

W'11:1 AN:MC 411 (1501)

REFRIGERATION AND AIR-CONDITIONING

Time : Three hours

Maximum Marks : 100

Answer FIVE questions, taking ANY TWO from Group A, ANY TWO from Group B and ALL from Group C.

All parts of a question (a, b, etc.) should be answered at one place.

Answer should be brief and to-the-point and be supplemented with neat sketches. Unnecessary long answers may result in loss of marks.

Any missing or wrong data may be assumed suitably giving proper justification

Figures on the right-hand side margin indicate full marks.

Use of steam table, refrigerant table, and psychrometric chart are permitted.

Group A

1. (a) Explain the principle of evaporative refrigeration system. 5
- (b) What are the advantages of sub-cooling of liquid refrigerant in vapour refrigeration system ? 5
- (c) A simple air-cooled system is used for aeroplane having a load of 10 ton of refrigeration. The atmospheric pressure and temperature are 0.9 bar and 10 °C, respectively. The pressure is increased

(Turn Over)

- (xiv) The compression device employed in steam jet refrigeration system is
 (a) liquid pump.
 (b) steam ejector.
 (c) vapour compressor.
 (d) condenser.

- (xv) The proper material for thermoelectric material is
 (a) semiconductor.
 (b) conductor.
 (c) magnetic.
 (d) copper.

- (xvi) The refrigerant R-744 stands for
 (a) carbon dioxide.
 (b) ammonia.
 (c) sulphur dioxide.
 (d) methyl chloride.

- (xvii) The refrigerant widely used in domestic refrigerators is
 (a) ammonia
 (b) carbon dioxide
 (c) R-22
 (d) R-134a

- (xviii) The difference between dry bulb temperature and wet bulb temperature is
 (a) dry bulb depression.
 (b) wet bulb depression.
 (c) relative humidity.
 (d) degree of saturation.

- (xix) The relative humidity during sensible heating
 (a) remains constant.
 (b) increases.
 (c) decreases.
 (d) can increase or decrease.

- (xx) In winter air-conditioning, the air is
 (a) cooled and humidified.
 (b) cooled and dehumidified.
 (c) heated and humidified.
 (d) heated and dehumidified.