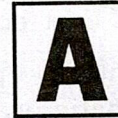


Candidate's Roll Number

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Serial No.

100092

Question Booklet

REMOTE SENSING AND GIS

(Objective)

Time Allowed : 2 Hours

Maximum Marks : 100

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. This Question Booklet contains 125 questions in all.
2. All questions carry equal marks.
3. Attempt all questions.
4. Immediately after commencement of the examination, you should check up your Question Booklet and ensure that the Question Booklet Series is printed on the top right-hand corner of the Booklet and the Booklet contains 20 printed pages and no page or question is missing or unprinted or torn or repeated. If you find any defect in this Booklet, get it replaced immediately by a complete Booklet of the same series.
5. You must write your Roll Number in the space provided on the top of this page. Do not write anything else on the Question Booklet.
6. An Answer Sheet will be supplied to you separately by the Invigilator to mark the answers. You must write your Name, Roll No. and other particulars on the first page of the Answer Sheet provided, failing which your Answer Sheet will not be evaluated.
7. You will encode your Roll Number and the Question Booklet Series A, B, C or D as it is printed on the top right-hand corner of this Question Booklet with Black/Blue ballpoint pen in the space provided on Page-2 of your Answer Sheet. If you do not encode or fail to encode the correct series of your Question Booklet, your Answer Sheet will not be evaluated correctly.
8. Questions and their responses are printed in English only in this Booklet. Each question comprises four responses—(A), (B), (C) and (D). You are to select ONLY ONE correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
9. In the Answer Sheet, there are four brackets—(A), (B), (C) and (D) against each question. To answer the questions you are to mark with Black/Blue ballpoint pen ONLY ONE bracket of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. Any erasure or change is not allowed.
10. You should not remove or tear off any sheet from the Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. After the examination has concluded, you must hand over your Answer Sheet to the Invigilator. Thereafter, you are permitted to take away the Question Booklet with you.
11. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.

SEAL

1. The specular or mirror-like reflection that occurs

(A) when a plane electro-magnetic wave encounters a plane surface separating two regions with different refractive indices

(B) when a plane electro-magnetic wave encounters a plane surface separating a region

(C) when a plane electro-magnetic wave encounters a non-plane surface separating two regions with different refractive indices

(D) None of the above

2. A scale refers to the ratio of units measured on

(A) a map

(B) the earth

(C) a map to the units measured on the earth's surface

(D) a map and the earth

3. Orthophotographs combine the details of

(A) photographs with the properties of a photograph

(B) photographs with the properties of a map

(C) map with the properties of a map

(D) Both (A) and (B) are correct

4. Satellite data are referred to as imagery instead of photography, because

(A) vast majority of satellite data are collected through electronic sensors, not a film-based photographic process

(B) vast majority of satellite data are collected through a film-based photographic process

(C) vast majority of satellite data are collected through drone

(D) None of the above

5. Digital raster graphics (DRGs) are a relatively recent dataset

(A) created by scanning existing paper maps

(B) created by scanning existing paper maps and creating an image

(C) suitable for combining with other GIS data

(D) created by resampled image

6. The dpi stands for

(A) dots

(B) dots per millimeter

(C) dots per centimeter

(D) dots per inch

7. Which one is the correct mid-infrared wavelength (nm)?

- (A) 1550-1750
- (B) 10400-12500
- (C) 760-900
- (D) 630-690

8. The latest satellite (IRS-D1) has a panchromatic, a linear imaging self-scanning sensor (LISS) and thermal band of spatial resolution follow respectively as

- (A) 5.8 meters, 70 meters and 23 meters
- (B) 5.8 meters, 23 meters and 70 meters
- (C) 70 meters, 5.8 meters and 23 meters
- (D) 23 meters, 70 meters and 5.8 meters

9. Bits per second refers to

- (A) data transfer
- (B) data transfer rate
- (C) speed
- (D) bytes

10. For most natural bodies, the spectral radiant emittance is

- (A) a monotonous curve
- (B) not a monotonous curve
- (C) not a monotonous curve but contains spectral lines that characterize the body constituents
- (D) None of the above

11. Laser altimetry or lidar (900-1064 nm) is an alternative remote-sensing technology that directly measures

- (A) the three-dimensional distribution of the plant canopy and sub-canopy topography
- (B) the three-dimensional sub-canopy topography
- (C) the two-dimensional distribution of the plant canopy and sub-canopy topography
- (D) the three-dimensional topography

12. GIFOV stands for

- (A) Ground-projected Instantaneous Field of View
- (B) Ground Sample Distance
- (C) Ground-projected Sample Interval
- (D) Both (A) and (B)

13. The pre-processing of satellite data consists of

- (A) calibrating the image radiometry
- (B) correcting the geometric distortions
- (C) removing some types of sensor noise
- (D) All of the above

14. Normalized burn ratio index (NBRI) is used for the analysis of
 (A) burn areas
 (B) burn severity
 (C) forest health
 (D) Both (A) and (B)
15. A line of 1 meter is shown by 1 cm on a scale. Its representative fraction (RF) is
 (A) 1
 (B) 100
 (C) 1/100
 (D) 1/50
16. Which of the following is **not** included in title block of a drawing sheet?
 (A) Sheet number
 (B) Scale
 (C) Method of projection
 (D) Size of the sheet
17. The key components of 'spatial data' quality include
 (A) positional accuracy
 (B) temporal accuracy and logical consistency
 (C) lineage and completeness
 (D) All of the above
18. How many bands are there in Landsat 5 TM?
 (A) 11 bands
 (B) 6 bands
 (C) 7 bands
 (D) 5 bands
19. Histograms and pie charts are classified as one-dimensional diagrams, because only
 (A) length is considered
 (B) width is considered
 (C) length plus width is considered
 (D) breadth is considered
20. ASTER stands for
 (A) Advanced Spaceborne Thermal Emission and Reflection Radiometer
 (B) Advanced Spaceborne Thermal Emissivity and Reflection Radiometer
 (C) Advanced Spaceborne Thermal Emission and Refraction Radiometer
 (D) Advanced Space Thermal Emission and Reflection Radiometer
21. Which one is the correct expression of NDVI?
 (A) $\frac{NIR + RED}{NIR + RED}$
 (B) $\frac{NIR + RED}{NIR - RED}$
 (C) $\frac{NIR - RED}{NIR + RED}$
 (D) $\frac{NIR - GREEN}{NIR + GREEN}$



22. In georeferencing, if we opt for polynomial 3, how many GCPs will be required?

- (A) 9
- (B) 10
- (C) 8
- (D) 11

23. What is image registration?

- (A) Registration for downloading data
- (B) Image enhancement
- (C) Image processing
- (D) None of the above

24. How many bands are there in RESOURCESAT-1 (also known as IRS-P6)?

- (A) 4 bands
- (B) 5 bands
- (C) 8 bands
- (D) 1 band



25. What is the visible range of wavelength (angstroms) of the electromagnetic spectrum?

- (A) 6000–3000
- (B) 7000–4000
- (C) 700–400
- (D) None of the above

26. The 'Key' which we use to combine two tables is

- (A) Attach
- (B) Merge
- (C) Joined
- (D) Joins

27. Combining two or more than two successive image tiles into a single tile is called

- (A) merging
- (B) stacking
- (C) combining
- (D) mosaicing

28. The basic requirement of any sensor system is

- (A) radiometric resolution
- (B) spatial resolution
- (C) spectral resolution
- (D) All of the above

29. Landsat 8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) spectral bands with a spatial resolution of

- (A) 15 meters
- (B) 60 meters
- (C) 120 meters
- (D) 30 meters

30. Georeferencing is

- (A) a process of assigning real-world coordinates
- (B) a process of aligning two or more images of the same scene
- (C) a transformation process used to project images onto a common image plane
- (D) an identification or estimation of the real-world geographic location of an object

31. Which one of the following parameters is considered to determine the reflectance of a vegetation canopy?
- Solar zenith angle
 - Azimuth angle
 - Look angle
 - All of the above
32. In case of reflection and refraction of electromagnetic radiation
- angle of incidence = angle of refraction
 - angle of incidence = angle of reflection
 - angle of refraction = sum of the angles of incidence and refraction
 - All of the above
33. A perfectly black
- is a diffuse emitter
 - absorbs all the radiations of every wavelength
 - emits power of every wavelength
 - All of the above
34. Remote-sensing techniques make use of the properties of ____ emitted, reflected or diffracted by the sensed objects.
- electric waves
 - sound waves
 - electromagnetic waves
 - wind waves
35. A Lambertian surface
- exhibits equal radiance in all directions
 - exhibits non-equal radiance in all directions
 - perfectly diffuses
 - None of the above
36. The sensor modifies the spatial properties of the scene in which of the following ways?
- Blurring due to the sensor's optics, detectors and electronics
 - Distortion of the geometry
 - Spatial blurring
 - Both (A) and (B) are correct
37. The image histogram describes the statistical distribution of
- image pixels
 - image pixels in terms of the number of pixels at each DN
 - probability density function
 - spatial distribution
38. The correct expression for modulation (M) is
- $\frac{DN_{max}}{DN_{min}}$
 - $\frac{DN_{min}}{DN_{max}}$
 - $\frac{DN_{max} - DN_{min}}{DN_{max}}$
 - $\frac{DN_{max} - DN_{min}}{DN_{max} + DN_{min}}$

39. Raster data models have which of the following characteristics?

- (A) Computational efficiency in such operations
- (B) Data volumes are relatively greater
- (C) Topological relationships among spatial features are more difficult to represent
- (D) All of the above

40. Shadows are important to interpreters in different respects. Which of the following is correct?

- (A) The shape or outline of a shadow affords an impression of the profile view of objects (which aids interpretation)
- (B) Objects within shadows reflect little light and are difficult to discern on an image (which hinders interpretation)
- (C) Image key
- (D) Both (A) and (B) are correct

41. The minimum mapping unit (MMU) to be employed in the process, refers to

- (A) the smallest size entity
- (B) the smallest size areal entity to be mapped as a discrete area
- (C) the classification system
- (D) signal-to-noise ratio

42. The georelational model stores geometries and attributes of spatial features in ____ whereas the object-based model stores them in ____.

- (A) a separate system and a single system
- (B) a separate system and not a single system
- (C) a single system and not a separate system
- (D) a single system and a separate system

43. Raster data with many repetitive cell values can be more efficiently stored using ____ which records the cell values by row and by group.

- (A) the cell-by-cell encoding method
- (B) the quadtree method
- (C) the run-length encoding (RLE) method
- (D) the lossy compression

44. The snapping tolerance can be defined as

- (A) digitization process
- (B) snap vertices to vertices
- (C) snap end points
- (D) snap vertices and end points within its range

45. The pyramiding is a technique that



- (A) builds different pyramid levels for analysis of large raster datasets
- (B) builds different pyramid levels for displaying large raster datasets at different resolutions
- (C) builds different pyramid levels for displaying large vector datasets
- (D) makes image enhancement

46. Spatial data accuracy measures

- (A) how close the recorded location of a spatial feature is to its ground location
- (B) how exactly the location is recorded
- (C) how far the recorded location of a spatial feature is to its ground location
- (D) None of the above

47. Dangling nodes occur when

- (A) line features meet perfectly
- (B) end points meet perfectly
- (C) line features do not meet perfectly at end points
- (D) Both (A) and (B) are correct

48. Normalization is designed to achieve which of the following objectives?

- (A) To avoid redundant data in tables that waste space in the database and may cause data integrity problems
- (B) To ensure that attribute data in separate tables can be maintained and updated separately, and can be linked whenever necessary
- (C) To facilitate a distributed database
- (D) All of the above

49. One type of map that emphasizes the spatial distribution of a theme is called as

- (A) isarithmic map
- (B) proportional symbol map
- (C) thematic map
- (D) graduated color map

50. When graphs are displayed in multiple and dynamically linked windows, they become

- (A) dynamic graphs
- (B) brushing
- (C) geovisualized graphs
- (D) spatial aggregation

51. If we use only one spectral channel (or a wide range of wavelengths), it may
- (A) be easy to determine the processes
 - (B) be difficult to determine which processes are responsible for tonal variations
 - (C) influence place-to-place (spatial) variations
 - (D) None of the above
52. The term 'thermal infrared' is used, because at this wavelength radiant energy is emitted by materials as
- (A) energy
 - (B) irradiance
 - (C) heat
 - (D) energy flux
53. Which one is the correct expression of contrast ratio (CR)?
- (A) $CR = \frac{D_{\max}}{D_{\min}}$
 - (B) $CR = \frac{D_{\max} - D_{\min}}{D_{\min}}$
 - (C) $CR = \frac{D_{\min}}{D_{\max}}$
 - (D) $CR = \frac{D_{\max} - D_{\min}}{D_{\max}}$
54. Spectral information is affected by variations in
- (A) view angle from the nadir
 - (B) illumination geometry
 - (C) topography
 - (D) All of the above
55. Mis-registration may stem from which of the following ways?
- (A) Images were acquired by a satellite or aircraft system
 - (B) The data were sampled
 - (C) Introduced inadvertently during processing or handling of the data
 - (D) All of the above
56. Application of mathematical equations to express data in a new coordinate system is known as
- (A) data transformation
 - (B) data transition
 - (C) density slice
 - (D) decorrelation stretch
57. A multiplicative factor in the encoding of radiance as DN, usually a setting in the amplifier of the imaging system is called as
- (A) loss
 - (B) gain
 - (C) amplification
 - (D) modulation
58. The outline of the area in a scene over which radiance reported in an image pixel is integrated as
- (A) pixel footprint
 - (B) path radiance
 - (C) pixel-to-pixel
 - (D) photometric function

59. The angle on the ground between the normal to the mean global surface and the direction to the sun is
- (A) off-nadir
 - (B) nadir
 - (C) azimuth angle
 - (D) zenith angle
60. Path radiance and atmospheric transmissivity additionally vary with
- (A) atmospheric humidity
 - (B) aerosols
 - (C) atmospheric humidity and aerosols
 - (D) variable atmosphere
61. The microwave portion of spectrum encompasses wavelength from about
- (A) 1 nm–2 nm
 - (B) 1 mm–1.3 m
 - (C) 0.45 nm–1.1 nm
 - (D) None of the above
62. Which is the most commonly used band in the microwave remote sensing?
- (A) X(2.40 cm – 3.75 cm)
 - (B) C(3.75 cm – 7.50 cm)
 - (C) L(15 cm – 30 cm)
 - (D) All of the above
63. Satellite-based sensors have become the primary platform for carrying out environmental remote-sensing activities due in large part to their capacity for
- (A) continuous data acquisition and frequent and regular revisit cycles
 - (B) broad areal coverage and good spectral resolution
 - (C) support of semi-automatic computerized processing and analysis
 - (D) All of the above
64. Polarization refers to the
- (A) spatial orientation of the electrical oscillation plane
 - (B) spatial orientation of the magnetic oscillation plane
 - (C) horizontal transmit and receive (HH)
 - (D) vertical transmit and receive (VV)
65. Bragg scattering is particularly important in microwave remote sensing of
- (A) land surfaces
 - (B) atmosphere
 - (C) ocean surfaces
 - (D) algal bloom

66. A body that is emitting thermally generated radiation is the temperature that the body would need to have if it were a black body emitting the same amount of radiation is called as
 (A) brightness temperature
 (B) virtual temperature
 (C) potential temperature
 (D) body temperature
67. The correction for the effects of banding in a poorly calibrated image acquired by a scanning system is known as
 (A) stripping
 (B) destripping
 (C) density slicing
 (D) dielectric constant
68. Hyperspectral sensors are instruments that acquire images
 (A) in many narrow bands
 (B) in spectral channel
 (C) in many narrow spectral bands
 (D) in limited number of bands
69. The analog-to-digital conversion that takes place onboard the sensor system usually creates pixels with a brightness value range of 8 to 12 bits is called
 (A) the quantization level of the remote sensor data
 (B) radiometric resolution
 (C) brightness value (BV)
 (D) digital number (DN) value
70. Due to scan geometry of a satellite sensor
 (A) details towards the edge of the scan get compressed
 (B) the off-nadir resolution is degraded
 (C) ground distance swept by the sensor, IFOV is proportional to $\sec 2\theta$, where θ is the angle of scan measured from the nadir
 (D) All of the above
71. Which one of the following geometric errors of satellite sensors is random?
 (A) Altitude variation
 (B) Panoramic distortion
 (C) Earth rotation
 (D) Scan skew
72. Clear water absorbs relatively little energy having wavelengths less than about
 (A) $0.6 \mu\text{m}$
 (B) $1.1 \mu\text{m}$
 (C) 1 cm
 (D) 1 m
73. The orbital radius of GPS satellites is
 (A) 36000 km
 (B) 26600 km
 (C) 18400 km
 (D) 15200 km

74. Which one is correct for the medium earth orbit (MEO)?
- (A) > 35786 km
 - (B) > 2000 km and < 35786 km
 - (C) 750 km–1500 km
 - (D) < 2000 km
75. Which one of the following errors is produced by platform characteristics of the sensor?
- (A) Orbit drift
 - (B) Altitude
 - (C) Altitude variation
 - (D) All of the above
76. Which of the following is the abbreviation of JPEG?
- (A) Joint Photographic Experts Group
 - (B) Joint Photographs Expansion Group
 - (C) Joint Photographic Expanded Group
 - (D) Joint Photographic Expansion Group
77. What are the names of the various color image processing categories?
- (A) Pseudo-color and multi-color processing
 - (B) Half-color and pseudo-color processing
 - (C) Full-color and pseudo-color processing
 - (D) Half-color and full-color processing
78. Which of the following processes helps in image enhancement?
- (A) Analog image processing
 - (B) Image classification
 - (C) Image analysis
 - (D) Digital image processing
79. Which of the following is the first and foremost step in image processing?
- (A) Image acquisition
 - (B) Segmentation
 - (C) Image enhancement
 - (D) Image restoration
80. Region of Interest (ROI) operation is generally known as
- (A) masking
 - (B) dilation
 - (C) shading correction
 - (D) None of the above
81. What is a pixel?
- (A) Pixel is the element of a digital image
 - (B) Pixel is the element of an analog image
 - (C) Pixel is the cluster of a digital image
 - (D) Pixel is the cluster of an analog image
82. The principle energy source for images is
- (A) electrical spectrum
 - (B) heat energy
 - (C) magnetic spectrum
 - (D) electromagnetic spectrum

83. If the pixel value is '0', then it represents _____ color.

- (A) white
- (B) black
- (C) red
- (D) gray

84. Each color-based pixel holds minimum _____ bits of color values.

- (A) 2
- (B) 4
- (C) 6
- (D) 8

85. Image enhancement technique benefits in terms of

- (A) visualization
- (B) removing noise
- (C) clearing image by deblurring
- (D) All of the above

86. Georeferenced image is stored in _____ format.

- (A) Prj
- (B) Exe\
- (C) Tif
- (D) shp

87. A gray scale image is also called

- (A) monochrome image
- (B) multi-color image
- (C) bi-color image
- (D) true color image

88. FCC is defined as

- (A) an image in which the R, G and B values do not correspond to the true colors of red, green and blue
- (B) an image in which the R, G and B values correspond to the true colors of red, green and blue
- (C) an image in which the R, G and B values correspond to the gray
- (D) All of the above

89. Which of the following is an advantage of the FCC?

- (A) Helps in understanding the memory used by an image
- (B) Helps in understanding true color images
- (C) Allows us to visualize the wavelengths the human eye does not see
- (D) None of the above

90. Image mosaicing is the process of

- (A) splitting images from a single scene
- (B) constructing multiple images of the same scene
- (C) Output of the image mosaic will be the intersections of two input images
- (D) All of the above



91. What is an attribute table?

- (A) Non-spatial data
- (B) Spatial data
- (C) A table contains null value
- (D) All of the above

92. API stands for

- (A) Applied Programming Interface
- (B) Application Platform Interactions
- (C) Application Programming Interface
- (D) Alliance Platform of Interchange

93. Which of the following is an open-source GIS server?

- (A) ArcGIS Server
- (B) GeoServer
- (C) GeoMedia
- (D) Smallworld

94. Which programming language is used for developing customizations and plugins for QGIS and ArcGIS?

- (A) JavaScript
- (B) C++
- (C) Python
- (D) HTML

95. In Google Earth Engine (GEE), all the following are used in filtering an image collection, **except**

- (A) .short()
- (B) .filterDate()
- (C) .filterBounds()
- (D) .filterCloud()

96. Which of the following is a Python package for raster data processing?

- (A) Shapely
- (B) Matplotlib
- (C) GDAL
- (D) Pandas

97. In Google Earth Engine (GEE), which of the following expressions is used to add an image to a map?

- (A) Map.addlayer();
- (B) Map.addLayer();
- (C) map.addLayer();
- (D) map.addlayer();

98. WebGIS development requires which of the following skills at most?

- (A) Python
- (B) JavaScript
- (C) R
- (D) C

99. Spatial statistics analysis can answer which of the following questions?

- (A) How are the features distributed?
- (B) What is the pattern created by the features?
- (C) Where are the clusters?
- (D) All of the above

100. Which of the following is **not** a statistics tool in GIS?

- (A) Mean
- (B) Standard deviation
- (C) Frequency
- (D) Mask

101. Point statistics tool is used to

- (A) sum the values of the point features
- (B) summarize the values for point features
- (C) locate the point features on the map
- (D) All of the above

102. Which tool is used to calculate the area of a vector feature?

- (A) Calculate geometry
- (B) Measurement tool
- (C) Field calculator
- (D) All of the above

103. Which projection system is used for geometric calculation?

- (A) World
- (B) National Grid
- (C) UTM
- (D) All of the above



104. Standard deviation of an attribute feature can be obtained through

- (A) statistic analysis
- (B) spatial analysis
- (C) 3D analysis
- (D) network analysis

105. Pattern identification of features helps in

- (A) understanding the geographic phenomena
- (B) understanding the data format
- (C) spatial analysis
- (D) field calculation

106. Interpolation is made possible by a principle called

- (A) spatial autocorrelation
- (B) spatial autocorrection
- (C) thematic autocorrelation
- (D) thematic autocorrection

107. TIN stands for

- (A) Traffic Internet Network
- (B) Triangulated Irregular Network
- (C) Temporal Interest Network
- (D) Temperature Interface Node

108. SDI stands for

- (A) Spatial Data Interface
- (B) Spatial Data Infrastructure
- (C) Spatial Data Intention
- (D) Spatial Data International

109. Spatial databases are also known as
 (A) geodatabases
 (B) monodatabases
 (C) concurrent databases
 (D) None of the above
110. Which of the following are the examples of small-scale maps?
 (A) Wall maps
 (B) City plans
 (C) Route maps
 (D) Guide maps
111. The program used in the digitization technique is
 (A) CAD
 (B) GPS
 (C) C
 (D) JAVA
112. The input to geoprocessing is
 (A) datasheet
 (B) alphanumeric
 (C) numeric
 (D) alphabets
113. What is the purpose of overlay analysis?
 (A) To know the features class
 (B) To know the weighted sum
 (C) To know the point statistics
 (D) To create the random raster
114. The purpose of reclassification is to
 (A) stretch an image
 (B) select definite classes
 (C) create normal raster
 (D) None of the above
115. Map algebra function is used to
 (A) multiply two rasters
 (B) compare two rasters
 (C) filter rasters
 (D) None of the above
116. Kernel density tool is used to
 (A) calculate line density
 (B) calculate point density
 (C) calculate polygon density
 (D) All of the above
117. Scale of the map tells us
 (A) representative of a feature corresponding to the ground surface
 (B) representative of a feature on another map
 (C) a non-representative feature
 (D) representative of an imaginary feature
118. The purpose of a graticule is
 (A) to count the number of features on a map
 (B) to differentiate vector and raster features on a map
 (C) to measure distance on a map
 (D) Does not serve any major purpose



119. The purpose of a grid is

- (A) to count the number of features on a map
- (B) to differentiate vector and raster features on a map
- (C) to measure distance on a map
- (D) Does not serve any major purpose

120. IDW interpolation technique is used

- (A) to measure relative distance between two or more points
- (B) to know numbers of null cells in a raster
- (C) to identify voids in a terrain
- (D) to predict a value for any unmeasured location using measured value

121. The passive microwave measurement of the atmosphere is known as

- (A) atmospheric sounding
- (B) atmospheric profiling
- (C) vertical profiles
- (D) All of the above

122. The microwave radiometers of multi-channels are used for measurement to determine

- (A) rainfall
- (B) hydrometeors
- (C) water vapour and vertical profiles of temperature
- (D) All of the above

123. The radiance is the measure of how much radiative energy comes from a given direction, and has units of

- (A) Wm
- (B) $Wmsr$
- (C) W
- (D) $Wm^{-2}sr^{-1}$

124. The analysis of underwater features is often permitted by using imaging systems sensitive to at least the wavelengths of

- (A) $0.48 \mu m$ to $0.60 \mu m$
- (B) $1.1 \mu m$ to $3.0 \mu m$
- (C) $< 0.2 \mu m$
- (D) $> 1 m$

125. Geocentric orbits with a fixed altitude of ____, with an orbital period timed to follow the rotation of the earth.

- (A) $< 160 km$ to $200 km$
- (B) $35000 km$
- (C) $35786 km$
- (D) None of the above