MA / M.Sc. GEOGRAPHY
THIRD SEMESTER
FUNDAMENTALS OF GEOINFORMATICS

SET B

MGE – 303
[USE OMR SHEET FOR OBJECTIVE PART]

Duration : 3 hrs.   Full Marks : 70

(Objective)

Time: 30 min.   Marks: 20

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

1. If the general ground level of any area is 10% of the flying height, the principal points may be used as the centers of radial directions for small scale mapping even in tilted photograph up to _____
   a. 1 degree   b. 2 degrees
   c. 3 degrees   d. 4 degrees

2. In which of the following aerial photographs the horizon appears?
   a. Vertical   b. Near-vertical
   c. Low-oblique   d. High-oblique

3. What is the output of a smoothing, linear spatial filter?
   a. Median of pixels   b. Maximum of pixels
   c. Minimum of pixels   d. Average of pixels

4. Raster graphic in GIS represents data in _____ grid of pixels.
   a. Circular   b. Rectangular
   c. Square   d. All of the above

5. What are the categories of digital image processing?
   a. Image Enhancement   b. Image Classification and Analysis
   c. Image Transformation   d. All of the mentioned

6. Which of the following are full-fledged GIS packages?
   a. ILWIS   b. GeoMedia
   c. ArcGIS   d. All of the above

7. The entire earth surface is divided into zones in which type of map projection?
   a. Polyconic projection system   b. Cylindrical projection
   c. UTM projection   d. Lambert-azimuthal equal area projection

8. The information in GIS is entered and stored as _____
   a. Panels   b. Layers
   c. Single panel   d. Dual-panel

9. Which type of data set is not used in GIS related softwares?
   a. Vertex   b. Point
   c. Polyline   d. Polygon

10. Which of the following satellite have maximum spatial resolution
    a. CARTOSAT
    b. LANDSAT OLI
    c. LISS III
    d. LANDSAT TM

11. GLONASS constellation is characterized by
    a. 27 operational satellites, 23,222 km orbital height, 55 degree inclination
    b. 24 satellites, 6 orbital planes and 20,200 km orbital height
    c. 24 total satellites, 64.8 degree inclination, Roscosmos operator, antipodal satellites
    d. None of the above

12. METEOSAT is a type of
    a. Sun synchronous satellite
    b. Geo synchronous satellite
    c. Geostationary satellite
    d. None of the above

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

14. Antipodal satellites are those satellites which are _____?
    a. in different orbit plane
    b. in different orbits with 90° separation
    c. same orbit plane with 90° separation
    d. same orbit plane with 180° separation

15. Flying height refers to _____
    a. Upper portion of the exposure station
    b. Bottom of the exposure
    c. Depression of the exposure station
    d. Elevation of the exposure station

16. Sky appears blue during day due to which of the following phenomenon.
    a. Mie scattering
    b. Rayleigh scattering
    c. Non selective scattering
    d. All the above

17. LIDAR is a type of
    a. Active non-imaging sensor
    b. Active imaging sensor
    c. Passive non-imaging sensor
    d. Passive imaging sensor

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

19. 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

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

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Time : 2 hrs. 30 mins.   Marks : 50

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

1. What is remote sensing? What are the various platforms of remote sensing? Explain the working principle of optical remote sensing with suitable diagram.   1+3+6 = 10

2. a. Define spectral reflectance curve? What is the significance of spectral signature in remote sensing?   5+5=10

   b. Discuss the salient features of spectral signature for vegetation and the factors affecting it.

3. a. What is GPS? Explain different segments of GPS and their functions?   5+5=10

   b. Write a errors of GPS signals.

4. Write short notes on (*any two*)   5+5=10
        a. GALILEO.
        b. IRNSS.
        c. GAGAN.

5. a. A camera having a focal length of 25 cm takes a vertical photograph of an area having an average elevation of 1800 metres. Find out the height above sea level at which an aircraft must fly to get the photograph at a scale of 1:12000.   5+5=10

   b. The length of a displaced building is measured at 2.01 mm and the radial distance to the principal point is 56.43 mm. If the flying height about the surface is 1220 m, what is the height of the building?

6. What do you understand by digital image processing? Explain geometric correction in brief.   4+6=10

7. Define various components of GIS and their role in GIS with suitable examples.   5+5=10

8. What is visual image interpretation? What are the factors governing quality of an image and interpretability? Discuss the key elements of image interpretation.   2+4+4 =10

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