Immaculate Conception High

CAPE Geography

Unit II

Module 1-Climate, Vegetation and Soils

Duration: Three sessions per week (1 hr and 45mins)

TERM 1 (weather and climate)

September

- **Global heat budget, including long and shortwave radiation and albedo.**
    i. Distinguish between Weather and Climate
    ii. Layers of the atmosphere and Atmospheric Composition
    iii. Long and short wave radiation
    iv. Albedo and its effect on surface climate
    v. Global heat budget
    vi. Factors (global) affecting temperature

- **Global surface and upper wind circulation including Jet Streams and Rossby Waves**
    i. Coriolis force and its effect
    ii. Factors influencing atmospheric circulation
    iii. Vertical and horizontal patterns of temperature and pressure
    iv. Factors influencing global patterns of pressure variation
    v. Characteristics of jet streams
    vi. How jet streams affect surface and upper level wind circulation
    vii. Characteristics of Rossby waves
    viii. How Rossby waves affect surface and upper wind circulation
    ix. Winds at ground level

October

- **Atmospheric moisture and humidity**
    i. Changes in atmospheric humidity
    ii. Process of condensation (factors influencing evaporation and condensation)
    iii. Types of precipitation
    iv. Mechanisms of raindrop formation(Bergeron Fiendeson and collision coalescence)
    v. Types of rainfall
    vi. Formation of different types of precipitation

- **Lapse Rate**
    i. Lapse rate
    ii. How lapse rate affects climatic conditions
    iii. Atmospheric stability, instability and conditional instability

November-December

- **Weather systems and air masses**

    i. Development of weather systems(Anticyclones, depressions, fronts, Hurricanes)
    ii. Weather conditions associated with different types of weather systems
    iii. How weather conditions changes with the passage of a weather system
    iv. How air mass influence weather and climate

TERM 2 (climate, vegetation and soils)

January

- **Meso and Micro climate**

  i. Effect of Land and sea breeze on local climate
  ii. Effect of Mountain and valley winds on local climate
  iii. Effect of Fohns on local climate
  iv. Define the term Micro-climate
  v. Concept of urban heat islands
  vi. Microclimate of urban, rural, mountain and forested areas.

- **Climate Change**

  i. Define climate change
  ii. Causes of long term and short term climate change
  iii. Effects of climate change
  iv. Solutions to climate change
  v. What is global warming
  vi. Effects of global warming
  vii. Solutions to global warming
  viii. Case study on global warming (Papua New Guinea)

February

- **Biogeography**

  i. Define biogeography and key terms associated with biogeography
  ii. Difference between primary and secondary succession
  iii. Types of vegetation succession
  iv. Factors influencing biome
  v. Nutrient cycles

- **Vegetation Types**

  i. Distribution and characteristic of tropical rainforest, tropical grasslands, temperate grasslands and northern coniferous forests.
  ii. Relationship between vegetation types and climate and human factors
  iii. Opportunities and problems associated with the development of the tropical rain forests.
  iv. Variations in vegetation in response to differences in rock type, altitude, slope angle and drainage in a local area.
  v. Vegetation studies using quadrats and transects

March

- **Soil formation and soil Conservation**

  i. Nature and Properties of soil
  ii. Processes of soil formation, including weathering, leaching
  iii. The interrelationships among parent rock, climate vegetation, topography, human activity and time on soil formation
  iv. The formation of soil types which develop under tropical rainforest and temperate grasslands.
  v. Study of soil horizon
  vi. Soil erosion and conservation

TERM 3

April

*REVISION AND WORKING ON PAST PAPERS