

Kolhan University, Chaibasa

M.Sc. (Geology) Semester - IV, Core course (CC-9)

(Model Questions)

Full mark : 70

Answer five questions, of which Q.No. 1 is compulsory

(1) Answer the following :

1 × 10 = 10

- (i) The term 'groundwater' is commonly referred to water present _____
(a) in the zone of aeration (h) in the zone of saturation
(c) on the surface of the earth (d) below the surface of the earth.
- (ii) The upper surface of zone of saturation is known as _____
(a) water table (h) piezometric surface
(c) Vadose water zone (d) Soil-water zone
- (iii) A saturated but relatively impermeable rock that does not yield appreciable quantity of water to wells is known as _____
(a) aquiclude (h) aquifuge
(c) aquitard (d) aquifer
- (iv) Fluoride content in the drinking water, as recommended by WHO, ranges between _____
(a) 0.1 - 0.5 mg/l (h) 0.5 - 1.5 mg/l
(c) 2.0 - 3.0 mg/l (d) 3.0 - 3.8 mg/l
- (v) According to Darcy's law, the velocity of flow through porous media is proportional to the head loss and inversely proportional to the length of the flow path. (True/False)

- (vi) Darcy's law is valid between Reynold number 1 and 10 (True/False)
- (vii) The sum of specific yield and specific retention equals the porosity of the rock (True/False)
- (viii) The coefficient of permeability of the medium is known as _____.
- (ix) The safest foundation for dam construction is that when the rocks dip _____ the flow of water in the reservoir.
- (x) The main source of anthropogenic CO_2 emission in the atmosphere is _____ of fossil fuel.
- (2) What do you mean by aquifer? Describe different types of aquifers. (15)
- (3) Describe hydrologic cycle with neat diagram. (15)
- (4) What is artificial recharge to groundwater? Describe different methods of artificial recharge using rain water harvesting.
- (5) Describe groundwater provinces of India with their hydrological characteristics. (15)
- (6) Describe the geological considerations for selection of dam site. (15)
- (7) Describe the impact of mining activity on environment. Also discuss the remedial measures (15)
- (8) Describe the mining hazards with emphasis on mine inundation and mine fire. (15)

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M.Sc. (Geology) Semester - IV,
Elective (EC-4) Group A: Fossil Fuel Geology
(Model Questions) Full marks : 70

Answer five questions, of which Q.No. 1 is compulsory.

(1) Answer the following :

1 × 10 = 10

- (i) Crude petroleum consists of _____
 - (a) Compounds paraffin series
 - (b) Unsaturated hydrocarbons
 - (c) Compounds of benzene group
 - (d) all of the above
- (ii) The most productive petroliferous strata belongs to:
 - (a) Cambrian (b) Permian
 - (c) Triassic (d) Tertiary
- (iii) Ankleshwar oil field is situated in _____.
 - (a) Assam (b) Rajasthan
 - (c) Gujarat (d) Tamilnadu
- (iv) Kerogen is the product of anaerobic decomposition of organic matter (True/False)
- (v) The action of bacteria in the formation of petroleum is to eliminate the nitrogen content of the animal and vegetal matter (True/False)
- (vi) Oil and gas associated with one another (True/False)
- (vii) A geological structure in which oil and gas accumulate is known as _____.
- (viii) The detailed record of a borehole in hydrocarbon exploration is obtained by _____

Sem-IV, Ec-4

- (ix) A formation in which oil and gas may be confined because of change in porosity and permeability of strata rather than ~~as a~~ the result of structural attitudes, is called —
- (x) The relatively impermeable rock layer that seals the top of reservoir and other geological formation is called —
- (2) Give an account of Origin of petroleum. (15)
- (3) What is reservoir trap? Describe different structural and stratigraphic traps. (15)
- (4) Describe the following: (15)
- (a) Maturation of organic matter
 - (ii) Reservoir rock
- (5) Discuss the identification and characterization of petroleum source rock. (15)
- (6) Describe the geological and geochemical exploration of petroleum. (15)
- (7) Describe the geology of Digboi oil field of Assam. (15)
- (8) Discuss the ~~p~~ status of oil and natural gas in India. (15)

Answer sheet of Q.No.1 of Sem-IV

CC-9

- (i) - b , (ii) - a
(iii) - a , (iv) - h
(v) - True (vi) - True
(vii) - True (viii) - Hydraulic conductivity
(ix) - opposite to (x) - Combustion ~~of fossil fuel~~

EC-4 (Group A : Fossil Fuel Geology)

- (i) - a (ii) - d
(iii) - c (iv) - True
(v) - True (vi) - True
(vii) - Trap (viii) - Mud logging
(ix) - Stratigraphic trap (x) - Cap rock