Seat No.

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OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Refrigeration & Air Conditioning

Sub. Code: 67501/83712/83947

Day and Date: Saturday ,13-12-2025 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Draw neat labelled diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

Q1) Solve any two **[12]**

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

b. A machine working on a Carnotcycle operates between305 K and 260 K .Determine the C.O.P. when it is operated as ------ **[6]**
1. A refrigerating machine.
2. A heat pump. &
3. A heat engine

c. Derive an expression for COP of a reversed Carnot refrigeration Cycle with the help of PV and TS diagram? **[6]**

Q2) Solve any two **[12]**

a. Differentiate betweenvapour absorption refrigeration and vapour compression refrigeration system with neat sketch **[6]**

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 183.9,209.41and 74.6 kJ/kg respectively Estimate **[6]**
1.Refrigerant flow
2.The power required to drive the compressor
3.The C.O.P.

c. Explain with neat sketch Simple Vapour compression cycle, **[6]**

Q3) Solve any two **[12]**

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

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

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

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

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

Q4) Solve any two **[12]**

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

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

c. With neat sketches explain psychrometric chart and air washer? **[6]**

Q5) Solve any two **[12]**

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

b. Explain in detail, cooling and heating load estimates. **[6]**

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

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

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

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

c. Duct design. **[5]**

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

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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