Seat No.

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MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Refrigeration & Air Conditioning

Sub. Code: 67501/83712/83947

Day and Date: MAY ,05-05-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Q1) Solve any two questions from the following: **[12]**

a. Derive an expression for Bell Coleman cycle with P-V & T-S diagram. **[6]**

b. A machine working on a Carnot cycle operates between 305 K and 260 K . Determine the C.O.P. when it is operated as ------ **[6]**
a. A refrigerating machine.
b. A heat pump
c. A heat engine

c. Enlist the methods of refrigeration.Explain in detail with neat sketch any one of them. **[6]**

Q2) Solve any two questions from the following: **[12]**

a. Sketch and explain the T-s and p-h diagrams for vapour compression cycles when the vapour after compression is **[6]**
i) Dry saturated and
ii) Wet

b. A Simple VCR Plant produces 5 TR. The enthalpies values at inlet to compressor, at exit from compressor and at exit from the condenser are 183.9, 209.41 and 74.6 kJ/kg respectively Estimate **[6]**
1. Refrigerant flow
2. The power required to drive the compressor
3. The C.O.P.

c. Differentiate between vapour absorption refrigeration and vapour compression refrigeration with neat sketch.

Q3) Solve any two questions from the following: **[12]**

a. Suggest a suitable refrigerant for following applications: **[6]**

1. Theatre air conditioning
2. Ice manufacturing unit.
3. Household refrigerator.
4. Split type air conditioner.
5. Cold storage.
6. Car air conditioning.

b. Write short note on- Cryogenics and its application **[6]**

c. Explain the following: **[6]**

1. Effect of ODP and GWP
2. Total Equivalent Warming Impact (TEWI)

Q4) Solve any two questions from the following: **[12]**

a. What is Fog air? Explain it with the help of psychrometric chart. **[6]**

b. Explain clearly the different stages of human body defence against variations of weather conditions during summer and winter. **[6]**

c. Explain with the help of neat sketch ERSHF, RSHF. **[6]**

Q5) Solve any two questions from the following: **[12]**

a. Explain the self regulatory system of the body against high temp. and low temp. exposure. **[6]**

b. Explain with nest sketch summer and year-round air conditioning systems. **[6]**

c. Enlist different Psychrometric Processes used in Air-conditioning. Explain any one **[6]**

Q6) Write short note on (any two) : **[10]**

a. Energy conservation in HVAC **[5]**

b. Concept of Green Building **[5]**

c. Heat loads in load estimation for Comfort application **[5]**

d. Duct design **[5]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (83712) Refrigeration & Air Conditioning Part 4 SEM 7
2] (101) Bachelor of Engineering (83947) Refrigeration & Air Conditioning Part 4 SEM 7
3] (101) Bachelor of Engineering (67501) Refrigeration & Air Conditioning Part 4 SEM 7