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

Question Paper Code: 59A22

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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. The net water balance equation can be written as CO1- R

   (a) P-Q-E-T-G = ΔS (b) P-Q+E+T-G = ΔS

   (c) Q- P-E+T-G = ΔS (d) P+Q+E+T+G = ΔS

2. A confined aquifer is also known as CO1- R

   (a) Confined aquifer (b) Semi confined aquifer

   (c) Artesian aquifer (d) Perched aquifer

3. Well slimness is CO2- R

   (a) l/r_w (b) R/r_w (c) l/R (d) r/R

4. For artesian wells, the radius of influence is assumed to be CO2- R

   (a) 300 m (b) 3000 m (c) 2000 m (d) 30 m

5. The thickness of gravel pack surrounding the well screen should be CO3- R

   (a) 5-10 cm (b) 10-20 cm (c) 20-30 cm (d) 40-50 cm

6. The entrance velocity near the well screen should not exceed CO3- R

   (a) 1-2 cm/s (b) 2-3 cm/s (c) 3-6 cm/s (d) 8-10 cm/s

7. Air drilling is specially suitable for CO4- R

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

8. Well loss can be expressed as CO4- R

   (a) BQ (b) CQ^2 (c) C/Q^2 (d) B/Q

9. 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) $h_f=40/h_s$

10. Construction of a line of recharge wells in coastal region to avoid sea water intrusion is known as CO5- R

(a) Pumping trough (b) Pressure ridge (c) Subsurface barrier (d) None of the above

PART – B (5 x 2= 10 Marks)

11. Define unconfined aquifer. CO1- U

12. Explain the validity of Darcy's law. CO2- R

13. Differentiate dug wells and tube wells. CO3- R

14. Give brief note on disinfection of well. CO4- R

15. How can we control sea water intrusion? CO5- R

PART – C (5 x 16= 80 Marks)

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

Or

(b) Explain the various properties of aquifers with appropriate equations**.** 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) Mention and explain the various materials used for well screens. CO3- U (16)

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

Or

(b) Write short notes on well development, well completion and well disinfection. CO4- U (16)

20. (a) Explain the Sea water intrusion with neat sketch. CO5- U (16)

Or

(b) Explain the groundwater potential and development in India. CO5- U (16)