

# CBSE | DEPARTMENT OF SKILL EDUCATION

## GEOSPATIAL TECHNOLOGY (SUBJECT CODE-818)

### MARKING SCHEME FOR CLASS XII (SESSION 2024-2025)

Max. Time: 3 Hours

Max. Marks: 60

#### General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **24 questions** in two sections – Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (6 + 18 =) 24 questions, a candidate has to answer (6 + 11 =) 17 questions in the allotted (maximum) time of 3 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (30 MARKS):**
  - i. This section has 06 questions.
  - ii. There is no negative marking.
  - iii. Do as per the instructions given.
  - iv. Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (30 MARKS):**
  - i. This section contains 18 questions.
  - ii. A candidate has to do 11 questions.
  - iii. Do as per the instructions given.
  - iv. Marks allotted are mentioned against each question/part.

#### SECTION A: OBJECTIVE TYPE QUESTIONS

Q. No.	QUESTION	Source Material (NCERT/P SSCIVE/ CBSE Study Material)	Unit/ Chap. No.	Marks
<b>Q. 1</b>	<b>Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)</b>			
<b>i.</b>	Eye contact, Gestures, Avoiding distractions, Giving feedback	NCERT Textbook	<b>1</b>	<b>1</b>
<b>ii.</b>	Stress is a state of feeling upset, annoyed and hopeless. There are times when we feel nothing is working right, we are not able to achieve our goals and feel hopeless.	NCERT Textbook	<b>2</b>	<b>1</b>
<b>iii.</b>	It arises because of incentives or external rewards. Lack of motivation or incentives may lead to frustration, for example, employees who are kept on contractual basis for a long time may get frustrated and leave an organisation.	NCERT Textbook	<b>2</b>	<b>1</b>
<b>iv.</b>	Ctrl+u	NCERT Textbook	<b>3</b>	<b>1</b>
<b>v.</b>	<b>Personal barriers</b> - Establishing any new venture is a risk because there is always a fear of what may go wrong. Secondly, finding a suitable team is also a tedious job. A team of careless and non-suitable workers may cause damage to a business. <b>No or faulty business plan</b> - "A goal without a plan is just a wish."	NCERT Textbook	<b>4</b>	<b>1</b>

	<b>Environmental barriers-</b> Lack of adequate resources or raw material, Non-availability of skilled labour, Lack of requisite machinery and other infrastructure, Unavailability of monetary resources on time.			
vi.	The <u>Krishi Vigyan Kendras (KVKs)</u> set up by the government, can be utilised to provide support activities like technology dissemination, training awareness to the local youth and farmers for collection, storage and reuse of agro-waste	NCERT Textbook	5	1
<b>Q. 2</b>	<b>Answer any 5 out of the given 7 questions (1 x 5 = 5 marks)</b>			
i.	B. Near Infrared	CBSE Textbook	1	1
ii.	A. Radiation	CBSE Textbook	1	1
iii.	C. LIDAR	CBSE Textbook	1	1
iv.	B. Reflect	CBSE Textbook	1	1
v.	B. 4 bands	CBSE Textbook	1	1
vi.	B. Image noise	CBSE TEXT BOOK	1	1
vii.	D. Allocating	CBSE Textbook	2	1
<b>Q. 3</b>	<b>Answer any 6 out of the given 7 questions (1 x 6 = 6 marks)</b>			
i.	C. Query	CBSE Textbook	2	1
ii.	A. GIS	CBSE Textbook	2	1
iii.	D. Cultural significance of a river	CBSE Textbook	2	1
iv.	C. Buffer	CBSE Textbook	2	1
v.	A. Raster	CBSE Textbook	2	1
vi.	A. 3	CBSE Textbook	3	1
vii.	D. Vehicle accessories	CBSE Textbook	3	1
<b>Q. No.</b>	<b>QUESTION</b>	<b>Source Material (NCERT/P</b>	<b>Unit/ Chap. No.</b>	<b>Marks</b>

		SSCIVE/ CBSE Study Material)		
<b>Q. 4</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>			
i.	C. Survey	CBSE Textbook	3	<b>1</b>
ii.	B. 20 cm-1 m	CBSE Textbook	3	<b>1</b>
iii.	D. Geoeye	CBSE Textbook	4	<b>1</b>
iv.	A.A Grid based mapping program	CBSE Textbook	4	<b>1</b>
v.	B. Enterprise GIS	CBSE Textbook	2	<b>1</b>
vi.	B. Bihar	CBSE Textbook	5	<b>1</b>
<b>Q. 5</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>			
i.	<u>Radiometric resolution</u> describes the ability of a sensor to discriminate very light differences in energy.	CBSE Textbook	1	<b>1</b>
ii.	<u>Doppler</u> lidar is used to measure the velocity of a target	CBSE Textbook	1	<b>1</b>
iii.	A <u>TIN (Triangulated Irregular Network)</u> is a series of triangles constructed using elevation data points taken from coverages.	CBSE Textbook	2	<b>1</b>
iv.	<u>Buffer</u> analysis is used for identifying area surrounding geographic feature.	CBSE Textbook	2	<b>1</b>
v.	<u>Radio</u> based navigation systems are developed and used in world war II	CBSE Textbook	3	<b>1</b>
vi.	<u>Mobile</u> GIS creates and maintains an inventory of asset locations and attribute information.	CBSE Textbook	4	<b>1</b>
<b>Q. 6</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>			
i.	Watershed management, Electricity and power management, Solid waste management etc	CBSE Textbook	5	<b>1</b>
ii.	Histogram equalization assigns the intensity values of pixels in the input image in such a way that the output image contains a uniform distribution of intensities. It improves contrast and obtains a uniform histogram. By modifying this histogram it enhances the image which is often called Contrast stretching or histogram normalization.	CBSE Textbook	1	<b>1</b>
iii.	Map Projection is a procedure which transforms the	CBSE	2	<b>1</b>

	features and locations from a 3D platform that is surface of earth to a 2D platform that on paper in a defined and consistent way.	Textbook		
iv.	In troposphere there is a change in the travel time of the signal	CBSE Textbook	3	1
v.	A reference datum is a known and constant surface which can be used to describe the location of unknown points. On Earth, the normal reference datum is sea level.	CBSE Textbook	2	1
vi.	Buffer analysis	CBSE Textbook	5	1

### **SECTION B: SUBJECTIVE TYPE QUESTIONS**

Q. No.	QUESTION	Source Material (NCERT/P SSCIVE/ CBSE Study Material)	Unit/ Chap. No.	Marks
<b>Answer any 3 out of the given 5 questions on Employability Skills in 20 – 30 words each (2 x 3 = 6 marks)</b>				
Q. 7	Listening, Speaking, Reading, Writing (Very brief explanation of all)	NCERT Book	1	2
Q. 8	Antisocial personality disorder Borderline personality disorder Histrionic personality disorder Narcissistic personality disorder	NCERT Book	2	2
Q. 9	1. Click on Insert from the menu. 2. Select Image 3. An Insert Image dialog box appears 4. Browse through folders and select the image you want to use. Click on Open.	NCERT Book	3	2
Q. 10	Some of the major functions performed by an entrepreneur are as follows. (a) Identifying entrepreneurial opportunity (b) Turning ideas into action (c) Feasibility study (d) Resourcing (e) Setting up an enterprise (f) Managing the enterprise (g) Growth and development	NCERT Book		2
Q. 11	Instead of only thinking about how to recycle or reuse waste, we must work towards finding solutions on how to reduce the amount of waste produced. This will help in waste management	NCERT Book	5	2

	<ul style="list-style-type: none"> <li>• Reusing scrap material</li> </ul> <p>Ensuring quality control</p> <ul style="list-style-type: none"> <li>• Waste exchange This is where the waste product of one process becomes the raw material for another. It represents the way of reducing waste disposal through re-use.</li> <li>• Managing e-waste With advanced technology, we have also encountered problems in managing e-waste like old mobile phones, laptops and television sets. It is important to have sustainable development and plan judiciously for recycling e-waste.</li> <li>• Use of eco-friendly material</li> </ul>			
<b>Answer any 3 out of the given 5 questions in 20 – 30 words each (2 x 3 = 6 marks)</b>				
<b>Q. 12</b>	Linear contrast stretching involves a simple linear transformation of all pixel values in an image to expand the dynamic range uniformly. Non-linear contrast stretching, like histogram equalization, adapts the transformation based on local histograms to enhance contrast and reveal fine details in different parts of the image. Linear is simpler and global, while non-linear is more complex and local. The choice depends on image enhancement goals and the image's characteristics.	CBSE TEXT BOOK	<b>1</b>	<b>2</b>
<b>Q. 13</b>	Thermal remote sensing is a technology that measures the heat (thermal infrared radiation) emitted by objects and surfaces on Earth. It is used for various purposes, including monitoring environmental factors, agriculture, forestry, geology, and infrastructure inspection. Specialized thermal sensors capture this data, and it helps in making informed decisions related to temperature and heat distribution.	CBSE Textbook	<b>1</b>	<b>2</b>
<b>Q. 14</b>	Raster data structure represents geospatial information in a grid format, with each cell containing a data value. It is used for various applications like satellite imagery and GIS, suitable for both continuous and discrete data, and its spatial resolution determines the level of detail.	CBSE Textbook	<b>2</b>	<b>2</b>
<b>Q. 15</b>	1.DGPS 2.Recreational 3.Mapping 4.Survey	CBSE Textbook	<b>3</b>	<b>2</b>
<b>Q. 16</b>	Control segment basically makes sure that the satellites are working properly. It includes one Master Control Station, five Monitor Stations and a Ground Antenna. The Monitor Stations passively track each satellite continuously and provide this data to Master Control Station. The Master Control Station calculates any changes in each satellite's position and timing. These changes are forwarded to the Ground Antennas and transmitted to each satellite daily. This ensures that each satellite is transmitting accurate information about its orbital path.	CBSE Textbook	<b>3</b>	<b>2</b>

<b>Answer any 2 out of the given 3 questions in 30– 50 words each (3 x 2 = 6 marks)</b>				
<b>Q. 17</b>	<p>The spectral signature of water is how water interacts with electromagnetic radiation at different wavelengths. Water absorbs strongly in the infrared part of the spectrum and to a lesser extent in the ultraviolet and visible portions. Its color in the visible spectrum is influenced by scattering and absorption, which makes deep, clear water bodies appear blue or green. The reflectance from water depends on various factors</p> <p>Depth Suspended particles in water Floating vegetation Sun angle Pure clear water has a relatively high reflecta</p>	CBSE Textbook	<b>1</b>	<b>3</b>
<b>Q. 18</b>	<ul style="list-style-type: none"> <li>• The spaghetti data model is the most simple data structure. In this model each entity on a map becomes one logical record in digital file and is defined as a string of x, y coordinates.</li> <li>• Spaghetti vector data structure is not optimal because it does not take into consideration shared lines and points. All entities are spatially defined, without any spatial relationships.</li> <li>• This creates a limitation to perform any type of spatial analysis. The spatial relationship between entities is derived through computation. Different lines and polygons are stored as independent objects. Lines between adjacent polygons must be digitized and stored twice.</li> <li>• No clear topological information is coded to show the connectivity and neighboring relationship. This type of format is efficient for cartographic display for CAD Database.</li> </ul>	CBSE Textbook	<b>2</b>	<b>3</b>
<b>Q. 19</b>	<p>Survey grade units are used where accuracy is crucial such as cadastral surveys, Highway construction and other engineering projects. They are capable of providing horizontal accuracy to within a centimeter. Survey grade GPS receivers are the most accurate and the most expensive. These GPS receivers are most often used by professional surveyors. It is more accurate. A survey grade GPS is used to establish a known point. From there, total station laser instruments are used to lay out measurements for other positions in the neighborhood of the known point.</p>	CBSE Textbook	<b>3</b>	<b>3</b>
<b>Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)</b>				
<b>Q. 20</b>	<p>In Unsupervised classification spectral classes are grouped first, based on the numerical information in the data. Clustering algorithms are used to determine the natural classes in the data. Algorithms examine the unknown pixels in an image and group them into a number of</p>	CBSE Textbook	<b>1</b>	<b>4</b>

	<p>classes. Unsupervised Classification method does not utilize training data as the basis for classification. Based on the reference data, area knowledge and experience, user compare the classified data. There are numerous clustering algorithms that can be used to determine the natural spectral groupings present in data set. Unsupervised classification is not complete without human involvement.</p> <p>Supervised classification is more accurate for mapping classes, but it depends heavily on the area knowledge and skills of the analyst. The analyst should recognize classes in an Image based on prior knowledge and assign them class names.</p>			
<b>Q. 21</b>	<p>Advantages of Remote Sensing</p> <ul style="list-style-type: none"> <li>* Synoptic view</li> <li>* Repetitive coverage</li> <li>* Continuous acquisition of data</li> <li>* Coverage of inaccessible areas</li> <li>* Up-to-date information, accurate and reliable data</li> <li>* Quantifiable data</li> <li>* New information</li> <li>* Multi disciplinary applications</li> <li>* Time, manpower saving</li> <li>* Quick assessment of resources</li> <li>* Service as a large archive of historical data</li> </ul> <p>Few benefits of Satellite remote sensing are listed below Data collected using satellite remote sensing can be used for following purposes</p> <ul style="list-style-type: none"> <li>* Assessing and observing vegetation types</li> <li>* Conducting soil surveys</li> <li>* Carrying out mineral exploration</li> <li>* Map making to facilitate easy study of information</li> <li>* Constructing thematic maps based on requirement</li> <li>* Planning and monitoring water resources</li> <li>* Carrying out urban planning</li> <li>* Assessing crop yields and other agriculture management</li> <li>* Assessing and managing natural disasters, etc.</li> <li>* Studying the various spatial features in relation to each other and delineation of regional features trends, phenomenon etc.</li> </ul>	CBSE Textbook	<b>1</b>	<b>4</b>
<b>Q. 22</b>	<p>Coordinate system which uses a set of numbers or co-ordinates to determine the position of any given point by using some references</p> <p>Geographic coordinate system: It's a three dimensional reference system that locate points on the Earth surface. A point on the earth has two coordinate values, latitudes and longitudes Latitude is defined as the angle formed by the intersection of a line perpendicular to the Earth's surface. Latitudes ranges from -90 to +90 degrees.</p>	CBSE Textbook	<b>2</b>	<b>4</b>

	<p>Longitude value is defined by the angle between the plane and a reference plane.</p> <p>Projected coordinate system</p> <p>A two dimensional coordinate system</p> <p>In the southern hemisphere normally has its origin on the equator at a specific longitude. This means that the Y-values increase southwards and the X-value increases to the West. In the northern hemisphere the origin is also the equator at a specific longitude. Y-value increases northward and the X-values increase to the East.</p>			
<b>Q. 23</b>	<p>GIS functions:</p> <ol style="list-style-type: none"> <li>1. Data capture</li> <li>2. Data storage and Manipulation</li> <li>3. Data Analysis</li> <li>4. Data presentation</li> </ol> <p>Relevant explanation of all</p>	CBSE Textbook	<b>2</b>	<b>4</b>
<b>Q. 24</b>	<p>GIS is indeed essential in disaster management for several reasons</p> <ol style="list-style-type: none"> <li>1. Risk Assessment and Mitigation</li> <li>2. Emergency response planning</li> <li>3. Estimation of damage caused by any disaster</li> <li>4. Coordination and communication</li> </ol> <p>Any other relevant point with relevant explanation</p>	CBSE Textbook	<b>5</b>	<b>4</b>