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UNIVERSITY OF GHANA

DEPARTMENT OF TEACHER EDUCATION

SCHOOL OF EDUCATION AND LEADERSHIP

COLLEGES OF EDUCATION

END OF SEMESTER ONE EXAMINATIONS FOR LEVEL 300, 2024/2025

B.ED. PROGRAMME

COURSE CODE: TEIS 333

COURSE TITLE: WEATHER AND CLIMATE

Instruction: Answer **all** questions in Section A and any **three** questions in Section B.

Time: 2 hours

SECTION A

[25 Marks. Each Question is 1 Mark]

Answer all the questions in this section.

1. In which layer of the earth's atmosphere is the ozone layer at its maximum?
   A. The troposphere
   B. The mesosphere
   C. The thermosphere
   D. The stratosphere
2. Which of the following instruments would be used for measuring the speed of wind?
   A. Wind vane
   B. Anemometer
   C. Thermometer
   D. Rain gauge
3. The heating of the atmosphere from the earth's surface occurs mainly through a process known as
   A. Shortwave radiation
   B. Surface albedo
   C. Convection
   D. Diffused radiation
4. In Koppen's classification of climates, the letter C represents to?
   A. Tropical
   B. Steppe
   C. Mediterranean
   D. Humid sub-tropical

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5. The dry adiabatic lapse rate refers to the fall in temperature with height of
   A. 0.0065°C per 1000m
   B. 0.065°C per 1000m
   C. 0.65°C per 1000m
   D. 6.5°C per 1000m
6. Which of the following is wrongly paired?
   A. Evaporation→ Gallons
   B. Atmospheric Pressure→ Milibars
   C. Humidity→ Percent (%)
   D. Wind speed→ Knot
7. ..... refers to the rate of change of pressure of winds over horizontal distance
   A. Chinook Winds.
   B. Polar high pressure belt
   C. Pressure gradient force
   D. Upper mid latitude
8. Orographic rain is likely to form when warm moist winds
   A. Rise over mountains
   B. Blow across hot deserts
   C. Rise over cool dry ones
   D. Blow over ocean currents
9. Large temperature ranges occur
   A. Over the ocean
   B. In areas of intense cold
   C. In equatorial regions
   D. In continental interiors
10. Winds whose direction is reversed from one season to the other are called the
   A. Harmattan
   B. Fohn
   C. Moonsoon
   D. Mistral
11. ..... is the region of calm, weak and changeable winds.
   A. Equatorial low-pressure belt (0°)
   B. Equatorial high-pressure belt (100°)
   C. Semi equatorial belt
   D. Dry equatorial belt
12. Carbon dioxide gives rise to the greenhouse effect because it
   A. Absorbs water vapour from the atmosphere
   B. Prevents ultraviolet rays from reaching the earth's surface
   C. Traps the heat that the earth's surface radiates
   D. Increases the rate of evaporation from the earth's surface.
13. In which layer of the atmosphere that temperature increase with altitude due to the absorption of solar radiation by the ozone layer?
   A. Stratosphere
   B. Troposphere
   C. Mesosphere
   D. Thermosphere

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14. Which of the following is an example of weather?
    A. The average temperature in a city over 30 years.
    B. The number of hurricanes in the Atlantic Ocean in a decade.
    C. A thunderstorm that occurs on a specific day.
    D. The annual rainfall in a desert region.
15. If a weather station reports a temperature of 30°C, 75% humidity, and wind speeds of 15 km/h, which of measurements is an element of weather?
    A. They all represent elements of weather
    B. Temperature only
    C. Wind speed only
    D. Humidity only
16. What role do clouds play in Earth's atmosphere?
    A. They help increase atmospheric pressure.
    B. They reflect sunlight and help regulate temperature
    C. They prevent rain from occurring
    D. They prevent the movement of air masses
17. What does a hygrometer measure?
    A. Wind speed
    B. Humidity
    C. Atmospheric pressure
    D. Temperature
18. The boundary separating two converging air masses is known as?
    A. Occlusion
    B. Air pressure
    C. Cyclone
    D. Front
19. How was the Earth's atmosphere initially formed?
    A. Through volcanic outgassing from the Earth's interior
    B. By the collection of gases from the Sun
    C. By the condensation of water vapor into clouds
    D. By the collision of Earth with other celestial bodies
20. Which of the following is a Middle Level Cloud?
    A. Stratocumulus
    B. Altocumulus
    C. Cirrostratus
    D. Cumulus
21. A large body of air in the atmosphere with very similar characteristics of temperature and moisture conditions are called?
    A. Jet stream
    B. Clouds
    C. Air masses
    D. Winds

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22. Rainfall mixed pellets of iced-blocks is called:
    A. Hail
    B. Fog
    C. Dew
    D. Smog
23. In the Northern Hemisphere, winds traveling north appear to curve to the east because of?
    A. Polar easterlies
    B. Convection currents
    C. Pressure gradient
    D. Coriolis effect
24. John feels an ocean breeze as he plays volleyball at the beach. Why do ocean winds or sea breezes blow toward shore during the day?
    A. Earth's rotation causes air to blow toward land
    B. Ocean air is less dense, so it moves in to replace air over the land
    C. Air over the beach heats up, rises and is replaced by ocean air
    D. The energy of the ocean storms push air toward shore
25. The transfer of heat energy by means of horizontal motions through a medium is referred to as?
    A. Advection
    B. Radiation
    C. Conduction
    D. Insolation

SECTION B

[75 Marks]

Answer any three questions in this section

1. (a) Explain the term atmospheric pollutants [4 marks]
   (b) Examine **three** anthropogenic atmospheric pollutants [9 marks]
   (c) Highlight **three** effects of Anthropogenic Atmospheric Pollutants [12 marks]

2. Using land breeze and sea breeze, explain how Pressure Gradient Force (PGF) causes winds.

3. (a) Explain the term climate change to a senior high school student [4 marks]
   (b) Explain **three** human-induced causes of climate change [12 marks]
   (c) Suggest **three** ways to reduce the effect of climate change to a group of students in a senior high school.

4 a) What is heat transfer? [9 marks]
   b) Discuss the three processes of heat transfer [5marks]
   c) Discuss the processes of radiation balance [15 marks]

5a) With the aid of suitable diagrams, describe the three types of rainfall [5marks]
   5b) With specific examples, describe high, middle and low clouds [13marks]