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| **Name:**<br>**Enrolment No:** | |

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**
**End Semester Examination, May 2022**

**Course: Physics and Chemistry of Earth** **Semester: II**
**Program: B. Sc. (Phy., Chem.), Int. B. Sc.-M.Sc. (Phy., Chem.)** **Time : 03 hrs.**
**Course Code: PEGS 7028** **Max. Marks: 100**

**Instructions: All questions are compulsory in all the sections; however, internal choice is given in Q 10 (Section C).**

**SECTION A**
**(5Q × 4M = 20Marks)**

| S. No. | Question | Marks | CO |
|---|---|---|---|
| Q 1 | Explain the significance of physics and chemistry to understand subsurface of the Earth. | **04** | **CO1** |
| Q 2 | Given that δ values of liquid water (lw) and water vapor (wv) in equilibrium at 10°C are: $\delta^{18}O_{lw} = -0.80‰$, and $\delta^{18}O_{wv} = -10.79‰$. Calculate are the values of $\delta_{lw-wv}$ and the fractionation factor $\alpha_{lw-wv}$ at 10°C. | **04** | **CO4** |
| Q 3 | List various major sub divisions and discontinuities of the Earth and illustrate them using a schematic diagram. | **04** | **CO3** |
| Q 4 | Describe coastlines of submergence. | **04** | **CO1** |
| Q 5 | Differentiate between<br>a) Primary and Secondary shorelines<br>b) Hawaiian type and Volcanian type of eruptions | **04** | **CO1** |
| | **SECTION B**<br>**(4Q × 10M = 40 Marks)** | | |
| Q 6 | Define Secular variations and magnetic disturbances. | **10** | **CO2** |
| Q 7 | Describe about abundance of elements in solar system. | **10** | **CO4** |
| Q 8 | Explain the main mechanisms for fractionation of stable isotopes. | **10** | **CO3** |
| Q 9 | Explain Nucleosynthesis and other theories of origin of elements | **10** | **CO4** |
| | **SECTION-C**<br>**(2Q × 20M = 40 Marks)** | | |
| Q 10 | Describe the scheme and classes in which various elements can be grouped based on their geochemical behavior.<br><br>**OR** | **20** | **CO3** |

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| | Evaluate physico-chemical features and types of coastlines and also describe about its significance,. | | |
| Q 11 | Describe in detail about formation of core with respect to Geochemical differentiation. | **20** | **CO4** |