Write the following information in the first page of Answer Script before starting answer

ODD SEMESTER EXAMINATION: 2020-21

Exam ID Number_____

Course_____   Semester_____

Paper Code _____Paper Title _____

Type of Exam: _____ (Regular/Back/Improvement)

Important Instruction for students:

1. Student should write objective and descriptive answer on plain white paper.
2. Give page number in each page starting from 1st page.
3. After completion of examination, Scan all pages, convert into a single PDF, rename the file with Class Roll No. **(2019MBA15)** and upload to the Google classroom as attachment.
4. Exam timing from 10am – 1pm (for morning shift).
5. Question Paper will be uploaded before 10 mins from the schedule time.
6. Additional 20 mins time will be given for scanning and uploading the single PDF file.
7. Student will be marked as ABSENT if failed to upload the PDF answer script due to any reason.

MA/M.Sc. GEOGRAPHY
THIRD SEMESTER
FUNDAMENTALS OF GEO-INFORMATICS
MGE-303

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

[PART-A : Objective]

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

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

1. 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

2. METEOSAT is a type of:
   - **a.** Sun synchronous satellite
   - **b.** Geo synchronous satellite
   - **c.** Geostationary satellite
   - **d.** None of the above

3. Which of the following factors determine the spectral reflectance of snow?
   - **a.** Grain size of snow
   - **b.** Thickness of snow
   - **c.** Contaminant present in snow
   - **d.** All the above

4. 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

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. Which of the following satellite data have higher spatial resolution?
   - **a.** CARTOSAT
   - **b.** LANDSAT TM
   - **c.** LISS III
   - **d.** LANDSAT OLI

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

8. 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

9. 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

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

11. Which of the following is the type of remote sensing on the basis of platform?
    a. Active remote sensing   **b.** Passive remote sensing
    c. Infrared remote sensing   **d.** Air borne remote sensing

12. The point of intersection made by joining the opposite marks is located in the centre of photograph is known as the_____.
    a. Principal point   **b.** Fiducial point
    c. Isocentre   **d.** Conjugate point

13. During aerial survey, when there is lack of adjustment between position of the camera and the route line of the flight, the airbase of the margins of the air photos or the flight line may not be parallel and such situation is known as_____.
    a. Crab   **b.** Crag
    c. Cramp   **d.** Crank

14. In the parallax equation $\Delta h = \Delta P \times H/P + P + \Delta P$, what does ΔP stand for?
    a. Flying height   **b.** Parallax difference
    c. Photo base   **d.** Difference in height

15. Which of the following is the first stage in any image processing sequence?
    a. Image enhancement   **b.** Image classification
    c. Image restoration and correction   **d.** Filtering

16. Normal and false colour composites are used to display_____.
    a. Three images of a scene   **b.** Two images of a scene
    c. Five images of a scene   **d.** Four images of a scene

17. Which of the following is considered as the most expensive and usually the most accurate classifier?
    a. Minimum distance to means classifier   **b.** Maximum likelihood classifier
    c. Parallelopiped classifier   **d.** None of the above

18. Which of the following is represented by a discrete location defining a map object whose boundary or shape is too small to be shown as a line or area feature?
    a. Point features   **b.** Map features
    c. Line features   **d.** Area features

19. GIS uses the information from which of the following sources?
    a. Non-spatial information system   **b.** Spatial information system
    c. Global information system   **d.** Position information system

20. Which of the following statements is true about the capabilities of GIS?
    a. Data capture and preparation   **b.** Data management, including storage and maintenance
    c. Data manipulation and analysis   **d.** All of the above

-- --- --

(**PART-B : Descriptive**)

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

1. What is visual image interpretation? What are the factors governing quality of an image and interpretability? Discuss the key elements of image interpretation.   2+3+5=10

2. Assume a vertical photograph was taken at a flying height of 5000m above sea level using a camera with a 152 mm focal length lens.   5+5=10
    a. Determine the photo scale at points A and B which lie at elevations of 1200 and 1960 m.
    b. What ground distance corresponds to a 20.1 mm photo distance measured at each of these elevations?

3. Define various components of GIS and their role in GIS with suitable examples.   3+7=10

4. Describe in detail the systematic and nonsystematic sources of image geometric errors.   5+5=10

5. 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

6. 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.

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

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

= = *** = =