

BACHELOR OF ARCHITECTURE EXAMINATION, 2023-2024
(B. Arch. 3rd year 1st Semester)

SUBJECT: SERVICES & EQUIPMENT- I

Time : Three hours

Full Marks : 100

Instructions:

Answer for 100 marks

Use sketches wherever necessary

- Q.01.** Using a sectional sketch show how water is available in nature. Mention the names of different sources of water in nature. Describe how shallow wells, deep wells and artesian wells occur in nature. Tabulate quantitative requirements of water for various household purposes. **25**
- Q.02.** Mention the names of different materials that are used for making the water supply pipes. Draw and name the different types of joints used in water supply piping connections. Draw a 'P-trap' and an 'S-trap' used in drainage connections. Describe the role of water seal associated with traps. Using a sketch for a toilet, show how drainage piping is connected to two floor traps located 10 feet apart in the same toilet with slab. **25**
- Q.03.** With the help of appropriate sketches show how raw water is treated in a water treatment plant. **25**
- Q.04.** Define drainage, sewage, sewer and sewerage. Using an appropriate sketch of a single storeyed house with kitchen and a couple of toilets, show how the drainage lines should be proposed along with inspection pits, master trap, etc. Draw sketches of plans and sections for a lamp hole and a man hole. **25**
- Q.05.** Draw plan and section of a typical septic tank with soaking arrangement. Describe how sewage is treated and purified inside a septic tank. Calculate the capacity of a septic tank for 30 users. **25**
- Q.06.** Write an essay on fire protection for buildings. Use sketches for relevant illustration. **25**
- Q.07.** Describe the steps for finding out riser pipe sizes for calculation on water supply schemes undertaken for tall buildings. Solve the following:
Given: 20 storey building with 10 feet floor to floor height. 50 psi at public main. Men's and women's toilets are on alternate floors. There are 1 water closet, 2 pedestal urinals and 2 service sinks in each of the Men's toilets. There are 3 water closets and 2 service sinks in each of the Women's toilets. Except for the top three floors (where flush tank typed fixtures would be used), all floors would be served with flush valve typed fixtures. Limiting pressure (not to exceed) at any fixture is 50 psi. Calculate the riser pipe sizes. Assume appropriate data wherever necessary. **25**