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

Programme Name: M.Sc (Petroleum Geosciences)   Semester   : II
Course Name   : Hydrogeology   Time   : 03:00 hrs
Course Code   : PEGS 7011   Max. Marks: 100
Nos. of page(s)   : 2

SECTION-A (6 x 5=30)
Attempt all questions

Sl. No.	Answer in one or two lines (Draw sketches if necessary)	Marks	CO
Q1	What is the difference between hydraulic conductivity and permeability?	5	CO2
Q2	What is perched aquifer?	5	CO3
Q3	What is the difference between water table and potentiometric surface?	5	CO3
Q4	How you define a watershed?	5	CO1
Q5	Describe different methods/models of precipitation.	5	CO1
Q6	What is groundwater mining?	5	CO3

SECTION-B (5 x 10=50)
Attempt all questions

	Answer in few lines (Draw sketches if necessary)		
Q7	Describe the working principle of constant head permeameter.	10	CO2
Q8	What do you understand by homogeneous and isotropic media in terms of its hydraulic conductivity? Describe different combinations of homogeneity and anisotropy.	10	CO2
Q9	a. What is the difference between steady state and transient flow? b. What is specific yield and specific retention for water saturated soil?	10	CO3
Q10	a. Describe storativity for confined and unconfined aquifer. b. For a given aquifer hydraulic conductivity is 0.1m/hour and thickness of the aquifer is 15m. Calculate the transmissivity of the aquifer.	10	CO3
Q11	Describe different methods of groundwater exploration.	10	CO1

SECTION-C (20 x 1=20)
Attempt all

	Answer comprehensively (Draw sketches if necessary)		
Q12	In a pump test of an confined aquifer pumping rate is 0.5cubic-meter/sec. Drawdown is measured at two observation wells of linear distance of 100m (Well A) and 150m (Well B)	10 + 10 = 20	CO4

from the pumping well. With constant pumping rate depth to water level for Well A is 15m and for Well B 10m.
a. Make the proper sketch of this well test operation.
b. Considering aquifer thickness of 12m determine the hydraulic conductivity of the aquifer.