

2018

GEOLOGY

(Major)

Paper : 6.4

(Fuel Geology and Mining Geology)

Full Marks : 60

Time : 3 hours

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

1. Answer the following as directed : $1 \times 7 = 7$

(a) Which of the following is a cyclic hydrocarbon?

- (i) Alkane
- (ii) Alkene
- (iii) Alkyne
- (iv) Aromatic (Choose the correct one)

(b) Which of the following is not a stratigraphic trap?

- (i) Channel trap
- (ii) Supraconformity trap
- (iii) Diagenetic trap
- (iv) Hydrodynamic trap

(Choose the correct one)

(c) Which of the following logging procedures measures flow of ions from concentrated to more dilute solution?

- (i) S-P logging
 - (ii) Neutron gamma logging
 - (iii) Induction logging
 - (iv) Acoustic logging
- (Choose the correct one)

(d) Which of the following is not true?

- (i) Methane is also known as 'marsh gas' if found at the surface.
- (ii) Methane is also known as 'fire damp' if present down a coal mine.
- (iii) Traces of methane is never recorded as shale gas.
- (iv) Methane is a colourless and flammable gas

(Choose the correct one)

(e) Your fingers will be soiled when you rub

- (i) vitrain
- (ii) durain
- (iii) fusain
- (iv) clarain

(Choose the correct one)

(f) Which of the following does not belong to vitrinite maceral group?

- (i) Tellinite
- (ii) Sporinite
- (iii) Collinite
- (iv) Resinite (Choose the correct one)

(g) The terms 'silicosis' and 'pneumoconiosis' are _____ related to _____.
(Fill in the blanks)

2. Write very briefly on the following : $2 \times 4 = 8$

- (a) Combination trap
- (b) Lithotypes of coal
- (c) Cut and fill mining method
- (d) Breast stoping

3. Write short notes on any *three* of the following : $5 \times 3 = 15$

- (a) Physical properties of hydrocarbon
- (b) Occurrence of uranium deposits in India
- (c) Solar energy
- (d) Longwall method of mining

4. What is geothermal energy? Describe the different geothermal systems. Briefly describe the functioning of a dry geothermal field power plant. $2+6+2=10$

Or

Write on the mode of origin of coal. Write briefly about the distribution of coal in North-East India. $6+4=10$

5. Describe how secondary migration of petroleum takes place in nature. Add a brief note on the phenomenon of 'clay mineral conversion'. $8+2=10$

Or

Define reservoir rock, source rock and cap rock. Write briefly on structural traps. Add a brief note on petroleum system. $3+4+3=10$

6. Write about different methods of sampling. Give an idea about the application of sampling. What are the factors need to be considered for sampling plan? $4+3+3=10$

Or

Write short notes on any two of the following: $5 \times 2 = 10$

- (a) Board and pillar method of mining
- (b) Mine ventilation and its significance
- (c) Sublevel caving method of mining

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