2023/08

**SET A**

# M.Sc. ENVORONMENTAL Sc.
## THIRD SEMESTER
## FUNDAMENTALS OF GEOINFORMATICS
## MEV – 303 [SPECIAL REPEAT]

**Duration: 3 hrs.** **Full Marks: 70**

**( Objective )**

**Time: 30 min.** **Marks: 20**

***Choose the correct answer from the following:*** ***1X20=20***

1. Which of the following UTM zone is used to map a part of Meghalaya to be drawn in planner coordinate system?
   a. UTM 44N
   b. UTM 45N
   c. UTM 46N
   d. UTM 46S

2. What is dimension of a line object?
   a. 0
   b. 1
   c. 2
   d. 3

3. Which of the following can be done in GIS?
   a. Data input and output
   b. Data storage and retrieval
   c. Data manipulation and analysis
   d. All of the above

4. Which of the following is considered in Positional Dilution of Precision (PDOP)?
   a. Latitude
   b. Longitude
   c. Altitude
   d. All of the above

5. GPS time is referenced to
   a. 6th January, 1980
   b. 00:00:00 hrs.
   c. First Sunday of 1980
   d. All the above

6. Where the Master Control Station of GPS control segment is located?
   a. Kwajalein
   b. Diego Garcia
   c. Colorado Springs
   d. Hawaii Island

7. Through which of the following satellite GAGAN signals are being broadcast?
   a. GSAT8
   b. GSAT10
   c. Both of the above
   d. None of the above

8. Which of the following regions are included in GAGAN GEO coverage?
   a. Arabian Sea and Bay of Bengal Sea
   b. Only Indian Ocean
   c. East Asia and East Africa
   d. All the above

9. Which of the following nation has developed EGNOS SBAS?
   a. USA
   b. EU
   c. India
   d. Japan

10. Which of the following shows characteristic features of GLONASS constellation?
    a. 24 operational satellites, 19,130 km orbital height and Roscosmos operator
    b. 24 satellites, 6 orbital planes and 20,200 km orbital height
    c. 36 total satellites, 34 operational satellites, 4 orbits and 12,660 km orbital height
    d. None of the above

11. Electromagnetic radiation:
    a. produces a time varying magnetic field and vice versa
    b. is capable to travel across space
    c. consists of magnetic and electric fields
    d. All of these.

12. The instruments which provide electromagnetic radiation of specified wavelength or a band of wavelengths to illuminate the earth surface, are called:
    a. Sensors
    b. Passive sensors
    c. Active sensors
    d. None of these

13. The entire range of the electromagnetic spectrum spans a large spectrum of wave lengths varying from:
    a. $10^{-10}$ to $10^{6}$ m
    b. $10^{-8}$ to $10^{6}$ m
    c. $10^{-10}$ to $10^{10}$ m
    d. $10^{-8}$ to $10^{8}$ m

14. Landsat program began in __
    a. 1972
    b. 2003
    c. 1973
    d. 1937

15. India's first remote sensing satellite (IRS 1A) was launced from ___
    a. Baikonur
    b. Cape Kennedy
    c. French Guiana
    d. Sriharikota

16. How much inclination must be provided in a tilted photograph?
    a. $13^{o}$
    b. $20^{o}$
    c. $3^{o}$
    d. $34^{o}$

17. Scale at elevation point in photograph can be given as ____
    a. S=f/(H-h)
    b. S=f/(H+h)
    c. S=f/(H*h)
    d. S=f/(-H+h)

18. The distance between two points on an aerial photograph is measured as 2 cm and distance between the same two points on the ground is 1 km. What is the scale of the aerial photograph?
    a. 1:5,000
    b. 1:50,000
    c. 1:55,000
    d. 1:15,000

19. Which of the following doesn't indicate the purpose of stereoscope?
    a. Relation between convergence and accomodation
    b. Line of sight justification
    c. Perception of depth
    d. Assisting eyes on the image

20. Digital images are displayed as a discrete set of _____

a. Values
b. Numbers
c. Frequencies
d. Intensities

-- --- --

## Descriptive

**Time : 2 hrs. 30 mins.** **Marks : 50**

*[ Answer question no.1 & any four (4) from the rest ]*

1. What is EMR? Discuss in detail about the interaction of EMR with earth's surface using suitable diagram. **2+8=10**

2. Discuss orbital and sensor characteristics of IRS satellite system. **4+6=10**

3. List and discuss in detail the basic elements of aerial photo-interpretation. **3+7=10**

4. Describe in detail the difference between human interpretation and digital image processing. **5+5=10**

5. **a.** What is georeferencing? Discuss the process of georeferencing with suitable example. **5+5=10**
   **b.** Write a brief note on Coordinate system and Projection system.

6. **a.** What is raster and vector data? Differentiate between them citing suitable example. **5+5=10**
   **b.** What is topology? Discuss different types vector data structures.

7. **a.** What is GPS? Explain different segments of GPS and their functions? **5+5=10**
   **b.** Write a brief note on applications of GPS.

8. Write short notes on **5+5=10**
   **a.** NAVSTAR system.
   **b.** IRNSS.

= = *** = =