1. Which branch of study deals with the effects of earthquakes on engineering structures?

a) Engineering Seismology
b) Structural Engineering
c) Geotechnical Engineering
d) Seismotectonics

Answer: a) Engineering Seismology

Explanation: Engineering seismology is the branch of study that focuses on understanding the effects of earthquakes on engineering structures, such as buildings, bridges, dams, and pipelines.

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2. What geological feature of India contributes significantly to its seismic activity?

a) Himalayan Mountain Range
b) Thar Desert
c) Deccan Plateau
d) Western Ghats

Answer: a) Himalayan Mountain Range

Explanation: The Himalayan mountain range, situated along India’s northern border, is a seismically active region due to ongoing tectonic activity, particularly the collision between the Indian and Eurasian tectonic plates.

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3. Seismic waves that travel through the Earth’s interior are known as:

a) Surface waves
b) Body waves
c) Love waves
d) Rayleigh waves

Answer: b) Body waves

Explanation: Body waves are seismic waves that travel through the Earth’s interior, consisting of P-waves (primary waves) and S-waves (secondary waves).

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4. Which earthquake measurement parameter indicates the total energy released during an earthquake?

a) Magnitude
b) Intensity
c) Richter Scale
d) Mercalli Scale

Answer: a) Magnitude

Explanation: Magnitude is a measure of the total energy released during an earthquake, typically determined using seismographs.

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5. The Modified Mercalli Intensity Scale quantifies the intensity of an earthquake based on:

a) The earthquake’s depth
b) The earthquake’s magnitude
c) Observations of shaking and damage
d) Seismic wave velocities

Answer: c) Observations of shaking and damage

Explanation: The Modified Mercalli Intensity Scale quantifies the intensity of an earthquake based on observed effects such as shaking and damage to structures, rather than instrumental measurements.

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6. Which instrument is commonly used to measure ground motion during an earthquake?

a) Seismograph
b) Barometer
c) Anemometer
d) Hygrometer

Answer: a) Seismograph

Explanation: A seismograph is an instrument used to measure ground motion during an earthquake by recording the vibrations caused by seismic waves.

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7. The seismic zoning map of India classifies regions based on their:

a) Population density
b) Geological features
c) Economic development
d) Climatic conditions

Answer: b) Geological features

Explanation: The seismic zoning map of India classifies regions based on their geological features and seismic activity levels, helping in assessing earthquake hazards and implementing appropriate building codes.

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8. Which magnitude scale accounts for the duration and frequency characteristics of seismic waves?

a) Richter Scale

b) Moment Magnitude Scale
c) Mercalli Intensity Scale
d) Body Wave Magnitude Scale

Answer: b) Moment Magnitude Scale

Explanation: The Moment Magnitude Scale accounts for the duration and frequency characteristics of seismic waves, providing a more accurate measure of earthquake size compared to the Richter Scale.

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9. Which seismic wave is primarily responsible for causing most of the damage during an earthquake?

a) P-waves
b) S-waves
c) Surface waves
d) Love waves

Answer: c) Surface waves

Explanation: Surface waves, including Rayleigh and Love waves, are primarily responsible for causing most of the damage during an earthquake, as they travel along the Earth’s surface and produce the strongest shaking.

10. What does the term “seismic zoning” refer to?

a) Mapping of seismic fault lines
b) Classification of regions based on earthquake risk
c) Study of seismic wave propagation
d) Monitoring of underground water movements

Answer: b) Classification of regions based on earthquake risk

Explanation: Seismic zoning refers to the classification of regions based on their level of earthquake risk, often used for urban planning, infrastructure development, and building code implementation.