**Chapter 11**

**Images from Space**

1. The first satellite to achieve orbit around Earth was:

a. Voyager.

b. Challenger.

c. Sputnik.

d. Explorer I.

2. In terms of the “satellite race” to be first to orbit Earth, the United States was the winner.

a. True

b. False

3. The Soviet Union’s Sputnik II launched animals into outer space for the first time.

a. True

b. False

4. NASA was established in:

a. 1958

b. 1962

c. 1974

d. 1988

5. The first U.S. surveillance program to take place via remote sensing satellites was:

a. Sputnik.

b. Explorer.

c. Nebula.

d. Corona.

6. Imagery from the Corona program is now available to the public.

a. True

b. False

7. The USSR used the Zenit satellite to gather information about weather patterns.

a. True

b. False

8. Which of the following is NOT true of satellites?

a. They are constantly orbiting Earth.

b. They can image much larger areas than single aerial photos can.

c. They are restricted to geographic boundaries, much the same way that aircraft are.

d. They are, in general, superior to aircraft in terms of their ability to capture images on Earth.

9. A satellite in geostationary orbit rotates at the same speed as Earth.

a. True

b. False

10. Which of the following does not utilize a geostationary orbit?

a. satellite TV

b. Landsat 7

c. WAAS and EGNOS satellites

d. GOES weather satellites

11. A satellite in geostationary orbit takes \_\_\_\_\_\_\_\_\_\_\_\_\_ to make one orbit of Earth.

a. 6 hours

b. one day

c. one week

d. one month

12. A satellite in geostationary orbit is always in the same place at the same time.

a. True

b. False

13. A geostationary orbit and a near-polar orbit are the same thing.

a. True

b. False

14. Roughly how many orbits does a Landsat satellite operating in a near-polar orbit make each day?

a. 6

b. 12

c. 14

d. 24

15. The width of ground that a satellite can image during one pass is called the:

a. ground area.

b. swath width.

c. dispersal rate.

d. imaging limit.

16. Suppose that a Landsat satellite passes over you on October 10th. What is the next date that the same satellite will pass over you (assuming you are standing in the same location)?

a. October 11th

b. October 17th

c. October 26th

d. November 1st

17. Landsat 7 has a sun-synchronous orbit.

a. True

b. False

18. All images of a particular swath of Earth taken from a satellite with a sun-synchronous orbit will exhibit similar lighting conditions.

a. True

b. False

19. Along-track scanning is synonymous with whiskbroom scanning.

a. True

b. False

20. In which U.S. state is EROS located?

a. New Mexico

b. South Carolina

c. California

d. South Dakota

21. Which of the following spatial resolutions provides the finest resolution?

a. 1 foot

b. 1 meter

c. 1 kilometer

d. 1 mile

22. The spatial resolution of a satellite’s sensor is easily adjusted (up or down) by the ground crew.

a. True

b. False

23. Pan sharpening is the process of using a lower-resolution band to sharpen the resolution of a higher-resolution band.

a. True

b. False

24. For pan-sharpening to take place, a satellite’s sensor must use at least two bands, one with a higher resolution than the other.

a. True

b. False

25. A 5-bit sensor would have \_\_\_\_\_\_ energy radiance values on a scale of 0 to \_\_\_\_\_\_.

a. 5; 5

b. 32; 31

c. 64; 63

d. 25; 24

26. The finer a sensor’s radiometric resolution, the better it can discriminate between smaller differences in energy measurements.

a. True

b. False

27. Which of the following is not one of the four characteristics of a satellite sensor?

a. orbital resolution

b. spectral resolution

c. radiometric resolution

d. temporal resolution

28. Suppose you are programming a satellite that will capture the same swath of Earth every Monday. Which temporal resolution would you use?

a. 48 hours

b. 7 days

c. 14 days

d. one month

29. Off-nadir viewing reduces a satellite’s temporal resolution.

a. True

b. False

30. A satellite with a 4-day temporal resolution passes over your house on January 2. The next day the satellite passes over your house will be January 6.

a. True

b. False

31. How many wavelengths can the Landsat 7 satellite sense simultaneously?

a. 3

b. 8

c. 10

d. 14

32. Landsat 1 was launched in:

a. 1960.

b. 1966.

c. 1970.

d. 1972.

33. Landsat 5 is still in operation.

a. True

b. False

34. Which Landsat satellite did not achieve orbit and was lost?

a. Landsat 2

b. Landsat 4

c. Landsat 6

d. Landsat 7

35. Landsat 5 remained in orbit much longer than originally intended.

a. True

b. False

36. A typical Landsat scene is not large enough to capture the imagery for one entire U.S. state.

a. True

b. False

37. Which reference scheme is used by Landsat’s Worldwide Reference System?

a. Orbital and Spectral

b. X-axis and Y-axis

c. Paths and Rows

d. Bands and Wavelengths

38. The system set up by the USGS for viewing and downloading satellite imagery is:

a. GloVis

b. Hyperion

c. QuickBird

d. ALI

39. The last Landsat launch took place in:

a. 1976.

b. 1984.

c. 2006.

d. 2013.

40. At 30-meter resolution, individual details are readily apparent.

a. True

b. False

41. Prior to 2014, the U.S. government did not permit the sale of imagery of less than \_\_\_\_\_\_\_\_\_ resolution to commercial customers.

a. 30 feet

b. 200 feet

c. 1000 feet

d. .5 meter

42. The SPOT 7 satellite was sold by Airbus to the Azerbaijan space agency and renamed:

a. Azersky

b. Pleiades 1A

c. IKONOS

d. LDCM

43. The SPOT satellites were initiated by the government of:

a. the United States.

b. Russia.

c. China.

d. France.

44. Which of the following captures the highest spatial resolution imagery:

a. Landsat 8.

b. GeoEye-1.

c. IKONOS.

d. WorldView-3.

45. The QuickBird satellite provided higher spatial resolution than IKONOS.

a. True

b. False