

Name:	
Enrolment	
No:	

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

Course: Engineering Geology and Groundwater Program: B. Tech GIE Course Code: PEGS 3019	Semester: V Time 03 hrs. Max. Marks: 100
--	---

SECTION A [5x4=20marks]

- 1. Each Question will carry 4 Marks**
- 2. Instruction: Complete the statement / fill the correct answer(s)**

S. No.	Question	CO
Q 1	List out the components of hydrological cycle	CO1
Q2	Define porosity, specific yield and specific retention	CO1
Q3	Define the Test for Uniaxial Compressive Strength.	CO1
Q4	(a) Hydraulic conductivity is maximum in(Granite/Sandstone) rock material (b) Materials that show substantial plastic deformation under external loading are called (brittle/ductile) materials (c) A rock body is deformed when it is subjected to(internal/external) forces. (d) Brazilian Test done to measure (Tensile/compressive) Strength	CO2
Q5	a) The aquifer behaviour is not controlled by (nature of the rock/ porosity/wind condition), b) An aquifer can hold water ...(Permanently/Temporarily) and the state of water is(state of flow/state of stagnancy) c) Capillary zone is formed in(zone of saturation/zone of aeration) d) Confine aquifer will have(water table/piezometric surface)	CO2

SECTION B[4x10=40marks]

- 1. Each question will carry 10 marks**
- 2. Instruction: Write short / brief notes**

Q 6	Explain the freshwater aquifer and saline water equilibrium with suitable sketch diagram.	CO3
Q 7	Elaborate the mechanism of assessing the threat of groundwater contamination due to surface disposal of waste material.	CO3

Q 8	Explain grouting. Define various methods of grouting in treatment of rock and soil.	CO4
Q 9	Explain the equation for NGI rock mass classification (Q values) used in the measurement of rocks in a tunnel or underground formation. OR Evaluate the key engineering aspects in site selection. How environmental factors can affects the sustainability of engineering structures	CO4
Section C [2x20=40marks]		
1. Each question will carry 20 marks. 2. Instruction: Write long answer.		

Q10	Identify the various components of Dam and Reservoir with sketch diagram. Evaluate the merits/demerits of different types of Dams and reservoir	CO5
Q 11	Define RQD index. Explain how RQD is calculated from the study of rock cores obtained from rotary drilling. From a 30 m-deep drill hole, the core recovery for each 3 m run of drilling from the top towards the bottom is as follows: 0.2 m, 0.5 m, 1.5 m, 1.4 m, 1.9 m, 2.5 m, 0 m, 2.2 m, 2.6 m, and 2.9 m. Calculate the rock quality of drill cores. State the method of measuring RQD of tunnel rock by volumetric joint count. OR Evaluate the remote sensing approach of identifying groundwater prospective zones under different terrains. Explain the key quality parameters limits to be tested for safe drinking of water. Illustrate the health hazard to human life caused by poor water quality.	CO6