A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59A22

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Agriculture Engineering

15UAG922- GROUND WATER AND WELL ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Porosity is: CO1- R

(a) $S_y + S_r$ (b) $S_y - S_r$ (c) $S_y \times S_r$ (d) S_y / S_r

2. Water derived from magma, which is found deep in the soil: CO1- R

(a) Connate water (b) Magmatic water (c) Metamorphic water (d) Volcanic water

3. A plot of u versus W(u) on a standard log paper is: CO2- R

(a) Type curve (b) Standard curve (c) Log curve (d) Well curve

4. Law of times states that: CO2- R

(a) $r_1^2/t_1 = r_2^2/t_2$ (b) $r_1/t_1 = r_2/t_2$ (c) $r_1 \times t_1 = r_2 \times t_2$ (d) $r_1 + t_1 = r_2 + t_2$

5. In homogeneous artesian aquifer ____thickness of the aquifer is screened. CO3- R

(a) 70-80 % (b) 40-50 % (c) 50-60 % (d) 90-100 %

6. Pack- Aquifer ratio for fine and uniform material is: CO3- R

(a) 4:1 (b) 5:1 (c) 2:1 (d) 6:1

7. Air drilling is specially suitable for CO4- R

(a) Lime stone (b) Sand stone (c) Both (d) None of the above

8. Which is a simplest and most efficient disinfectant used in wells? CO4- R

(a) Chlorine (b) Charcoal (c) Calcium hypochlorite (d) None of the above

9. The fresh water-sea water interface has a_____ shape. CO5- R

(a) Parabolic (b) Elliptical (c) Circular (d) None of the above

10. Ghyben Herzberg equation for salt water intrusion is CO5- R

(a) $h_s=40h_f$ (b) $h_f=40h_s$ (c) $h_s=40/h_f$ (d) $h_f=40/h_s$

PART – B (5 x 2= 10 Marks)

11. Differentiate profiling and sounding. CO1- U

12. Define well slimness. CO2- R

13. Define infiltration galleries. CO3- R

14. List out the various methods for installation of well screens. CO4- R

15. Define pressure ridge. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Explain the various properties of aquifers with appropriate equations**.** CO1- U (16)

Or

(b) Explain the various geophysical techniques for ground water investigation**.** CO1- U (16)

17. (a) Explain partial penetration of wells with neat sketch. CO2- U (16)

Or

(b) Explain image well theory with neat sketch. CO2- U (16)

18. (a) Describe the design of infiltration galleries. CO3- U (16)

Or

(b) Describe the design of collector wells. CO3- U (16)

19. (a) Elaborate the various drilling methods for wells. CO4- U (16)

Or

(b) Explain the installation of well screens with neat sketch. CO4- U (16)

20. (a) Explain the different artificial recharging techniques. CO5- U (16)

Or

(b) Explain the various groundwater flow modeling techniques. CO5- U (16)