School of Aeronautics (Neemrana)

Question Paper For Back / Re-back Internal Assessment Examination (Theory) - Old Scheme i.e 2012 Syllabus

Instructions For Students / Faculty

Back / Re-back Internal Examination (Total 60 Marks, 2 Hrs, Syllabus From Beginning of The Session)

Total number of questions to be given are 10, each carrying 10 marks and it is compulsory to attend 2 questions from Part A and 4 questions from Part B. There is a choice of two questions out of four in part A and 4 questions out of 6 in Part B. Part A will be theoretical or derivation type **(Not More Than 70 Words For Question).** Part B will be fully numerically oriented questions **(Not More Than 70 Words For Question)**, except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

* LIST OF ELABORATIVE THEORY QUESTION SUBJECTS: Aircraft Materials, Aircraft System, Aircraft Rules & Regulation-I, Mechanics of Composite Materials, Aircraft Design, Aircraft Rules & Regulation-II, Avionics-I, Helicopter Theory, Maintenance of Airframe and System Design, Avionics-II, Airlines and Airport Management, Maintenance of Power Plant & Systems

FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'B' OF QUESTION PAPER

STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION

Question Paper & Student Details

Name of Faculty*	Sidhartha Sondh	**Date of Submission of QP**	15/03/2021
Subject*	7MH4 - Refrigeration and Air Conditioning (Old)	**Date of Examination***	15/03/2021
Email Id of Faculty:*	sidharthasondh@soaneemrana.org	**Course***	B.Tech (Mechatronics Engineering)
Phone Number of Faculty*	963 455 7511	**Semester***	Semester : 7

Student Name

Student Reg No.

Part A

Question : 1* Explain the need of multi-stage compressor and evaporator in a refrigerator.

Lesson Plan*	8	**Topic***	Multi-stage	**Source***	Refrigeration and air Co

Question : 2*

Explain the concept of dehumidification.

Lesson Plan* 24   **Topic*** Human Comfort   **Source*** Refrigeration and air Cc

Question : 3*

Describe about psychometric charts.

Lesson Plan* 20   **Topic*** Psychometry   **Source*** Refrigeration and air Cc

Question : 4*

Explain reversed Carnot cycle in detail.

Lesson Plan* 3   **Topic*** Reversed Carnot cycle   **Source*** Refrigeration and air Cc

Part B

Question : 1*

Enlist the procedure for cooling load calculations.

Lesson Plan* 26   **Topic*** Cooling load   **Source*** Refrigeration and air Cc

Question : 2*

Ambient air temperatures during summer and winter in are 45 °C and 15 °C respectively. Find values of COP for air conditioner for cooling and heating, corresponding to refrigeration temperatures of 5 °C for summers and heating temperature of 55 °C of winter. If water from cooling-tower at 30 °C is used as cooling medium with 3 °C temperature differential for air-conditioning in summer, what is COP for cooling?

Lesson Plan*	6	**Topic***	Vapor Compression cycle	**Source***	Refrigeration and air Cc

Question : 3*

The air-handling unit of an air conditioning plant supplies a total of 4500 m3/min of dry air which comprises by weight 20% fresh air at 40 °C DBT and 27 °C WBT, and 80% recirculated air at 25 °C DBT and 50 % RH. The air leaves the cooling coil at 13ºC saturated state. Calculate the total cooling load, and room heat gain.

Lesson Plan*	22	**Topic***	Psychometry	**Source***	Refrigeration and air Cc

Question : 4*

A vapor-compression cycle using refrigerant R22 operates at condensing temperature of 36 °C and evaporative temperature of -16 °C. For a system capacity of 55 kW, calculate:
a) Mass flow rate
b) Compressor power
c) Refrigerating effect
d) Coefficient of performance.
Enthalpy of refrigerant at the end of evaporator is 398.64 kJ/kg, at the end of compressor is 428 kJ/kg and enthalpy at inlet of expansion-valve is 244.34 kJ/kg.

Lesson Plan*	6	**Topic***	Vapor compression cycle	**Source***	Refrigeration and air Cc

Question : 5

Describe summer air conditioning system with ventilation air bypass factor.

Lesson Plan	24	**Topic**	Human comfort	**Source**	Refrigeration and air Cc

Question : 6

Make a complete analysis for the vapor compression cycle with the help of p-h diagram and T-S diagram.

Lesson Plan	8	**Topic**	Vapor compression cycle	**Source**	Refrigeration and air Cc

Upload Scanned Document In Case of Numerical or Diagram for any of the above question

Choose files or drag here

Mention question number with relevant fig / numerical / equations.
Max 150 KB

I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.