

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

**B.TECH. DEGREE VI SEMESTER EXAMINATION IN MARINE ENGINEERING
JUNE 2020**

**MRE 1605 MARINE REFRIGERATION AND AIR CONDITIONING
(2013 Scheme)**

Time: 2hrs 30 Minutes [30 Minutes for Answering and Scanning/Uploading the page of the Answer Sheet per module]

Max. Marks: 70(14 per module)

INSTRUCTIONS

1. You have to be available in Google Meet on demand by the faculty.
2. You have to share your '**live location**' to the faculty before uploading the answer sheet.
3. You have to answer only one question .
4. Answer may not exceed one page of an A4 size paper in a standard handwriting, as far as possible.
5. If at all an answer goes beyond one page, (due to your handwriting) another page can also be used. In such a situation, the page number should be given as 1/2, 2/2.
6. You have to put dated signature along with Register Number, Subject Code, Module/Group Number (as given in the Question Paper) in each page.
7. You have to put the Question Number correctly.
8. After answering the question, you have to scan and upload the answer page.

MODULE - I

(Answer **ANY ONE** question)

- I(1). With regard to a vapour compression refrigeration system, discuss the following with the help of a p-H diagram: (14)
- (i) Work of compression
 - (ii) Heat rejection
 - (iii) Refrigerating effect
 - (iv) Coefficient of performance
 - (v) Mass flow rate
 - (vi) Compressor power
 - (vii) Volume flow rate

OR

- I(2). Sketch and describe a vapour compression system along with the p-H and T-S diagrams where superheating and sub-cooling of refrigerant is involved. (14)

MODULE - II

(Answer *ANY ONE* question)

II(1). Sketch and explain a compound refrigeration system with multi-stage compression and a flash chamber. (14)

OR

II(2). Briefly explain how to calculate the total heat load of a particular refrigeration plant. (14)

MODULE - III

(Answer *ANY ONE* question)

III(1). Explain the method of hot gas defrosting used in a vapour compression refrigeration system with the help of a sketch. (14)

OR

III(2). Describe a multiple temperature system of vapour compression refrigeration and explain how control of temperature is achieved in different refrigeration chambers, with the help of a simple sketch. (14)

MODULE – IV

(Answer *ANY ONE* question)

IV(1). With respect to air and water vapour mixture explain the following terms and highlight the significance of these in air conditioning: (14)

(i) Dew point temperature

(ii) Dry and wet bulb temperatures

(iii) Relative humidity, specific humidity and absolute humidity

OR

IV(2). Explain the purpose and working of a cooling tower with the help of a neat sketch (14)

MODULE – V

(Answer *ANY ONE* question)

V(1). Sketch and describe a double duct air conditioning system. (14)

OR

V(2). Write short notes on the following: (14)

(i) Engine room ventilation

(ii) Battery room ventilation
