S. B. Roll. No.....

REFRIGERATION AND AIR CONDITIONING
5th Exam/Mech./6853/Dec'22
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Fill in the blanks. **15x1=15**

a. The ratio of actual COP and theoretical COP is called_____
b. One ton of refrigeration is equal to _____kJ/min.
c. During a refrigerated cycle, heat is rejected by the refrigerant in a _____
d. In refrigeration, the sub-cooling _____COP
e. Chemical name of R-717 is _____
f. A ideal refrigerant should have _____boiling point.
g. A boot strap air cooling system has _____heat exchangers.
h. The simple air cooling system is good for _____flight speeds.
i. An Electrolux refrigerator works on the principle of _____
j. The vapour absorption refrigerator uses _____as refrigerant.
k. There are _____types of evaporators.
l. Evaporator used in house hold refrigerator is _____evaporator.
m. WBT stands for _____
n. Adding moisture to the air without change in dry bulb temperature is called _____
o. The curved lines on the psychrometric chart indicate _____

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. Write a note on ice refrigeration.
ii. Compare vapour compression cycle with reversed Carnot cycle.
iii. Write the difference between primary and secondary refrigerants.
iv. Explain the working of boot strap system with the help of T-S diagram.
v. Write a note on domestic electrolux refrigeration.
vi. Compare water cooled condenser with air cooled condenser.
vii. Explain sling psychrometer with a neat sketch.
viii. Discuss the factors which affect optimum effective temperature.
ix. Atmospheric air enters a heater at 5.5°C and 65% R.H. and leaves at a temperature of 20°C. Calculate heat supplied to the air and final R.H.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain actual vapour compression cycle with the help of T-S diagram.
b. Write the desirable properties of a good refrigerant.
c. Explain the working principle of lithium-bromide absorption refrigeration system.
d. Explain how the central air conditioning system works. Also list out its advantages and disadvantages.
e. The capacity of the refrigerator is 42MJ/min when working between -6°C and 25°C. Determine the mass of ice produced per day from water at 25°C. Also find the power required to drive the unit. Assuming that the cycle operates on reversed Carnot cycle and latent heat of ice is 335kJ/Kg.