A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59A01

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Agriculture Engineering

15UAG901- REFRIGERATION AND AIR CONDITIONING FOR AGRICULTURE ENGINEERS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. 1 bar pressure is equal to _____ Kg/cm^2. CO1- R

   (a) 1.0197 (b) 1.5026 (c) 2.1526 (d) 0.5071

2. _____ principle is considered to be best refrigeration cycle. CO1- R

   (a) Carnot cycle (b) Dual cycle (c) Brayton cycle (d) Joule cycle

3. Designation of refrigerant is given by_____ CO2- R

   (a) R (b) P (c) A (d) G

4. For obtaining high COP, the pressure range of compressor should be CO2- R

   (a) Brine solution (b) Low (c) CCl_3 (d) $CHCl_2$

5. Cooling water is required for following equipment in ammonia absorption plant CO3- R

   (a) Tripple point (b) Boiling point

   (c) Melting point (d) Condenser, absorber and separator (rectifier)

6. If both the wet bulb and dry bulb thermometers show same reading, then, RH is _____ percent. CO3- R

   (a) 50 (b) 100 (c) 90.9 (d) 25.9

7. In all water system, the external medium is _____. CO4- R

   (a) Air (b) Water (c) Air-Water (d) brine

8. The purpose of the humidifier in all air A.C system is to maintain the _____ CO4- R

(a) Air moisture (b) Temperature

(c) Air volume (d) Cleanliness

9. The bank of tubes at the back of domestic refrigerator is CO5- R

(a) Condenser tubes (b) $Q=1/KA\Delta T$ (c) $Q=mCp\Delta T$ (d) $Q=-UA\Delta T$

10. The COP of a vapour compression plant in comparison to vapour absorption plant is CO5- R

(a) More (b) Less (c) low (d) None of these

PART – B (5 x 2= 10Marks)

11. What is refrigeration? CO1- R

12. What is stroke length? CO2- R

13. What is sensible heating and cooling? CO3- U

14. What is the role of duct in A.C system? CO4- R

15. Difference between the LP and HP cutout. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain first and second law of thermodynamics with illustrations. CO1 -U (16)

Or

(b) Explain different methods of production of low temperatures. CO1- U (16)

17. (a) Explain thermodynamic properties of refrigerants CO2- U (16)

Or

(b) Derive the work of compression of an ideal reciprocating compressor refrigeration system. CO2- U (16)

18. (a) (i) Explain sensible heating and cooling processes. CO3- U (8)

(ii) Explain heating and dehumidification process CO3- U (8)

Or

(b) (i) What is the required wattage of an electrical heater that heats 0.1 m/s of air from 15^{o}C and 80% RH to 55^{o}C? The barometric pressure is 101.325 kPa. CO3- Ana (8)

(ii) Explain cooling and humidification process CO3- U (8)

19.	(a)	(i) Explain the advantages and disadvantages of unitary refrigerant based system of A.C.	CO4- U	(8)
		(ii) Explain dual duct constant volume system of air condition.	CO4- U	(8)
		Or		
	(b)	(i) Explain all water system of air conditioning	CO4- U	(8)
		(ii) Explain single duct variable volume system of air condition.	CO4- U	(8)
20.	(a)	Explain the process of milk chilling plant with neat sketch	CO5- U	(16)
		Or		
	(b)	Explain about steam jet refrigeration with neat sketch	CO5- U	(16)