KGC (22) 1071
(Revision - 2022)

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KERALA GOVERNMENT CERTIFICATE EXAMINATION IN REFRIGERATION AND AIR CONDITIONING – APRIL 2024

REFRIGERATION THEORY

[Maximum marks: **60**] [Time: **3** hours]

PART – A
(Maximum marks:* 20 x 1 marks = 20 marks*)

I. Answer the following questions by choosing the correct answer from the options given below. Each question carries **1** Mark.

Q.No.	Question	Module
1.	The feeler gauge is used to measure (A) Diameter (B) Length (C) Arc (D) Clearance between two mating surfaces	M1.1
2.	structural sections such as rails, angles, I- beams are made by (A) Hot rolling (B) Hot drawing (C) Hot piercing (D) Hot Extrusion	M1.1
3.	The consumable electrode is used in (A) Carbon Arc welding (B) Submerged arc welding (C) TIG Arc welding (D) MIG Arc Welding	M1.3
4.	The transformation ratio of a transformer is (A) I_2/I_1, (B) E_1/E_2 (C) N_2/N_1 (D) N_1/N_2	M1.2
5.	The work function of oxide coated surface is A) 1.leV (B) 4.52eV (C) 2.63eV (D) 0Ev	M1.2
6.	The relative coefficient of performance is equal to (A) C.O.P $_{relative} = \frac{q}{w}$ (B) C.O.P $_{Relative}$ = 1+C.O.P (C) $\frac{Actual\ C.O.P}{Theortical\ C.O.P}$ (D) $\frac{Theortical\ C.O.P}{Actual\ C.O.P}$	M2.1
7.	The efficiency of a power transformer is around. (A) 50% (B) 60% (C) 80% (D) 95%	
8.	In compound compression refrigeration system with intercooling, the optimum intercooler or intermediate pressured P2. When the cooling ratio is fixed is given by (A) $P_2 = P_1/P_3$ (B) $P_2 = P_3/P_1$ (C) $P_2 = P_1 X P_3$ (D) P2 = $\sqrt{P1P3}$	M2.2
9.	The Freon group of refrigerants are (A) Halocarbon refrigerants (B) Azeotrope refrigerants (C) Inorganic refrigerants (D) Hydro Carbon refrigerants	M2.1
10.	The dry ice is produced by (A) Drying the ice (B) Keeping ice in an insulated chamber (C) By solidifying liquid Co_2	M2.1

11.	In Electrolux refrigerator (A) Ammonia is absorbed in H_2 (B) Ammonia is absorbed in water (C) Ammonia evaporates in H_2 (D) Hydrogen evaporates in Ammonia	M3.1
12.	The clearance factor is the ratio of (A) Swept volume of the cylinder to the clearance volume (B) Total volume of the cylinder to the clearance volume (C) Clearance volume to the swept volume of the cylinder (D) Clearance volume to the total volume of the cylinder	M3.1
13.	The thermostatic expansion valve is also called (A) Constant pressure valve (B) Constant temperature valve (C) Constant superheat valve	M3.1
14.	The Evaporator used in household refrigerator is (A) Frosting Evaporator (B) Non frosting Evaporator (C) Defrosting Evaporator	M3.1
15.	The boiling point of ammonia is (A) -10.5^0C (B) -30°C (C) -33.3°C (D) -77.7°C	M3.2
16.	The refrigerant widely used in domestic refrigerator is (A) Ammonia (B) CO_2, (C) SO_2 (D) R-12	M3.2
17.	The minimum temperature to which water can be cooled in a cooling tower is (A) Dew point temperature of air (B) Wet bulb temperature of air (C) Dry bulb temperature of air	M4.1
18.	The natural convection air cooled condensers are used in (A) Domestic refrigerator (B) water cooler (C) Room air conditioners	M4.1
19.	In a scooter engine the cylinders in lubricated by (A) Pressure lubrication (B) Splash lubrication (C) Lubrication Plug (D) Mixing lubricating oil in the fuel	M4.1
20.	The process of removing the moisture from the food products is called (A) Heat processing (B) Dehydration (C) Canning (D) Pasteurisation	M4.1

PART - B

(Maximum marks:* 8 x 5 marks = 40 marks*)

II. Answer ***any eight*** questions from the following. Each question carries **5** Marks.

Q.No.	Question	Module
1.	Differentiate between cross peen hammer and Straight peen Hammer.	M1.1
2.	Two Resistances 6 Ω and 4 Ω are connected in parallel, find the effective Resistance	M1.2
3.	Sketch and explain Oxy acetylene welding torch	M1.3
4.	A machine working on a carnot cycle operate between 305k and 260k. Determine C.O.P. When it is operated (l) a refrigerating machine (2) a heat pump and (3) A heat engine	M2.1
5.	Comparison between centrifugal and reciprocating compressor.	M.2.2

6.	Define:- (a) Suction pressure (b) discharge pressure (c) compression ratio (d) volumetric efficiency (or pressure ratio)	M2.2
7.	Sketch simple evaporative refrigeration system.	M3.1
8.	Write U - factor for heat leakage in thermal insulation.	M3.2
9.	Write short notes on milk cooler.	M3.2
10.	What is green house effect?	M4.1
11.	Sketch tube in tube and shell and coil condenser.	M4.1
12.	Sketch automatic expansion valve and show main parts.	M4.1
