

**M.Sc. ENVIRONMENTAL SCIENCE
THIRD SEMESTER
ENVIRONMENTAL GEOSCIENCES AND METEOROLOGY
MEV-301**

**SET
A**

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

(Objective)

Marks: 20

Choose the correct answer from the following:

1X20=20

- Which of the following evidence did Wegener use to support his Continental drift hypothesis?
 - Magnetic anomalies on the ocean floor
 - Matching fossils on different continents
 - Distribution of earthquakes along plate boundaries
 - Hotspot volcanism
- The boundary where two plates move away from each other is called –
 - Convergent boundary
 - Divergent boundary
 - Transform boundary
 - Subduction zone
- Which process provides the main driving force for plate movements?
 - Gravitational attraction of the Moon
 - Solar radiation
 - Convection currents in the mantle
 - Earth's rotation
- The concept of "climatic controls" primarily includes
 - Latitude, altitude, pressure, winds, ocean currents
 - Temperature, rainfall, soils, vegetation
 - Forests, deserts, grasslands
 - Earthquakes, volcanoes, floods
- The minimum period of data required by WMO (World Meteorological Organization) to define climate is
 - 5 years
 - 10 years
 - 20 years
 - 30 years
- Which of the following best explains the scope of climatology?
 - Study of rocks and soils
 - Study of atmospheric phenomena over short period
 - Study of weather conditions over long periods and their influence on life
 - Study of ocean depths
- Which process is necessary for formation of igneous rocks?
 - Weathering
 - Solidification
 - Erosion
 - All of above

8. A fault is best described as
 - a. A crack in rocks with no movement
 - b. A fracture along which displacement has occurred
 - c. A bend in the rock layers
 - d. A volcanic vent
9. Glacier is a ----- sheet of ice
 - a. Fast moving
 - b. Slow moving
 - c. Static
 - d. None of above
10. Strain is defined as the ratio of
 - a. Change in volume to original volume
 - b. Change in length to original length
 - c. Change in cross-sectional area to original cross-sectional area
 - d. Any one of above
11. Which of the following is *not* considered a geological hazard?
 - a. Landslide
 - b. Acid rain
 - c. Earthquake
 - d. Volcanic eruption
12. The point inside the Earth where an earthquake originates is called the
 - a. Epicentre
 - b. Fault line
 - c. Hypocentre
 - d. Seismic zone
13. The study of annual growth rings in trees to reconstruct past climate is called
 - a. Palynology
 - b. Dendrochronology
 - c. Stratigraphy
 - d. Glaciology
14. Which branch of climatology deals with circulation of air masses and pressure systems?
 - a. Regional climatology
 - b. Applied climatology
 - c. Dynamic climatology
 - d. Physical climatology
15. Who developed the most widely used classification of world climates?
 - a. Albrecht Penck
 - b. Wladimir Köppen
 - c. Alfred Wegener
 - d. Alexander von Humboldt
16. In which layer of the atmosphere is the ozone layer located?
 - a. troposphere
 - b. stratosphere
 - c. mesosphere
 - d. thermosphere
17. In which layer of the atmosphere does cloud formation occur?
 - a. troposphere
 - b. stratosphere
 - c. mesosphere
 - d. thermosphere
18. Environmental Lapse Rate is
 - a. The rate of decrease of temperature with height in the actual atmosphere
 - b. The rate at which unsaturated air cools when rising or warms when sinking

- c. The rate at which saturated air cools as it rises, due to latent heat release
- d. None of the above

19. Which condition leads to absolute instability?

- a. $ELR < MALR$
- b. $MALR < ELR < DALR$
- c. $ELR > DALR$
- d. $ELR = DALR$

20. Which type of cloud is found between 6000-20,000 ft.?

- a. Altostratus
- b. Altocumulus
- c. Nimbostratus
- d. all of above

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(Descriptive)

Time : 2 hrs. 30 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Discuss environmental problems associated with extraction of minerals from the Earth. 10
2. What are Geological hazards? Write about causes and measuring methods of earthquake. 2+6=10
3. Explain Koeppen's classification of world climates. 10
4. Explain how geographical factors influence the spatial and temporal distribution of climate parameters across the globe. 10
5. Write the evidence in support of the continental drift hypothesis. 10
6. Write short notes on (any two) 5+5=10
 - a) Darcy's law
 - b) Physical aspects of glaciers
 - c) Himalayan glaciers
 - d) Igneous rocks
7. How is cloud formed? Discuss different types of clouds and their role in the weather. 2+8=10
8. Write a short note on (any two) 5+5=10
 - a. Structure of atmosphere
 - b. Insolation and heat budget
 - c. Atmospheric stability
 - d. Formation of mineral deposits

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