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3 (Sem-6/CBCS) GLG HE 1

2022

GEOLOGY

(Honours Elective)

Paper : GLG-HE-6016

(Fuel Geology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct option : ***(any seven)***

$1 \times 7 = 7$

(a) The most important characteristics of reservoir rock is

- (i) porosity
- (ii) permeability
- (iii) fluid saturation
- (iv) All of the above

Contd.

(b) Which of the following rock types would most likely to be the best oil reservoir ?

- (i) Granite
- (ii) Sandstone
- (iii) Shale
- (iv) Basalt

(c) An oil trap contains

- (i) an impermeable layer
- (ii) a syncline
- (iii) a fault
- (iv) None of the above

(d) Which of the following is a brown coal ?

- (i) Lignite
- (ii) Anthracite
- (iii) Bituminous coal
- (iv) None of the above

(e) Cleat is the property of

- (i) petroleum
- (ii) coal
- (iii) groundwater
- (iv) All of the above

(f) Conversion of dead vegetation into coal is called

- (i) carbonization
- (ii) distillation
- (iii) coal gas
- (iv) natural gas

(g) Least polluting fuel for a vehicle is

- (i) coke
- (ii) kerogen
- (iii) diesel
- (iv) CNG

(h) The reservoir rock of Digboi oil field is

- (i) Tipam sandstone
- (ii) Kopili shale
- (iii) Barail shale
- (iv) Girujan clay

(i) CBM is found in coal seam of

- (i) shallow depth
- (ii) intermediate depth
- (iii) deep depth
- (iv) All of the above

(j) Lignite deposits are found in

- (i) Tamil Nadu
- (ii) Uttar Pradesh
- (iii) Bihar
- (iv) None of the above

2. Describe briefly the following : **(any four)**
2×4=8

- (a) Chemical constituents of coal
- (b) Humic coal
- (c) Maceral of coal
- (d) Kerogen
- (e) Nuclear fuel
- (f) Anthracite
- (g) Difference between source rock and reservoir rock
- (h) Salt dome

3. Write short notes on the : **(any three)**
5×3=15

- (a) Basic classification of coal
- (b) Proximate analysis of coal
- (c) Gas hydrate
- (d) Structural trap for petroleum
- (e) Hydrocarbon accumulation

- (f) Underground coal gasification
- (g) Coal liquefaction
- (h) Global distribution of hydrocarbon reserves

4. Answer the following questions : **(any three)**

10×3=30

- (a) Write in detail about lithotypes and microlithotypes of coal.
- (b) Define coal bed methane (CBM). Describe briefly the Indian scenario of CBM.
4+6=10
- (c) Describe in detail about the origin of petroleum.
- (d) Define kerogen. Give a brief description of the types of kerogen.
3+7=10
- (e) Write in detail about the mode of origin of coal.
- (f) Define hydrocarbon trap. Write an explanatory note on anticlinal theory of hydrocarbon trap.
3+7=10

- (g) Define cap rock and its function in petroleum accumulation. Explain different types of cap rock.

(2+3)+5=10

- (h) Write short notes on : 5+5=10

- (i) Chemical classification of reservoir rock
- (ii) Digboi oil field