

**039/2022**

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. The three factors that must be present in combination for a fire to continue to burn are :  
(A) fuel , heat, oxygen (B) fuel, light, oxygen  
(C) fuel, heat and carbon dioxide (D) none of these
2. Fires are classified into :  
(A) one type (B) two types  
(C) three types (D) four types
3. A vernier caliper is a precision measuring instrument it is used to measure upto an accuracy of :  
(A) 0.01 mm (B) 0.02 mm  
(C) 0.50 mm (D) 0.05 mm
4. Taps are used for :  
(A) drilling a hole (B) cutting external threads  
(C) cutting internal threads (D) measuring internal diameter of a hole
5. Which file is used for filing soft metals like brass, aluminium, bronze and copper :  
(A) double cut file (B) single cut file  
(C) curved cut file (D) rasp cut file
6. What thickness of metal sheets are called as plates?  
(A) sheets over 5 mm (B) sheets over 4 mm  
(C) sheets over 3 mm (D) sheets over 2 mm
7. Specify the thickness of a sheet metal having 24 SWG (Standard Wire Gauge) :  
(A) 0.71 mm (B) 0.51 mm  
(C) 0.56 mm (D) 0.61 mm
8. What is the storage volume (capacity) of gas in an oxygen cylinder?  
(A) 3 m<sup>3</sup> (B) 5 m<sup>3</sup>  
(C) 6 m<sup>3</sup> (D) 7 m<sup>3</sup>

A

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[P.T.O.]

9. What is the pressure Inside the Acetylene cylinder?  
(A) 120-150 kg/cm<sup>2</sup> (B) 80-100 kg/cm<sup>2</sup>  
(C) 15-16 kg/cm<sup>2</sup> (D) 18-36 kg/cm<sup>2</sup>
10. The Ammeter is used in :  
(A) combination of series and parallel circuit  
(B) in earth wire  
(C) parallel connection  
(D) series connection
11. The same current passes through each resistance in a :  
(A) parallel circuit  
(B) series circuit  
(C) combination of parallel and series circuit  
(D) none of these
12. Which law relates voltage, current and resistance of a circuit?  
(A) First law of thermodynamics (B) Ohm's law  
(C) Newton's law (D) Faraday's law
13. Which one is the three phase AC motor used in refrigerating machines?  
(A) split phase Induction motor (B) capacitor start induction run motor  
(C) shaded pole motor (D) slip ring induction motor
14. Which is the revolving part of single phase motor?  
(A) rotor (B) stator  
(C) terminal (D) condenser
15. The starting torque of a capacitor start motor is :  
(A) low (B) 0  
(C) more than rated torque (D) same as rated torque
16. The over load release protects the motor against :  
(A) over voltage (B) overload  
(C) over current (D) none of these

17. If a humming and chattering noise is observed in the starter then check for the :
- (A) current (B) overload  
(C) rated voltage (D) none of these
18. The diode used for voltage regulation is :
- (A) rectifier diode (B) zener diode  
(C) signal diode (D) tunnel diode
19. How many diodes are required to form a bridge rectifier?
- (A) 4 (B) 2  
(C) 1 (D) 3
20. In a refrigeration system which is used as heat transferring medium?
- (A) Evaporator (B) Condenser  
(C) Refrigerant (D) None of these
21. Which refrigerant absorb only sensible heat?
- (A) Secondary refrigerant (B) 134a  
(C) Primary refrigerant (D) R-12
22. Which is react with ozone and changes it into oxygen?
- (A) Carbon (B) Chlorine  
(C) Fluorine (D) Sulphur
23. The desirable quantity of a refrigerant :
- (A) Low boiling point (B) Well mixable with oil  
(C) High latent heat valve (D) All of the above
24. HC blend refrigerant is :
- (A) Freon (B) 134a  
(C) Sulphur (D) Ammonia
25. Refrigerant -500 is :
- (A) Ammonia (B) Aceo traps  
(C) Methane (D) Ethane

26. An ozone friendly refrigerant is :
- (A) Hydro fluorocarbon (B) Chlorine  
(C) Chloro fluorocarbon (D) Freon
27. G.W.P means :
- (A) Global warming protection (B) Gauge with pressure  
(C) Global warming potential (D) All of the above
28. Which is saturated carbon compound?
- (A) Sulphur dioxide (B) Ethane  
(C) Methane (D) Propylene
29. It is the process of replacing of a refrigerant from the system with another refrigerant :
- (A) Retrofitting (B) Gas charging  
(C) Evacuation (D) Leak testing
30. In a psychrometric chart the horizontal line indicates :
- (A) Dry bulb temperature (B) Humidity  
(C) Wet bulb temperature (D) None of these
31. A clamp meter is used to detect :
- (A) Current (B) Voltage  
(C) Resistance (D) All of these
32. Hygrometer is used to measure :
- (A) Air velocity (B) Heat  
(C) Humidity (D) Enthalpy
33. Dew point depression is :
- (A) Difference between dry bulb temperature and dew point temperature  
(B) Difference between wet bulb temperature and dew point temperature  
(C) Difference between dry bulb temperature and wet bulb temperature  
(D) Difference between humidity and enthalpy

34. Which one of the following have eliminators and spray nozzles?
- (A) Hygrometer (B) Air washer  
(C) Anemometer (D) Pressure gauge
35. During winter season which one of the following should be controlled with temperature in an air conditioning system?
- (A) Oxygen (B) Dew point  
(C) Pressure (D) Humidity
36. In a comfortable AC system the relative humidity should be :
- (A) 70% (B) 40%  
(C) 60% (D) 50%
37. Which is a psychrometric process?
- (A) Latent heat (B) Sensible heat  
(C) Sensible cooling (D) Specific heat
38. A device which is used to decrease moisture from an air conditioning system :
- (A) Air washer (B) Dehumiditie  
(C) Anemometer (D) Psychromete
39. An instrument used to measure air velocity :
- (A) Anemometer (B) Hygrometer  
(C) Mycrometer (D) Pressure gauge
40. Heat increases :
- (A) Temperature and size (B) Only temperature  
(C) Only pressure (D) None of these
41. Standard atmospheric pressure :
- (A) '0' (B) 20 Pound  
(C) 14.75 Pound/square inch (D) 50 Psi
42. Rectifier is a part of refrigeration system :
- (A) Mechanical (B) Absorption  
(C) Water vapour (D) All of these

43. In HVAC, "V" represents :
- (A) Variable refrigerant (B) Volumetric efficiency  
(C) Volume of refrigerant (D) Ventilation
44. Timer and heating coil is used with :
- (A) Conventional type refrigerator (B) Frost free refrigerator  
(C) Water cooler (D) Deep freezer
45. 'TON' of refrigeration is based on :
- (A) Ampere (B) Voltage based on  
(C) Litre (D) Melting of 2000 pounds of ice
46. The term drift related with cooling tower means :
- (A) Temperature of incoming water  
(B) Temperature of out going water  
(C) Temperature difference between incoming water and out going water  
(D) Loss of water
47. One of the advantages of heat exchanger in conventional type refrigerator is :
- (A) prevent wet compression  
(B) increase the flow of refrigerant to the compressor  
(C) prevent sub cooling  
(D) prevent super heating
48. Hydrocarbon gas charging should be done :
- (A) Level (B) Volume  
(C) Pressure (D) Weight
49. The weight of refrigerant for a cylinder can be calculated by the following correct formula is :
- (A)  $M = A \times d$  (B)  $M = V \times d$   
(C)  $M = d \times A$  (D)  $M = V \times a$
50. When moisture is present in refrigerant, it can lead to the formation of :
- (A) Hydrochloric acid (B) Carbon dioxide  
(C) Hydrogen (D) Peroxide

51. Which refrigerant is suitable for domestic refrigerator?  
(A) R-12 (B) R-22  
(C) HC blend (D) Ammonia
52. The Liquid refrigerant is purified filter drier and enters to the :  
(A) Compressor (B) Condensor  
(C) Capillary tube (D) Evaporator
53. The defrost refrigerator is an electric heater attached to the evaporator controlled by :  
(A) Timer switch (B) Relay  
(C) Overload protector (D) Thermostat switch
54. The condenser fins of refrigerator should be cleaned by :  
(A) Fin comb (B) Painting brush  
(C) Diluted acid (D) Soap solution
55. Which type of compressor motor is used in inverter refrigerator?  
(A) RSIR (B) BSIR  
(C) BLSR (D) BLDC
56. In refrigerator compressor keeps the working continuously, what is the reason of its defect :  
(A) Timer motor (B) Overload protector  
(C) Thermostat switch (D) Door switch
57. The capacity of water cooler is expressed in :  
(A) liters (B) K cal/TR  
(C) Cubic feet (D) Ton of refrigeration
58. Recently which type of insulation material is used in water cooler :  
(A) Cork (B) Poly urethane form  
(C) Thermocol (D) PVC
59. Which of the following insulating material does not absorb moisture in air due to the Environment?  
(A) Glass (B) Fibre glass  
(C) Lead (D) Saw dust

60. The melting temperature of Tin and Lead is :
- (A) 188 degree Celsius and 202 degree Celsius
  - (B) 201 degree Celsius and 212 degree Celsius
  - (C) 221 degree Celsius and 228 degree Celsius
  - (D) 232 degree Celsius and 327 degree Celsius
61. In working Deep freezer if the voltage drops, the compressor will be stopped by :
- (A) Thermostat
  - (B) Relay
  - (C) Timer
  - (D) Overload protector
62. The kind of wiring will be in small capacity of Defreezer are :
- (A) CSIR
  - (B) CSR
  - (C) RSIR
  - (D) PSC
63. Accumulation of ice in a defreezer can be diagnosed by :
- (A) Discolour the external body
  - (B) Cold spot on the outside surface
  - (C) Compressor run continuously
  - (D) Deteriorate the food stored inside
64. What happens if air present in ice?
- (A) Clear white ice is obtained
  - (B) Dark white ice is obtained
  - (C) No white ice is obtained
  - (D) Milky white ice is obtained
65. Name the instrument used to check the air velocity in window air conditioner :
- (A) Thermostat
  - (B) Anemometer
  - (C) Barometer
  - (D) Voltmeter
66. Select the physical condition of a filter/drier in a split ac unit if it is clogged :
- (A) Cool
  - (B) Hot
  - (C) Warm
  - (D) Normal
67. The condensing unit kept closer to the split ac unit in order to reduce :
- (A) Expense
  - (B) Pressure drop
  - (C) Line temperature
  - (D) Oil flow and viscosity



68. The split ac which contains one out door and more than indoor unit is known as :
- (A) Wall mounted split A/C (B) Ceiling mounted split A/C  
(C) Multi split A/C (D) Duct split A/C
69. The outer unit of split A/C fan motor have single shaft with a capacity of :
- (A) 1/4 HP at 220 V (B) 1/5 HP at 220 V  
(C) 1/6 HP at 220V (D) 1/8 HP at 220V
70. The recommended vacuum level of split A/C unit should be :
- (A) 50 microns/30 inches of Hg (B) 100 microns/30 inches of Hg  
(C) 150 microns/30 inches of Hg (D) 25 microns/30 inches of Hg
71. The cooling capacity of 1.5 Ton ductable split A/C is :
- (A) 12000 Btu/hour (B) 14000 Btu/hour  
(C) 16000 Btu/hour (D) 18000 Btu/ hour
72. Split A/C condensing unit should be installed at :
- (A) A dark place (B) Direct sun light area  
(C) Free air area (D) Enclosed room
73. Which type of cooling coil is used in defreezer Commonly?
- (A) Flooded type (B) Forced draft  
(C) Finned coil type (D) Natural draft
74. Floor level of bottle cooler to be checked by :
- (A) Using spirit level (B) Using tube level  
(C) Measuring scale (D) Outside caliper
75. All types of yeast will be destroyed when subjected to a temperature of :
- (A) 60°C (B) 80°C  
(C) 100°C (D) 120°C
76. The process of freeze-drying is also known as :
- (A) Dehydration by sublimation (B) Dehydration by boiling  
(C) Dehydration by evaporation (D) Both (B) and (C)

77. For unsaturated air :
- (A) D.B.T is greater than W.B.T                      (B) D.B.T is less than W.B.T  
(C) D.B.T is equal to W.B.T                         (D) D.B.T is one-half of W.B.T
78. Damper is used in Air conditioning plant for :
- (A) Controlling pressure                                (B) Controlling the flow of air  
(C) Controlling flow of water                         (D) Controlling flow of refrigerant
79. The process of cooling a liquid below its saturation temperature is called :
- (A) Condensation                                        (B) Super cooling  
(C) Freezing    (D) Sub cooling
80. What is the cause of high suction pressure and low discharge pressure of the compressor in ice plant?
- (A) Compressor pumping is poor                      (B) High ambient temperature  
(C) Compressor pumping is high                      (D) Low ambient temperature
81. What is meant by hydronic system?
- (A) Pressure control system                            (B) Pressure equaliser  
(C) Water distribution system in HVAC                (D) Humidity control system
82. Which of the following types of filters used in the air conditioning system is made of cloth that is discarded on getting dirty?
- (A) Viscous type filters                                 (B) Spray washers  
(C) Electric precipitators                               (D) Dry filter
83. Aspect ratio in rectangular duct should be kept within :
- (A) 4:1    (B) 5:1  
(C) 6:1    (D) 7:1
84. Which refrigerant is used in ice candy plant?
- (A) Ammonia    (B) R600a  
(C) R134a    (D) R22

85. Which process increases the specific humidity of air at constant dry bulb temperature?  
 (A) Humidification of air (B) Dehumidification of air  
 (C) Sensible heating of air (D) Sensible cooling of air
86. Which instrument is used to measure the total pressure in an air duct?  
 (A) Anemometer (B) Pitot tube manometer  
 (C) Hygrometer (D) Velocimeter
87. The air which is filtered by electronic filter, is passed from :  
 (A) Electrostatic field (B) Electrodynamic field  
 (C) Electromagnetic field (D) Electromotive field
88. \_\_\_\_\_ is the preservation of food in sealed containers, usually after the application of heat.  
 (A) Pasteurization (B) Dehydration  
 (C) Heat processing (D) Canning
89. \_\_\_\_\_ type expansion valve is used in Railway air-conditioning system.  
 (A) Automatic (B) Thermostatic  
 (C) Low side float valve (D) Hand operated
90. What is the purpose of adding dye to the car AC system?  
 (A) Lubricate the engine (B) Shine the car  
 (C) Identify the gas leak (D) Adding performance
91. What is the reason for Ice accumulating in drain pan of walk-in cooler?  
 (A) Fan not running (B) Lack of refrigerant  
 (C) Plugged suction filter (D) Defective heater
92. Which method prevents the foul smell of drainage entering the AHU?  
 (A) U-trap (B) Louvers  
 (C) Exhaust fan (D) Strainer
93. What is the other name of absolute filter?  
 (A) Fine filter (B) HEPA filter  
 (C) Bag filter (D) Course filter

94. The axial flow fans are particularly suitable for handling :
- (A) small volumes of air at relatively low pressures
  - (B) small volumes of air at relatively high pressures
  - (C) large volumes of air at relatively low pressures
  - (D) large volumes of air at relatively high pressures
95. Which control terminals are shorted before pump down operation in split package AC?
- (A) Selector switch
  - (B) Low pressure switch
  - (C) Dual pressure switch
  - (D) High pressure switch
96. Which is scheduled for yearly maintenance in package AC?
- (A) Clean the cooling tower
  - (B) Tighten the pump gland nut
  - (C) Tighten the blower belt
  - (D) Wash the air filter
97. Which device is used to measure the density of brine solution?
- (A) Thermometer
  - (B) Hydrometer
  - (C) Lactometer
  - (D) Hygrometer
98. What is the function of magnetic clutch in an automobile air conditioner?
- (A) Start and stop the compressor electro magnetically
  - (B) Start and stop the evaporator blower
  - (C) Check Rpm of engine shaft
  - (D) Check Rpm of compressor shaft
99. Which process decreases the dry bulb temperature of air at constant specific humidity?
- (A) Sensible heating of air
  - (B) Humidification of air
  - (C) Dehumidification of air
  - (D) Sensible cooling of air
100. What is the reason for short cycling of LP control switch in AC plant?
- (A) Excess of refrigerant
  - (B) Excess of water flow
  - (C) Shortage of refrigerant
  - (D) Shortage of water flow

**SPACE FOR ROUGH WORK**

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