GUJARAT TECHNOLOGICAL UNIVERSITY

BE-5 SEMESTER – OLD PAPER – S22 TO S25 – QUESTION BANK

Subject Name & Code:

Remote Sensing and GIS- 3150617

Unit 1: FUNDAMENTAL OF REMOTE SENSING

Repeated Questions:

1. **Define Remote Sensing. / Explain the concept of Remote Sensing.**
   - **Appeared in:** WIN 24 (Q1a), SUM 25 (Q1b), WIN 23 (Q1a), SUM 24 (Q1a), WIN 22 (Q1a)
   - **Marks:** 03-04 Marks
2. **Differentiate between Active and Passive Remote Sensing/Sensors.**
   - **Appeared in:** SUM 25 (Q3a), WIN 24 (Q5c), SUM 24 (Q2b), WIN 23 (Q2b), WIN 22 (Q2a), SUM 22 (Q2b)
   - **Marks:** 03-04 Marks
3. **Explain the principle of Remote Sensing. / What are the Elements of Remote Sensing? / What are the seven elements in remote sensing?**
   - **Appeared in:** SUM 23 (Q2b), WIN 24 (Q1a), SUM 23 (Q3c), WIN 23 (Q1a)
   - **Marks:** 03-07 Marks
4. **Explain the interaction of Electromagnetic Radiation (EMR) with the atmosphere/earth's surface. / Write a note on EMR.**
   - **Appeared in:** SUM 25 (Q2c, Q4c), SUM 23 (Q2c OR), SUM 22 (Q2c, Q3c)
   - **Marks:** 07 Marks
5. **Discuss the Role of Spectral Reflectance Curves in Remote Sensing with a neat sketch, including Spectral Reflectance of Soil, Water, and Vegetation.**
   - **Appeared in:** SUM 24 (Q2c), WIN 23 (Q2c OR), WIN 22 (Q2c)
   - **Marks:** 07 Marks
6. **What are the advantages and disadvantages/limitations of Remote Sensing?**
   - **Appeared in:** SUM 25 (Q2a), SUM 23 (Q3b)
   - **Marks:** 03-04 Marks

Other Important Questions:

- Explain in Detail: Electromagnetic Radiation. (WIN 24 Q4a, WIN 23 Q3a, **04 Marks**)
- Explain microwave remote sensing. (SUM 23 Q3a OR, SUM 25 Q3a OR, **03 Marks**)
- Define swath and explain the concept of orbital calendar. (SUM 22 Q3a OR, **03 Marks**)
- What are the requirements of ideal remote sensing? (SUM 25 Q4b OR, **04 Marks**)
- Explain air borne and space borne sensors. (SUM 23 Q4b, SUM 25 Q2b, **04 Marks**)
- "RS & GIS - The IT of Civil Engineering" Explain. (SUM 24 Q1b, WIN 23 Q1b, WIN 24 Q1b, **04 Marks**)
- Explain error in GIS data. (WIN 24 Q3a, WIN 23 Q3a, SUM 24 Q3a, **03 Marks**)
- What is resolution of a sensor? Write about different sensors in accordance to remote sensing. (SUM 24 Q2c OR, **07 Marks**)
- Classify and explain various sensors in detail. (WIN 24 Q4b, WIN 23 Q3b, WIN 22 Q2b, **04 Marks**)

Unit 2: IMAGE INTERPRETATION AND DIGITAL IMAGE PROCESSING

Repeated Questions:

1. **Describe elements of visual image interpretation.**
   - **Appeared in:** SUM 24 (Q3c), WIN 23 (Q3c), WIN 22 (Q3c)
   - **Marks:** 07 Marks
2. **Describe about Digital image processing. / Write a note on image processing systems.**
   - **Appeared in:** SUM 25 (Q3c OR), WIN 24 (Q4c), WIN 23 (Q3c OR), SUM 22 (Q3c OR)
   - **Marks:** 07 Marks
3. **Differentiate between supervised and unsupervised classification.**
   - **Appeared in:** WIN 24 (Q2b), WIN 22 (Q2c OR), SUM 22 (Q3b)
   - **Marks:** 04 Marks
4. **Write a note on imaging sensors for digital image.**
   - **Appeared in:** SUM 23 (Q3a), SUM 25 (Q5a OR)
   - **Marks:** 03 Marks

Other Important Questions:

- Give your views on image interpretation strategies. (SUM 22 Q1c, **07 Marks**)
- Give a brief introduction of a digital image. (SUM 22 Q4b, **04 Marks**)
- Explain image interpretation strategies. (SUM 23 Q5c OR, **07 Marks**)
- What are the different file formats used to store Raster data and Vector data? (WIN 24 Q8b, WIN 22 Q3b OR, **04 Marks**)

Unit 3: GEOGRAPHIC INFORMATION SYSTEM (GIS)

Repeated Questions:

1. **Define GIS? Describe the components of GIS with suitable examples? / Explain in brief different components of GIS.**
    - **Appeared in:** SUM 25 (Q3b), WIN 24 (Q6c), SUM 23 (Q3b OR), WIN 22 (Q4c)
    - **Marks:** 04-07 Marks
2. **Define metadata, attribute data & spatial data. / What do you mean by spatial/attribute data?**
    - **Appeared in:** SUM 25 (Q1a), SUM 23 (Q2a), WIN 24 (Q6b), SUM 22 (Q2a, Q5b)
    - **Marks:** 03-04 Marks
3. **What are the advantages of GIS over a map?**
    - **Appeared in:** SUM 25 (Q3b OR), SUM 23 (Q5b)
    - **Marks:** 04 Marks
4. **What are raster and vector? Write the basic differences between raster and vector. / What are the advantages and limitations of raster and vector data model?**
    - **Appeared in:** WIN 24 (Q3b), SUM 23 (Q1b), WIN 23 (Q3b)
    - **Marks:** 03-04 Marks
5. **Explain the procedure of georeferencing in any GIS Software (e.g., QGIS).**
    - **Appeared in:** SUM 25 (Q4b), WIN 24 (Q7b), SUM 23 (Q4b OR), WIN 23 (Q5b), WIN 22 (Q5b)
    - **Marks:** 04 Marks

Other Important Questions:

- What do you understand by 'map'? Differentiate between topographic and thematic map. (SUM 23 Q2c OR, SUM 25 Q5c, **07 Marks**)
- Write the types of views a map can be visualized in GIS. (SUM 23 Q1a, SUM 22 Q3a, **03 Marks**)
- Why geo-referencing is required in GIS? (SUM 22 Q4a OR, **03 Marks**)
- Write about the function of DBMS. (SUM 25 Q4c OR, **07 Marks**)
- Explain how spatial data and attribute data are integrated to make a GIS. (SUM 24 Q4b OR, **04 Marks**)
- Enlist Input and Output Devices in GIS. (WIN 24 Q5a, SUM 24 Q4a, WIN 23 Q4a, **03 Marks**)

Unit 4: SPATIAL DATA ANALYSIS

Repeated Questions:

1. **What is a projection? Explain the different types of map Projections.**
    - **Appeared in:** WIN 24 (Q6a), SUM 24 (Q4a OR), WIN 23 (Q4b), WIN 22 (Q4b)
    - **Marks:** 03-04 Marks
2. **Explain the characteristics of different coordinate systems in GIS.**
    - **Appeared in:** SUM 25 (Q2c OR), SUM 24 (Q4b), SUM 22 (Q4c)
    - **Marks:** 04-07 Marks
3. **List out the GIS analysis functions. Describe an overlay analysis. / Explain the concept of "Overlay analysis".**
    - **Appeared in:** WIN 24 (Q5b), SUM 23 (Q5a OR), WIN 22 (Q4b OR)
    - **Marks:** 03-04 Marks
4. **What is Buffering and Neighborhood? / Explain Neighborhood Operations.**
    - **Appeared in:** WIN 24 (Q4b OR), WIN 22 (Q4c OR), SUM 22 (Q4c)
    - **Marks:** 03-07 Marks
5. **List out various GIS spatial data sources from the internet.**
    - **Appeared in:** WIN 24 (Q7a), SUM 24 (Q5a), WIN 23 (Q5a)
    - **Marks:** 03 Marks

Other Important Questions:

- What is Geoid? Difference between WGS 84 and GRS 80? (WIN 22 Q4a, **03 Marks**)
- Write a note on reference co-ordinate systems. (SUM 23 Q5a, **03 Marks**)
- Describe the Fundamentals of GIS Analysis functions. (SUM 25 Q4a, **03 Marks**)
- State various input datasets required for Terrain Modelling? Give process steps for watershed delineation. (WIN 22 Q4c OR, **07 Marks**)
- Explain error in GIS data. (Also listed in Unit 1, but relevant here) (WIN 24 Q3a, WIN 23 Q3a, SUM 24 Q3a, **03 Marks**)

Unit 5: SOFTWARE

Repeated Questions:

1. **Enlist various GIS and Remote sensing software packages and explain one from both in detail. / Write salient features of remote sensing tool ENVI or ERDAS. / Write any five tools (softwares) used in GIS.**
    - **Appeared in:** WIN 24 (Q3c), SUM 24 (Q4c), SUM 23 (Q5b OR, Q4c), SUM 22 (Q1b, Q5c OR)
    - **Marks:** 04-07 Marks
2. **What are the important components of ISRO Bhuvan Geo-portal?**
    - **Appeared in:** WIN 24 (Q8a), SUM 24 (Q5a OR), WIN 23 (Q5a OR), WIN 22 (Q5a OR)
    - **Marks:** 03 Marks

Other Important Questions:

- How do you differentiate public domain softwares with other softwares available in GIS? Explain with examples. (SUM 22 Q5b, **04 Marks**)
- Describe features of important GIS software packages. (SUM 23 Q5b OR, **04 Marks**)
- Give a brief idea about GSLV and PSLV. (SUM 22 Q4a, **03 Marks**)

Unit 6: APPLICATIONS

Repeated Questions:

1. **Discuss Application of Remote Sensing and GIS in Town planning / Transportation planning with suitable example.**
   - **Appeared in:** WIN 24 (Q7c), SUM 24 (Q1c), WIN 23 (Q5c), WIN 22 (Q1c)
   - **Marks:** 07 Marks
2. **Describe the application of RS & GIS in the area of Water resources management. / Discuss Application of RS/GIS in Watershed Management.**
   - **Appeared in:** WIN 24 (Q8c), SUM 25 (Q5b), WIN 23 (Q1c), WIN 22 (Q1c)
   - **Marks:** 04-07 Marks
3. **Describe the application of GIS in flood hazard management with suitable example.**
   - **Appeared in:** SUM 24 (Q5c), WIN 23 (Q5c)
   - **Marks:** 07 Marks
4. **Discuss in detail about any two case-studies of applications of remote sensing and GIS in the field of civil engineering. / Write about the applications of GIS in different field of civil engineering in detail.**
   - **Appeared in:** SUM 22 (Q5c), SUM 23 (Q4c)
   - **Marks:** 07 Marks

Other Important Questions:

- Discuss Application of Remote Sensing in Land use and Land Cover Mapping. (WIN 23 Q1c, **07 Marks**)
- Discuss Application of Remote Sensing in Geology. (WIN 23 Q5c OR, **07 Marks**)
- Write a note on Remote Sensing and its application to disaster management. (SUM 23 Q5c, WIN 22 Q5c, **07 Marks**)
- Give a brief description of four types of natural disasters in India? How will Remote Sensing & GIS technology influence disaster management? (WIN 22 Q5c, **07 Marks**)
- Discuss about integrated applications of GIS and Remote sensing in civil engineering. (WIN 22 Q1b, **04 Marks**)

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