

SUMMATIVE TEST IN SCIENCE 10

2ND QUARTER
Nov. 6 – 7, 2025

1. The electromagnetic spectrum includes waves of different lengths and energies. Which of the following electromagnetic waves has the longest wavelength?

a) X-rays b) Microwaves c) Infrared waves d) Radio waves

2. Each type of electromagnetic wave differs in how long or short its wavelength is. Which electromagnetic wave has the shortest wavelength?

a) Visible light

c) Ultraviolet rays

b) Gamma rays

d) Infrared rays

3. The electromagnetic spectrum can be organized according to wavelength and frequency. Arrange the following electromagnetic waves from longest to shortest wavelength:

1. Visible light
2. X-rays
3. Radio waves
4. Infrared

a) 3, 4, 1, 2

c) 4, 3, 1, 2

b) 2, 1, 4, 3

d) 1, 2, 3, 4

4. A scientist is studying two electromagnetic waves: Wave A used in cell phone communication and Wave B used in medical imaging. Which wave has a shorter wavelength, and why?

- a) Wave A, because communication waves travel faster.
- b) Wave A, because radio waves have shorter wavelengths.
- c) Wave B, because X-rays have shorter wavelengths than radio waves.
- d) Both have the same wavelength since they are electromagnetic.

5. If the wavelength of an electromagnetic wave decreases, what happens to its frequency and energy?

- a) Both decrease
- b) Both increase
- c) Frequency increases but energy decreases
- d) Frequency and energy increase

6. A group of engineers must choose between infrared and microwave signals for a short-range data transmission system. Based on their wavelengths, which should they select and why?

- a) Microwaves, because longer wavelengths allow better data clarity.
- b) Infrared, because shorter wavelengths allow higher data transfer rates for short distances.
- c) Either, since wavelength does not affect data transmission.
- d) Infrared, because it has lower frequency and energy than microwaves.

7. Which of the following electromagnetic waves is commonly used in television and radio broadcasting?

- a) Microwaves b) Radio waves c) Ultraviolet rays d) Infrared rays

8. Which statement correctly describes the use of different electromagnetic waves in daily life?

- a) Radio waves are used to detect broken bones.
b) Microwaves are used for cooking and satellite communications.
c) Ultraviolet rays are used for listening to music on the radio.
d) Infrared rays are used in X-ray imaging.

9. A doctor asks for a test that can show the condition of a patient's bones without surgery. Which region of the electromagnetic spectrum is most useful?

- a) Visible light b) X-rays c) Ultraviolet rays d) Microwaves

10. A company needs to set up a wireless internet system that transfers data quickly over short distances inside a building. Which electromagnetic wave is most appropriate and why?

- a) Radio waves, because they have the lowest frequency.
b) Microwaves, because they can carry large amounts of data over short distances.
c) Infrared rays, because they can pass easily through walls.
d) Gamma rays, because they have the highest energy.

11. Which type of electromagnetic radiation is known to cause sunburn in humans?

- a) Radio waves b) Infrared rays c) Ultraviolet rays d) Microwaves

12. Which statement best describes how electromagnetic radiation both beneficial and harmful effects can have?

- a) Infrared rays are always harmful to humans.
b) Ultraviolet rays can help produce vitamin D but may also damage skin cells.
c) Microwaves are safe for all biological tissues.
d) Gamma rays are harmless when used in hospitals.

13. A scientist studies the impact of increased ultraviolet radiation due to ozone layer depletion. Which health problem is most likely to increase among people?

a) hearing loss b) skin cancer c) common cold d) heart disease

14. Why are gamma rays used carefully and only in controlled environments?

a) They are visible and easy to detect.

b) They have very low energy.

c) They can destroy living cells and cause radiation sickness.

d) They can easily be blocked by paper.

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15. A city plans to increase the number of cell towers to improve communication. Which is the best action to balance technology use and public health?

- a) Install towers anywhere since EM radiation is always safe.
- b) Ban all EM devices to protect humans from radiation.
- c) Conduct safety studies and follow international radiation exposure guidelines.
- d) Increase tower power levels for stronger signals regardless of exposure.

16. What kind of image is formed by a plane mirror?

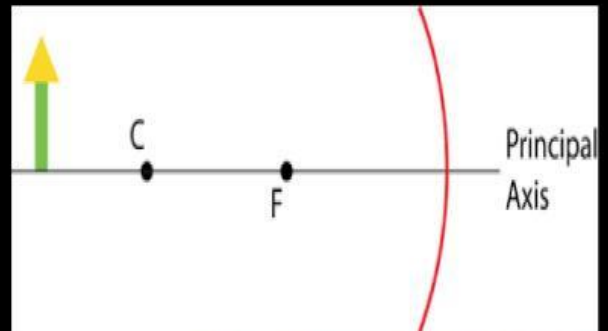
- a) Virtual, upright, and same size
- b) Real, inverted, and smaller
- c) Real, upright, and magnified
- d) Virtual, inverted, and smaller

17. Which type of mirror can form a real image?

- a) Concave mirror
- b) Plane mirror
- c) Convex mirror
- d) None of the above

18. When an object is placed beyond the center of curvature of a concave mirror, the image formed is:

- a) Virtual, inverted, and magnified
- b) Virtual, upright, and smaller
- c) Real, upright, and magnified
- d) Real, inverted, and smaller



19. What type of image is produced by a convex lens when the object is placed between the focal point and the lens?

- a) Real, inverted, and smaller
- b) Real, upright, and magnified
- c) Virtual, upright, and magnified
- d) Virtual, inverted, and smaller

