Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: MEC803 and Course Name: Refrigeration and Air-conditioning

Time: 1-hour Max. Marks: 50 ==============================================================================

Note to the students: - All the Questions are compulsory and carry equal marks.

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| Q1. | The degree of warmth or cold felt by a human body depends mainly on |
| Option A: | dry bulb temperature |
| Option B: | relative humidity |
| Option C: | air velocity |
| Option D: | dry bulb temperature, relative humidity and air velocity |
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| Q2. | **An ordinary passenger aircraft requires a cooling system of capacity** |
| Option A: | 2 TR |
| Option B: | 4 TR |
| Option C: | 8 TR |
| Option D: | 20 TR |
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| Q3. | **One ton of the refrigeration is** |
| Option A: | The standard unit used in refrigeration problems |
| Option B: | The cooling effect produced by melting 1 ton of ice |
| Option C: | The refrigeration effect to freeze 1 ton of water at 0°C into ice at 0°C in 24 hours |
| Option D: | The refrigeration effect to produce 1 ton of ice at NTP conditions |
|  |  |
| Q4. | The velocity of air in air blast freezing varies between--- |
| Option A: | 7 to 8 m/min |
| Option B: | 30 to 120m /min |
| Option C: | 8 to 10 m/min |
| Option D: | 14to 18 m/min |
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| Q5. | Vertical lines on pressure-enthalpy chart show constant |
| Option A: | pressure lines |
| Option B: | temperature lines |
| Option C: | total heat lines |
| Option D: | entropy lines |
|  |  |
| Q6. | The Ozone-Friendly refrigerant R-134a contains |
| Option A: | One chlorine atom |
| Option B: | Two chlorine atom |
| Option C: | Four chlorine atom |
| Option D: | Zero chlorine atom |
|  |  |
| Q7. | ........................ is defined as the ratio of the total sensible heat to the grand total heat which the cooling coil or the conditioning apparatus is required to handle. |
| Option A: | ERSH |
| Option B: | RSHF |
| Option C: | GSHF |
| Option D: | GTH |
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| Q8. | **The operation theatre in a hospital is to be air conditioned. Suggest the percentage of outside air being circulated in the theatre:** |
| Option A: | zero |
| Option B: | 20 |
| Option C: | 50 |
| Option D: | 100 |
|  |  |
| Q9. | In summer comfort cooling, the air of the occupied space should not have a relative humidity above |
| Option A: | 80% |
| Option B: | 60% |
| Option C: | 40% |
| Option D: | 20% |
|  |  |
| Q10. | **The fluids used in Electrolux refrigerator are** |
| Option A: | Water and hydrogen |
| Option B: | Ammonia and hydrogen |
| Option C: | Ammonia, water and hydrogen |
| Option D: | Ammonia, water and air |
|  |  |
| Q11. | **An important characteristic of absorption system of refrigeration is** |
| Option A: | Noisy operation |
| Option B: | Quiet operation |
| Option C: | Cooling below 0°C |
| Option D: | Very little power consumption |
|  |  |
| Q12. | The room air conditioner controls the--- |
| Option A: | temperature of the air |
| Option B: | temperature and humidity of the air |
| Option C: | *t*e*mp*erature and dust of air |
| Option D: | Temperature of moist air |
|  |  |
| Q13. | **Oil separator if fitted in between** |
| Option A: | Condenser and evaporator |
| Option B: | On the suction line |
| Option C: | compressor and condenser |
| Option D: | at the receiver outlet |
|  |  |
| Q14. | **In aircraft, the air refrigeration cycle is used because of** |
| Option A: | low weight per ton of refrigeration |
| Option B: | high heat transfer rate |
| Option C: | low temperature at high altitudes |
| Option D: | higher coefficient of performance |
|  |  |
| Q15. | ............... is the method used to protect milk against bacteria. |
| Option A: | Heat processing |
| Option B: | Dehydration |
| Option C: | Canning |
| Option D: | Pasteurization |
|  |  |
| Q16. | Cryogenics deal with temperatures around |
| Option A: | -50oC |
| Option B: | -90oC |
| Option C: | -180oC |
| Option D: | -250oC |
|  |  |
| Q17. | In traditional Air conditioners in home appliances, what is the type of condenser used? |
| Option A: | Natural convection type |
| Option B: | Forced convection type |
| Option C: | Flash Type |
| Option D: | Rotary condensers |
|  |  |
| Q18. | **The COP of a vapour compression system is \_\_\_\_\_\_ as compared to a vapour absorption system** |
| Option A: | more |
| Option B: | less |
| Option C: | same |
| Option D: | increase |
|  |  |
| Q19. | **A condenser of a refrigeration system rejects heat at a rate of 120 KW, while compressor consumes a power of 30 KW. The COP of the system would be** |
| Option A: | 1/4 |
| Option B: | 4 |
| Option C: | 3 |
| Option D: | 1/3 |
|  |  |
| Q20. | As the amount of clothing & activity level increases |
| Option A: | the surrounding DBT should be increased to maintain thermal comfort |
| Option B: | the surrounding DBT should be decreased to maintain thermal comfort |
| Option C: | the surrounding DBT remains constant to maintain thermal comfort |
| Option D: | Doesn’t depend on DBT to maintain thermal comfort |
|  |  |
| Q21. | **The COP of a domestic refrigerator in comparison to domestic air conditioner will be** |
| Option A: | Same |
| Option B: | More |
| Option C: | Less |
| Option D: | dependent on weather conditions |
|  |  |
| Q22. | **The condition of refrigerant after passing through the expansion or throttle valve, in a vapour compression system is** |
| Option A: | High pressure saturated liquid |
| Option B: | Wet vapour |
| Option C: | Very wet vapour |
| Option D: | Dry vapour |
|  |  |
| Q23. | **The COP of a domestic air conditioning in comparison to domestic refrigerator will be:** |
| Option A: | same |
| Option B: | less |
| Option C: | more |
| Option D: | depends upon weather conditions |
|  |  |
| Q24. | **Sling psychrometer is used to measure** |
| Option A: | only dry bulb temperature |
| Option B: | only wet bulb temperature |
| Option C: | dry and wet bulb temperature |
| Option D: | relative humidity |
|  |  |
| Q25. | If the evaporator temperature of a plant is lowered, keeping the condenser temperature constant, the h.p. of compressor required will be |
| Option A: | same |
| Option B: | more |
| Option C: | less |
| Option D: | more/less depending on rating |