AMEV-11 WATER SUPPLY ENGINEERING

OBJECTIVES:

The course objective is to identify the sources and quantity of surface and ground water bodies and their demand for the public and also to study the quality of water and their treatment techniques.

UNIT I PUBLIC WATER SUPPLY SCHEMES AND QUANTITY OF WATER

Necessary and objectives of public water supply schemes – planning and financing – Quantity of water – water requirements – continuous and intermittent supply – water demand – variations in rate of demand- its effect on design – design period – population growth and forecast – estimating the quantity of water required.

UNIT II HYDROLOGICAL CONCEPTS AND SOURCES OF WATER

Hydrological concepts – hydrological cycle – Sources of water – Intakes – types of intakes – infiltration galleries – infiltration well – storage reservoirs – storage capacity by analytical method and mass curve method – types of wells – sanitary protection of wells – tests for yield of a well.

UNIT III QUALITY OF WATER AND TRANSPORTATION OF WATER

Quality of water – portable water and mineral water – contamination of water – sampling techniques– analysis of water – Bacteriological analysis- water borne diseases – water quality standards. Transportation of water – Hydraulics of pipe flow – pipes & its types – design of pipes – Joints – pipe appurtenances – pumps – types of pumps – selection of pumps.

UNIT IV PURIFICATION OF WATER

Treatment of water- working principles of all the unit process of water treatment, Purpose and its design – screening – plain sedimentation – coagulation sedimentation – filtration – disinfection – water softening and Desalination– Operation & Maintenance aspects of all the unit process.

UNIT V OTHER TREATMENTS AND DISTRIBUTION OF WATER

Removal of Iron and Manganese – Fluoridation and Defluoridation– distribution of water – Planning – Methods of distribution – Service Reservoirs – purpose – types – locations and height – Design aspects – requirements of good distribution system – layout of distribution system- Net
work analysis – preventive methods to reduce wastage of water – pipe appurtenances – house service connection.

OUTCOMES:

The students completing the course will have

- an insight into the structure of drinking water supply systems, including water transport, treatment and distribution
- an understanding of water quality criteria and standards, and their relation to public health,
- the ability to design and evaluate water supply project alternatives on basis of chosen selection criteria

TEXT BOOKS :

Garg. S.K., "Water Supply Engineering", Khanna Publishers, Delhi, September 2001

Punmia B.C, Arun K.Jain, Ashok K.Jain, " Water supply Engineering" Lakshmi publication private limited, New Delhi, 1--8.

Birdie.G.S., "Water Supply and Sanitary Engineering", Dhanpat Rai and sons, 1--1.

REFERENCES :

Fair. G.M., Geyer.J.C., "Water Supply and Wastewater Disposal", John Wiley and Sons, 1-54.

Babbit.H.E, and Donald.J.J, "Water Supply Engineering" , McGraw Hill book Co, 1-84.

Steel. E.W.et al., "Water Supply Engineering" , Mc Graw Hill International book Co, 1-84.

4. Duggal. K.N., "Elememts of public Health Engineering", S.Chand and Company Ltd, New Delhi, 1--8.

Mark J. Hammer & Mark J. Hammer Jr., "Water and Waste Water Technology", Prentice Hall of India Pvt. Ltd., New Delhi, 2008.