

Seat no: _____

Enroll.no.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING–SEMESTER–VI EXAMINATION–SUMMER 2015

Subject Code: 361907

Date: 06/05/2014

Subject Name: Refri. And A/C

Time: 10:30AM TO 1:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumption where ever necessary.
3. Figure to the right indicates full 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.

Q-1 (B) Any four air-conditioning process explain on psychometric chart. (04)

Q-1(C) List the human comfort condition for India. (03)

Q-2 (A) List the various refrigeration system. Explain Vapor Compression refrigeration system. (04)

Q-2(B) List the various tubing operation and explain any one. (03)

Q-2(C) Derive the Equation of C.O.P for BELL COLEMAN air refrigeration cycle. (07)

OR

Q-2(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)

Q-3(B) Explain desirable properties for ideal refrigerant (07)

OR

Q-3 (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)

Q-4 (B) list the various heat sources (heat load) for air-conditioning design. (04)

Q-4(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/mk and 0.95 W/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 Solve the Following Example

(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. (04)

temp $^{\circ}\text{C}$	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

(2) 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

(2) Explain sling psychometric (03)

(3) 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 $p v^{1.35} = \text{constant}$. Calculate C.O.P Of the System and take $c_p=1.003 \text{ kj/kg-k}$ and $r=1.4$. (07)
