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B.E. (Petroleum)

CARBON MANAGEMENT IN PETROLEUM INDUSTRY

(2008 Course) (Elective - II) (Semester - I) (412385)

Time : 3 Hours]   *[Max. Marks : 100*

Instructions to the candidates:

1) *Answer Q.No.1 or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, from Section - I and Q.No.7 or Q.No.8, Q.No.9 or Q.No.10, Q.No.11 or Q.No.12 from Section - II.*

2) *Answers to the two sections should be written in separate answer books.*

3) *Neat diagrams must be drawn wherever necessary.*

4) *Figures to the right side indicate full marks.*

5) *Use of logarithmic tables,Slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*

6) *Assume Suitable data if necessary.*

SECTION - I

Q1) a) Draw neat schematic sketch of Carbon cycle in nature and write reasons for change in weather pattern.   **[6]**

b) Discuss the role of 'United Nations Framework Convention on Climate Change' (UNFCCC) in stabilizing green house gas concentration in the atmosphere?   **[6]**

c) Discuss Kyoto Protocol in brief? How it is helpful to control global warming and achieve sustainable development? Explain.   **[6]**

OR

Q2) a) How carbon credit related trading will be useful to minimize carbon emission? Explain with example.   **[10]**

b) Write the expectations from developing countries to minimize GHG Emission?   **[8]**

P.T.O.

Q3) a) Discuss impact of various green house gases on global warming, in brief. **[8]**

b) Describe different ways and means by which Industrialized countries with a green house gas reduction commitment can invest in emission reducing projects in developing countries as an alternative to costly emission reductions in their own countries. Also write the advantages of this. **[8]**

OR

Q4) Give the brief of operations and sources responsible for emission and various ways of carbon management in Industrial sectors Such as power, automobile, petroleum and refining. Elaborate at least for four areas in each of these. **[16]**

Q5) Describe in detail, design considerations of a project in which, both 'environmental benefits by reducing CO_2 concentration in the atmosphere and economical benefits by maximizing oil recovery is an immediate option to reduce carbon emissions. **[16]**

OR

Q6) a) Discuss in brief scope, challenges, and benefits involved in carbon dioxide flooding in deep geological formations or petroleum reservoir including carbon compression, transportation. **[8]**

b) Explain the role of any two largest carbon sinks and effect of excess carbon emission due to Industrialization on it, in brief. **[8]**

SECTION - II

Q7) Write in brief the working principle of different methods of renewable energy resources. **[18]**

OR

Q8) 'Industrialization and globalization have changed the context of business, accelerating economic growth and intensifying social and ecological risks and impacts,' Discuss in detail role of 'education for sustainable development' in this background. **[18]**

Q9) Why biomass energy is considered as a green technology? Write in brief any one method of manufacturing biofuels. State true or false and discuss in brief: 'controlled cultivation and consumption of biomass can provide sustainable energy by using biogas, vegetable oil, biodiesel, producer gas and gasifiers.

[16]

OR

Q10) Describe in detail scope, challenges and applications of Bio-energy. **[16]**

Q11) Describe any four of the following methods to reduce CO_2 emission. **[16]**

    a) Reduce dependence on hydrocarbons.

    b) Carbon sequestration.

    c) Develop new technologies to operate with cleaner and renewable fuels.

    d) Energy saving possibilities in Petroleum Industry.

    e) Minimize energy losses in transportation sector.

OR

Q12) Write short notes on, **[16]**

    a) One case study/ technology of emission reduction.

    b) Considerations for sustainable development.

    c) Efficiency in energy or power transmission.

    d) Clean Development Mechanism and Projects or Processes.

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