Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGINEERING – SEMESTER –VI • EXAMINATION – WINTER 2015

Subject Code: 2361907 **Date: 08/12/2015**

Subject Name: Refri. and A/C

Time: 02:30 PM TO 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Each question carry equal marks (14 marks)**

Q.1 (a) Define the terms (any seven) **07**
(1) T.R. (2) C.O.P (3) R.H. (4) I.C.L (5) C.F. (6) B.F.
(7) SHF (8) Dew point Temperature (9) Relative humidity.

(b) Any four air-conditioning process explain on psychometric chart. **04**

(c) List the human comfort condition for India. **03**

Q.2 (a) List the various refrigeration system. Explain Vapor Compression refrigeration system. **04**

(b) List the various tubing operation and explain any one **03**

(c) Derive The Equation of C.O.P for BELL COLEMAN air refrigeration cycle. **07**

OR

(c) Explain ammonia water absorption refrigeration system. **07**

Q.3 (a) (1) Explain working of ice plant. **04**
(2) List various faults and remedies for split a/c **03**

(b) Explain desirable properties for ideal refrigerant. **07**

OR

(b) (1) Explain Silent Feature of an ideal insulator material. **04**
(2) Explain various air distribution outlet with sketch. **03**

Q.4 (a) List the various air conditioning and explain any one. **07**

(b) List the various heat sources (heat load) for air-conditioning design. **04**

(c) A thick wall 25 cm thick is faced with concrete of 5 cm thick. Thermal conductivity of bricks and concrete is 0.70 W/mkand0.95W/mk if the temperature of bricks and concrete is 30˚ C and 5˚C .Find the heat loss through wall of 10m X 5m. **03**

Q.5 (a) Solve the Following Example **04**
(1) A F12 vapor refrigeration system working with condensing temperature is 50˚C and evaporating temperature is 0˚C. The capacity of the system is 7 TR. determine (1).The mass flow rate of R12. (2)The heat rejection. (3) C.O.P. of the system (4) power of compressor.

temp˚C	Press (bar)	Hf (kj/kg)	Hg (kj/kg)	Sf(kj/kg-k)	Sg(kj/kg-k)
50	12	85	206	0.30	0.68
0	3	36	187	0.14	0.70

(b) A Carnot refrigerator required 1.5 kw per tonne of refrigeration to maintain at low temperature of -38˚C. Determine 1). C.O.P. 2) Higher temp. 3). C.O.P of heat pump. **03**

OR

(b) Explain sling psychometric **03**

(c) A bell Coleman cycle operate between 1 bar to 8 bar. Air is compress and cooled up to 29˚C and the temperature of cold chamber is 9˚C. the compression is follow by pv1.35 = constant. Calculate C.O.P Of the System and take cp=1.003 kj/kg-k and r =1.4. **07**

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