

- (ii) Describe the morphology of Calcareous foraminifera microfossils 5 marks
- (iii) Explain biogenetic origin of petroleum 7 marks
- (C) (i) Identify any three bacterial strains capable degrading petroleum products 3 mark
- (ii) State the importance of metallomonas microorganisms in the environment 2 marks

QUESTION TWO

- (a) (i) Explain why bioremediation is relevant tool for rehabilitation of petroleum hydrocarbon contaminated environment 6 marks
- (ii) Explain how metallomonas bacteria are capable of corroding metals 5 marks
- (b)(i) Describe characteristics of petroleum reservoir 7marks
- (ii) Distinguish between *insitu* and *exsitu* bioremediation methods 2 marks

QUESTION THREE

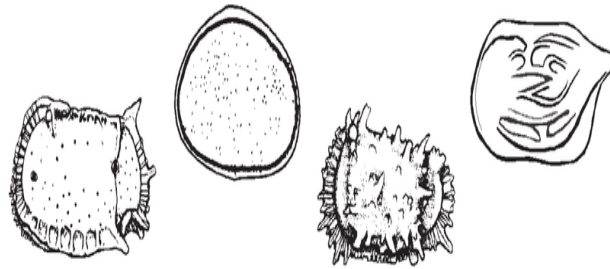
(a)(i) State any cause of acidification in the oceans

1 mark

Anthropogenic carbon dioxide (CO₂) emissions into the atmosphere.

(ii) Identify the microfossils shown below and state their significance in geology

4 marks



(ii) Discuss Palynomorph microfossils' structure and where they are commonly found 6marks

(b)(i) Explain importance of Pelagic and Benthic regions of the ocean

2 marks

(ii) Describe lentic hydrobiology

5marks

(iii) Distinguish between biosphere and lithosphere

2 marks

QUESTION FOUR

(a)(i) Explain the process of primary oil recovery during petroleum exploration

7 marks

(ii) Discuss the biological methods of controlling petroleum pollution

8 marks

(b) (i) Identify any three fungi genera used in bioremediation of petroleum pollutants 3 marks

(ii) Name any two gases which were abundant in the early development of Earth's atmosphere across geologic time 2 marks

QUESTION FIVE

(a)(i) Explain various sources of petroleum pollution 8marks

(ii) Other than bacteria and fungi describe any other organisms that are capable of xenobiotic degradation 6marks

(b)(i) State the role of hydrocarbonoclastic microorganisms in the environment 2 marks

(ii) Name the enzyme that introduces oxygen into hydrocarbon when degradation occurs in aerobic condition 1 mark

(iii) Explain importance of biostratigraphy in petroleum exploration 3 marks