◉ Passive Remote Sensing ○ Active Remote Sensing ○ Sonar Remote Sensing ○ Radar Remote Sensing			
Q4.	Which satellite is used for earth resource monitoring?	1	2	2
	◉ LANDSAT ○ INSAT ○ NavIC ○ GPS			
Q5.	The criterion for identification of an object with interpretation element is called-	1	1	1
	○ GPS ○ GIS ◉ Interpretation key ○ Remote sensing			
Q6.	Which of the following is not an advantage of remote sensing over conventional mapping?	1	2	2
	○ Rapid data collection ○ Cost-effectiveness for large areas ◉ Ability to measure underground features ○ Consistency and repeatability of data			
Q7.	What does GIS stand for?	1	2	2
	○ Geospatial Information System ○ Geographic Information Science ○ Global Information System ◉ Geographic Information System			
Q8.	How many zones are there in the UTM coordinate system?	1	1	1
	○ 30 ◉ 60 ○ 90 ○ 120			
Q9.	Which of the following raster data structures stores values in a regular grid format?	1	1	1
	○ TIN (Triangulated Irregular Network) ◉ Grid format ○ Vector format ○ Shapefile			

Q10. What is a Geo-relational Vector Data Model? **1 2 2**

- (●) A model that combines spatial and attribute data in a relational database
- ( ) A model that only stores spatial data
- ( ) A model that uses only raster data for representation
- ( ) A model that stores data in a spreadsheet format

Section 2 (Answer all question(s))

Marks CO BL

Q11. Write down the working principle of GPS in detail. **2 2 2**

Rubric	Marks
On correct explanation of working principle	2

Q12. Briefly explain the evolution of GPS. **2 2 1**

Rubric	Marks
On correct explanation of the evolution of GPS	2

Q13. (a) Can you explain the Earth-Centered Earth-Fixed (ECEF) coordinate system and the World Geodetic System 1984 (WGS 84) in detail? **6 2 2**

Rubric	Marks
Explanation of Earth-Centered Earth-Fixed (ECEF) coordinates	3
Explanation of world geodetic 1984	3

(OR)

(b) Can you describe the three main segments of the GPS system and explain their functions in detail, particularly focusing on their roles and interdependencies.

Rubric	Marks
On correct explanation of three main segments of the GPS system	3
Functions of all segments	3

Section 3 (Answer all question(s))

Marks CO BL

Q14. Differentiate between active and passive remote sensing. **2 2 2**

Rubric	Marks
Any 2 correct difference between Active and Passive Remote Sensing.	2

Q15. (a) Can you describe the components of a remote sensing system in detail and provide a well-labeled diagram to illustrate their interconnections and functions. **8 2 2**

Rubric	Marks
Components of a remote sensing system	6
Well-labeled diagram	2

(OR)

(b) What are the various types of satellites used in remote sensing? How do their specific capabilities contribute to environmental monitoring?

Rubric	Marks
Types of satellites used in remote sensing	5
Applications	3

Section 4 (Answer all question(s))

Marks CO BL

Q16. What are the advantages of using remote sensing for terrain investigation in comparison to conventional mapping techniques? **4 3 3**

Rubric	Marks
On any 4 correct advantages	4

Q17. (a) How would you explain the false color composite and digital image classification techniques? Also include their processes and practical applications. **6 3 2**

Rubric	Marks
False color composite explanation	3
Digital image classification techniques explanation	3

(OR)

(b) How would you analyze the concept of photo-image interpretation keys and evaluate their importance in image analysis?

Rubric	Marks
Explanation of concept of photo-image interpretation keys	3
Importance in image analysis	3

Section 5 (Answer all question(s))

Marks CO BL

Q18. Define the following terms: **4 2 2**

- Geospatial data
- Spatial data

Rubric	Marks
Definition of Geospatial Data	2
Definition of Spatial Data	2

Q19. (a) How would you analyze the various types of map projections in GIS? Discuss their advantages and limitations in different applications. **6 2 2**

Rubric	Marks
on correct explanation of any 3 types of map projections of GIS.	6

(OR)

(b) How would you compare and synthesize the UTM Grid system and UPS Grid system? Also highlight their differences, advantages, and suitability for various applications.

Rubric	Marks
UTM Grid system explanation	3
UPS Grid system explanation	3

Section 6 (Answer any 2 question(s))

Marks CO BL

Q20. What does raster data models indicate? Explain various types of raster data in detail. **5 3 3**

Rubric	Marks
On correct explanation of Raster data models indication.	1
Types of Raster data	4

Q21. Explain the following term: **5 4 4**

- Non topological vector data
- Data models for composite features of vector data.

Rubric	Marks
Correct explanation of Non topological vector data	2.5
Data models for composite features of vector data explanation	2.5

Q22. How would you critically compare and contrast the raster data model and vector data model? Also analyse their strengths, weaknesses, and appropriate use cases. **5 5 5**

Rubric	Marks
Any 5 correct difference between raster data and vector data model	5

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