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| Name: |  |
| Enrolment No: | |

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, June 2021

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| Course: Elements of Geochemistry | Semester: II |
| Program: B. Sc. Geology [Hons] | Time 03 hrs. |
| Course Code: PEGS 1005 | Max. Marks: 100 |

SECTION A

1. Each Question will carry 5 Marks
2. Instruction: Complete the statement / Select the correct answer(s)
3. All Questions are compulsory.
4. Type the answers.

| S. No. | Type the correct answers. | Marks | CO |
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| Q 1 | Define Lithophile, Siderophile and Chalcophile. | 5 | CO1 |
| Q 2 | Select True/False- i. It is not possible to know about the earth's interior by direct observations. i. Meteorites belong to the same type of materials earth is made of. ii. Continental crust is about 25 km thick, has a density around 1.7 g/cc. iii. Porosity has constant relationship with depth. | 5 | CO2 |
| Q 3 | Discuss the radioactive method use in Geochronology. | 5 | CO3 |
| Q 4 | Fill in the Blanks- i. Name of two elements of earth crust are..... ii. The mineralogical composition of Peridotite iii. Fenestral porosity develop only inRocks. iv. Unit to measure Permeability v. Density of Crust, Mantle and Core of the Earth are..... | 5 | CO4 |
| Q 5 | Define ore forming minerals. | 5 | CO1 |
| Q 6 | Give the major divisions of igneous rocks based upon the content of elements in the minerals. | 5 | CO2 |

SECTION B

1. Each question will carry 10 marks.
2. Instruction: Write short / brief notes.
3. Attempt all the Questions.
4. Scan and upload answers.

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| Q 7 | Explain the importance of dating in geology. Illustrate the Luminescence dating. | 10 | CO1 |
| Q 8 | Write a short notes on any two: i- Fundamental Principles of X-ray Powder Diffraction (XRD). ii- Weathering intensity-implication for Provenance. iii- Loss on ignition (LOI). | 10 | CO3 |

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| Q 9 | Discuss marine water geochemistry. How the physical marine process change the marine environment? | 10 | CO4 |
| Q 10 | Explain Darcy law with arranged diagram. | 10 | CO3 |
| Q 11 | A confined aquifer is 3.0 m thick. The piezometric level drops 0.15 m between two observation wells which are located 238 m apart. The hydraulic conductivity of the aquifer is 6.5 m/day and the effective porosity is 0.15. Determine the Discharge of groundwater through a strip of the aquifer having 10 m width? | 10 | CO3 |
| SECTION-C | | | |
| 1. Each Question carries 20 Marks. 2. Instruction: Write long answer. 3. Scan and upload answer. | | | |
| Q 12 | Discuss the Components of the Hydrologic Cycle. Differentiate confined and unconfined aquifer. | 20 | CO4 |
| | OR | | |
| | Explain the complete process of sample collections from the field, and their preparation for geochemical investigation: Rock Eval pyrolysis, XRD and XRF analysis. | 20 | CO4 |