

**FURTHER DETAILS REGARDING MAIN TOPICS OF
PROGRAMME NO. 08/2015 (Item No. 22)**

**TECHNICIAN GRADE II
(BOILER OPERATOR)**

**KERALA CO-OPERATIVE MILK MARKETING
FEDERATION LIMITED**

(CATEGORY Nos. 5/2013)

PART I

MODULE I STEAM BOILERS

- 1-1 Function of a Boiler
- 1-2 Classification of boilers
- 1-3 Terms commonly employed in connection with boilers
- 1-4 Lancashire and Cornish boilers
- 1-5 Multi-tubular fire tube boilers: Economic boilers:
- 1-6 Horizontal Return Tubular boilers:
- 1-7 Locomotive boilers
- 1-8 Vertical boilers
- 1-9 Cochran Boilers:
- 1-10 Scotch Marine fire-tube boiler:
- 1-11 Water tube boilers:
- 1-12 Babcock & Wilcox longitudinal drum water tube boilers (Straight tube type water tube boiler):
- 1-13 Stirling boilers (Bent tube type water tube Boiler):
- 1-14 Integral furnace boiler:
- 1-15 Waste heat boilers:

MODULE II BOILER MOUNTINGS AND ACCESSORIES

- 2-1 Steam boiler mountings:
- 2-2 Safety valves:
- 2-3 Water level indicators:
- 2-4 Pressure gauge:
- 2-5 An attachment for inspector's test gauge:
- 2-6 Steam stop valve:

- 2-7 Feed check valve:
- 2-8 Blow off cock:
- 2-9 Manhole:
- 2-10 Fusible plug
- 2-11 Economisers
- 2-12 Air pre-heaters
- 2-13 Superheaters
- 2-14 Feed pumps
- 2-15 Injectors

MODULE III DRAUGHT

- 3-1 Definition of draught
- 3-2 Classification of draught
- 3-3 Functions of a chimney
- 3-4 Natural draught
- 3-5 Determination of a height of a chimney to produce a given total static draught
- 3-6 condition for maximum discharge through a chimney
- 3-7 Efficiency of a chimney
- 3-8 Draught losses
- 3-9 Artificial draught
- 3-10 Advantages of mechanical draught
- 3-11 Induced draught
- 3-12 Forced and balanced draught
- 3-13 Power required to drive a fan
- 3-14 Steam jet draught

MODULE IV PERFORMANCE OF BOILERS

- 4-1 Evaporation
- 4-2 Boiler performance
- 4-3 Equivalent evaporation
- 4-4 Boiler trial
- 4-5 Boiler house instruments
- 4-6 Boiler house records

MODULE V PROPERTIES OF STEAM

- 5-1 Conservation of form
- 5-2 Effect of pressure on the boiling point of water
- 5-3 Conditions of steam

- 5-4 Saturated steam
- 5-5 Dry saturated steam and wet steam
- 5-6 Superheated steam
- 5-7 Supersaturated steam
- 5-8 Properties of steam
- 5-9 Methods of determination of dryness fraction of steam

MODULE VI FUEL

- 6-1 Classification of fuels
- 6-2 Solid fuels
- 6-3 Liquid fuels
- 6-4 Hydrocarbons
- 6-5 Calorific value of fuels
- 6-6 Calorific value of gaseous fuel
- 6-7 Experimental determination of calorific value of a fuel
- 6-8 Bomb calorimeter
- 6-9 Calorific value of liquid fuels
- 6-10 Calorific value of gaseous fuels

MODULE VII COMBUSTION OF FUELS

- 7-1 Combustion of a fuel
- 7-2 Minimum quantity of air required for complete combustion of 1kg of solid or liquid fuel
- 7-3 Excess air
- 7-4 Determination of the gas analysis by mass and by volume
- 7-5 Determination of air supplied from volumetric analysis of flue gases.
- 7-6 Determination of air leakage in boiler flues
- 7-8 Calculation of heat losses
- 7-9 Flue gas analysis

MODULE VIII UNITS OF MEASUREMENT

- 8-1 Systems of units
- 8-2 Units of length, area and volume
- 8-3 Units of mass
- 8-4 Units of force
- 8-5 Units of work and power
- 8-6 Units of energy
- 8-7 Important measurements - Pressure
- 8-8 Important measurements-Temperature

- 8-9 Pyrometers
- 8-10 Volume
- 8-11 Quantity of heat
- 8-12 Mechanical equivalent of heat

MODULE IX BOILER WATER TREATMENTS

- 9-1 Mechanical Treatment
- 9-2 Chemical Treatment
- 9-3 Heat Treatment

PART II: GENERAL KNOWLEDGE, CURRENT AFFAIRS AND RENAISSANCE IN KERALA

General Knowledge

Facts about India

Geography of India – Physical features – Climate – Soils – Rivers – Famous sites – etc.

Demography – Economic and social development – Poverty alleviation – Economy and planning – etc.

History of India – Period from 1857 to 1947 – National movement

Facts about Kerala

Geographical Facts – Physical features – Climate – Soils – Rivers – Famous sites – etc.

Renaissance in Kerala

Important Events/Movements/Leaders

Brahmananda Swami Sivayogi, Chattampi Swami, Sree Narayana Guru, Vagbhatananda, Thycaud Ayya, Ayya Vaikundar, Poikayil Yohannan (Kumara Guru), Ayyankali, Pandit Karuppan, Mannathu Padmanabhan, V.T.Bhattathirippad, Dr. Palpu, Kumaranasan, Vakkom Moulavi, Blessed Kuriakose Elias Chavara, Etc.

Current Affairs

Important world, national and regional events related to the political and scientific fields, sports, cinema and literature etc.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.