LAND MANAGEMENT, ENVIRONMENT & SOLID-WASTE: INSIDE EDUCATION AND BUSINESS IN CENTRAL ASIA
ERASMUS-EDU-2023-CBHE Project Number: 101129032

MICRO-CREDENTIAL

LAND MANAGEMENT IN CENTRAL ASIA

12.- Sensors and Remote Sensing Platforms

Quiz

Week 12 – Sensors and Platforms

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Quiz: Week 12 - Sensors and Platforms

Assessment type: Multiple-choice quiz

Total questions: 30

Recommended time: 35-45 minutes

Scoring: 1 point per question, 30 points total

Instruction to students: Choose the best answer for each question. Each question has one correct answer.

Source base: This compact quiz is aligned with Week 12 presentations on sensor classification, optical sensors, thermal and microwave sensors, satellite platforms, aerial and UAV platforms, resolution concepts, and sensor-platform review.

Part	Topic	Questions	Share
A	Classification of remote sensing sensors	1-5	17%
B	Optical, thermal, and microwave sensors	6-12	23%
C	Satellite platforms	13-17	17%
D	Aerial and UAV platforms	18-22	17%
E	Resolution and data quality	23-27	17%
F	Sensor-platform selection and review	28-30	10%

Student Copy

Part A. Classification of Remote Sensing Sensors

1. Why do remote sensing specialists classify sensors?

A. To choose data that match the observation task.

B. To make all images look identical.

C. To remove the need for validation.

D. To replace spectral bands with map legends.

2. Which statement best describes a passive sensor?

A. It sends out its own microwave pulse.

B. It records natural reflected or emitted energy.

C. It works only as a ground survey tool.

D. It cannot record infrared wavelengths.

3. Which statement best describes an active sensor?

A. It records only sunlight reflected from vegetation.

B. It transmits its own energy and measures the return signal.

C. It can operate only in visible wavelengths.

D. It is always a thermal camera.

4. Which list contains three major spectral sensor families?

A. Optical, thermal, and microwave.

B. Spreadsheet, vector, and database.

C. Legend, scale, and north arrow.

D. Buffer, clip, and dissolve.

5. Imaging sensors are different from non-imaging sensors because imaging sensors:

A. create spatially organized image data.

B. never need calibration.

C. measure only one point at a time.

D. cannot be mounted on satellites.

Part B. Optical, Thermal, and Microwave Sensors

6. Optical Earth-observation sensors most commonly measure:

A. reflected sunlight in visible, NIR, and SWIR bands.

B. only emitted heat from the surface.

C. only microwave backscatter.

D. the exact crop species automatically.

7. Panchromatic sensors usually provide:

A. one broad band with strong spatial detail.

B. hundreds of narrow spectral bands.

C. only thermal temperature values.

D. only radar phase information.

8. Multispectral sensors are widely used because they:

A. balance spectral information, coverage, and manageable data volume.

B. always have centimeter spatial resolution.

C. work without any atmosphere or cloud effects.

D. do not require band interpretation.

9. Thermal infrared sensors are especially useful for:

A. land surface temperature, fire, heat islands, and water stress.

B. panchromatic image sharpening only.

C. radar deformation mapping only.

D. replacing all field observations.

10. Which factor is especially important when interpreting thermal data?

A. Emissivity and atmosphere.

B. The color of the slide background.

C. The number of map labels.

D. Whether the file name is short.

11. SAR is valuable for flood mapping because it can often:

A. operate day or night and through many cloud conditions.

B. measure only visible color.

C. ignore surface roughness and geometry completely.

D. work only during direct sunlight.

12. Radar backscatter is influenced by:

A. roughness, moisture, geometry, polarization, and wavelength.

B. only the RGB display color.

C. only the map title.

D. only crop names from a survey form.

Part C. Satellite Platforms

13. A satellite platform affects data because it controls:

A. orbit, coverage, revisit, viewing geometry, and data acquisition pattern.

B. only the spelling of band names.

C. only the final report design.

D. only the classification algorithm.

14. Sun-synchronous land-observation satellites are useful because they:

A. observe under relatively consistent local solar time conditions.

B. remain fixed over one point at all times.

C. can never observe vegetation.

D. always produce centimeter-resolution imagery.

15. Swath width means:

A. the ground width observed in one pass.

B. the number of students in a class.

C. the file size of a map.

D. the height of a legend.

16. Revisit time is important because it describes:

A. how often the same area can be observed.

B. how many bands are in the sensor.

C. the color of water in a true-color image.

D. the number of labels in a map.

17. Geostationary satellites are especially important for:

A. continuous weather monitoring over broad regions.

B. detailed parcel-level crop mapping only.

C. UAV flight planning only.

D. ground control point measurement only.

Part D. Aerial and UAV Platforms

18. UAV platforms are particularly useful for:

A. high-detail local mapping and field validation.

B. global daily coverage of the whole Earth.

C. ignoring flight permissions and weather.

D. replacing all satellite archives.

19. A fixed-wing UAV usually has an advantage over a small multirotor UAV for:

A. longer endurance and larger area coverage.

B. hovering in one place for inspection.

C. flying safely indoors in every case.

D. avoiding all processing needs.

20. A multirotor UAV is often useful because it:

A. can take off and land vertically and maneuver over small sites.

B. always covers an entire country in one flight.

C. does not need batteries.

D. works only with radar sensors.

21. Ground control points in UAV mapping are used to:

A. improve georeferencing and assess spatial accuracy.

B. replace the sensor payload.

C. make the sky cloud-free.

D. change crop type in the field.

22. A UAV orthomosaic is:

A. a geometrically corrected image map built from many overlapping images.

B. a single uncorrected photo used without coordinates.

C. a thermal equation.

D. a satellite orbit type.

Part E. Resolution and Data Quality

23. Spatial resolution describes:

A. pixel size or ground detail.

B. number of spectral bands only.

C. how often a satellite returns only.

D. bit depth only.

24. Spectral resolution describes:

A. the number and width of wavelength bands.

B. the time between revisits only.

C. the shape of the study area boundary.

D. the number of rows in an attribute table.

25. Temporal resolution is especially important for:

A. floods, crop growth, irrigation events, and seasonal change.

B. choosing a font style.

C. drawing a north arrow.

D. naming a shapefile.

26. Radiometric resolution is commonly related to:

A. how many brightness levels a sensor can record.

B. how many maps are in a report.

C. how large the platform is physically.

D. whether the image is printed in color.

27. A mixed pixel can reduce classification accuracy because it:

A. contains more than one surface material or class.

B. always contains only water.

C. cannot exist in satellite data.

D. means the sensor is active.

Part F. Sensor-Platform Selection and Review

28. For cloudy-season flood mapping, the best first option is often:

A. SAR or other microwave radar data.

B. a true-color optical image only.

C. a panchromatic image from any date.

D. a map legend without imagery.

29. For small parcel-level crop validation, a useful combination is:

A. satellite time series plus UAV or field reference data.

B. only a single cloudy RGB image.

C. only a table without coordinates.

D. only a decorative map.

30. Before trusting a remote sensing product, students should check:

A. sensor, platform, date, processing level, resolution, and validation.

B. only whether the map looks attractive.

C. only the file name.

D. only the color of the legend.

Student Answer Sheet

Q	Answer	Q	Answer	Q	Answer
1		11		21	
2		12		22	
3		13		23	
4		14		24	
5		15		25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	

Instructor Answer Key

Q	Correct	Q	Correct	Q	Correct
1	A	11	A	21	A
2	B	12	A	22	A
3	B	13	A	23	A
4	A	14	A	24	A
5	A	15	A	25	A
6	A	16	A	26	A
7	A	17	A	27	A
8	A	18	A	28	A
9	A	19	A	29	A
10	A	20	A	30	A

Compact Marking Guide

Total: 30 points. One correct answer = 1 point. No negative marking. Suggested interpretation: 27-30 excellent mastery; 23-26 good understanding; 18-22 satisfactory understanding; below 18 requires revision of sensor classification, platform differences, resolution, and sensor-platform selection logic.

References and Recommended Sources

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- Campbell, J. B., & Wynne, R. H. (2011). Introduction to Remote Sensing. Guilford Press.

Note for instructors: mission specifications can change as agencies release new products and processing levels. When using real data, students should check the official data provider pages and the metadata of the exact product used.