Total No. of Printed Pages:2

SUBJECT CODE NO:- H-448
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (Civil) (Sem-I)
Elective-I: Plumbing Engineering
[OLD]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: 1. Q. No.1 and Q.No.6 are compulsory.
2. Solve any Two questions from each section.
3. Assume suitable data if necessary.

Section– A

Q.1 Attempt the following. 10

I. Design a water supply system for 10 floors residential building of 36 flats, each flat is occupied by 5 persons. Ground floor for parking. Assume suitable data if necesssary. Use UPC-I-2017-India.

Q.2 (a) What is flood rim level in vent? Explain the basic floor rim level system in residential building with neat sketch. 07

(b) How will you select pump for water supply in residential building. Explain the procedure for calculating efficiency of centrifugal pump as per UPC-I-2017-India. 08

Q.3 (a) What is plumbing engineering? State the various objectives and application of plumbing engineering. 05

(b) Calculate the velocity and rate of flow in sewerhaving diameter 40cm with an invert slope of 1 in 600. Sewer in running full condition. Take Manning's constant N=0.015. Use UPC-I-2008-India. 10

Q.4 (a) Write in details DO'S and DONT'S for plumbing and sanitary work in detail. 07

(b) What is indirect waste? Under which circumstances, indirect waste is required. Explain with neat sketch. 08

Q.5 (a) What is trap? Enlist various types of traps. Explain all traps according to location and purpose in detail with neat sketch. 07

(b) What are the various types of pipes used in plumbing systems of building? Explain with neat sketches jointing methods of any four pipes in detail. 08

Section – B

Q.6 Attempt the following 10

I. A combined sewer of circular cross section is to be constructed for a colony. Design the sewer for following data.

1) Area to be covered by sewer line =100 hectors
2) Population = 90,000
3) Maximum velocity of flow=3 m/sec.

4) Time of entry=3 minutes
5) Time of flow=17 minutes
6) Rate of water supply=250 lit./head/day
7) Impermeability factor=0.50. Design as per UPC-I-2017-India.

Q.7 a) Explain the septic tank with neat sketch. Find the size of septic tank designed to serve 200 hostel students in village area. 07

b) Explain fitting suitability for following pipes for building sewers. 08
i) RCC ii) PVC iii) Vitreous china clay.

Q.8 a) What is rain water harvesting? Why rainwater is to be harvested? Explain rainwater harvesting system in case of residential building with neat sketch. 07

b) What is solar hot water? Explain solar hot water system for residential building with neat sketch. 08

Q.9 a) Explain various principles of good sanitary drainage system? Draw neat sketch of drainage plan by considering principles and explain working as per flow chart. 07

b) Explain with neat sketch one pipe and two pipe sanitary drainage systems in detail 08

Q.10 Attempt the Following (Any Five) 15

i. A PVC pipe of length 12m connected to a roof tank. Calculate the pressure at exit of pipe.
ii. If water flow rate at wash basin is 7 lit/minute with pipe diameter 1 inch, calculate velocity.
iii. If a customer complains their house has too little water pressure, what steps would you take to fix this problem?
iv. A residential apartment consist of eight floors having 2-BHK-3 flat and 1-BHK-3 flat on each floor. Find out demand of water supply for apartment.
v. What is the minimum rate of flow at all fixture of plumbing?
vi. Draw elevation of two pipe sanitary drainage system.