

Printed Pages : 3



EAG-011

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 994011

Roll No.

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B. Tech.

(SEM. VII) (ODD SEM.)

THEORY EXAMINATION, 2014-15

RURAL WATER SUPPLY AND SANITATION

Time : 3 Hours]

[Total Marks : 100

Note : The Question paper is divided in to three sections.
Attempt each section.

SECTION-A

- 1 Attempt the following short answer type (10x2=20) question
- Explain the scope of rural supply water?
 - Describe the geometric design of roads.
 - What is various types of roads planning of rural roads?
 - Explain the source and characteristics of water supply.
 - Define the pavement design?
 - Explain the estimation of quantity for rural water supply.
 - Discuss the water treatment of methods.
 - What is National policy?
 - Explain the material for construction roads.
 - What is human rights and environment?

SECTION-B

- 2 Attempt any four parts: **(4×5=20)**
- (a) What are the factor considered while estimating the quantity of sewage of a small town?
 - (b) Discuss the comparative merits and demerits of the separate system and combined system of sewerage.
 - (c) A 30 cm dia sewer with an invert slope of 1 in 400 is flowing 1/3rd of full depth. Calculate the velocity and rate of flow in the sewer. Is it self cleaning velocity? Use $n=0.015$.
 - (d) Design a circular sewer for providing a residential colony in a town having the following data:
 - Area of the colony = 36 h.
 - Population = 6500
 - Pre-capita water consumption = 150 lphd.
 - Critical design rainfall intensity = 4 cm/hr.
 - General available ground slope = 1 in 800
 Assume any other data, not given, and if needed.
 - (e) Describe the laying of a sewer line in a trench.
 - (f) Design a septic tank for 30 users.

SECTION-C

- 3 Attempt any **two** of the followings : **(2x10=20)**
- (a) Describe the following methods of water distribution highlighting their advantages with figure :
 - (i) Gravitational system
 - (ii) Combined gravity and pumping system

- (b) What are different materials which are commonly used for water supply pipe? Discuss their comparative merits and demerits.
- (c) Discuss the factor for site selection of water treatment plant. Draw the flow sheet showing the different treatment units of water purification plant.
- 4 Attempt any **two** of the followings : **(2x10=20)**
- (a) What is water demand? Briefly discuss various types of demands to be covered in a water supply scheme.
- (b) What are the two major types of sources of water supply? Discuss the comparative merits and demerits of both these types of sources.
- (c) A gravity well has a diameter of 60 cm. The depth of water in the well is 50 meter before pumping is started, when pumping is being done at the rate of 2000 L/min. the drawdown in a well 15 meter away is 4 m. and in another well 20 m. away is 2.50 m. Determine :
- (i) Radius of Zero drawdown
- (ii) Coefficient of permeability
- (iii) Drawdown in the well
- 5 Attempt any **two** of the followings : **(2x10=20)**
- (a) What are specific issues and problems encountered in rural sanitation?
- (b) Describe briefly sanitary landfill method of refuse disposal.
- (c) Write short notes on any Two of the following;
- (i) Controlled dumping
- (ii) Composting
- (iii) Excreta disposal.