

Railway Recruitment Cell

Post Name : Refrigeration and Air Conditioning Mechanic

Exam Code : MASSXAEF

Exam Date : 21-06-2024

Exam Time : 11:15AM

Question No. 1

One tonne of refrigeration is equal to about-

- A) 21 kJ/min
B) 211 kJ/min
C) 420 kJ/min
D) 620 kJ/min

Answer Key: B

Question No. 2

Filter driers are used to remove-

- A) Acid
B) Moisture
C) Solid contaminants
D) All of the options

Answer Key: D

Question No. 3

The term superheat refers to-

- A) Liquid refrigerant that is less than its saturation temperature
B) Vapour refrigerant that has temperature while leaving the evaporator
C) Vapour refrigerant that has temperature above its saturation temperature
D) Liquid refrigerant that has temperature while entering the evaporator

Answer Key: C

Question No. 4

The air containing moisture to its full capacity at a given temperature is called-

- A) Relative humidity
B) Superheat air
C) Specific humidity
D) Saturated air

Answer Key: D

Question No. 5

The term 'heat of respiration' refers to the-

- A) Heat load when a lid or door is opened
B) Heat leaking through insulation
C) Heat load from fresh fruits and vegetables
D) Heat source from the condenser

Answer Key: C

Question No. 6

Gauge pressure plus atmospheric pressure equals-

- A) Hot gas pressure
B) Cold air pressure
C) Head pressure
D) Absolute pressure

Answer Key: D

Question No. 7

The density of brines is checked with a-

- A) Thermometer
- B) Psychrometer
- C) Hydrometer
- D) Voltmeter

Answer Key: C

Question No. 8

Litmus paper is used to test the _____ of a liquid or substance.

- A) Softness
- B) pH balance
- C) Hardness
- D) Total dissolved salt

Answer Key: B

Question No. 9

The refrigerant gas in a refrigeration system will be at its highest temperature between the-

- A) Evaporator and expansion valve
- B) Compressor and condenser
- C) Expansion valve and evaporator
- D) Condenser and expansion valve

Answer Key: B

Question No. 10

The halide torch is used for _____ in the refrigeration system.

- A) Leak detection
- B) Oil miscibility measurement
- C) Pressure measurement
- D) Temperature measurement

Answer Key: A

Question No. 11

The freezing temperature of water is-

- A) 4 °C
- B) 2 °C
- C) 0 °C
- D) 1 °C

Answer Key: C

Question No. 12

The insulating material which is most widely used in the refrigerator cabinet is-

- A) Thermocole
- B) Glass wool
- C) Cork
- D) Polyurethane foam

Answer Key: D

Question No. 13

The result of a partially choked capillary in a refrigerator is-

- A) Low temperature in the evaporator
- B) Poor cooling in the system

C) More suction pressure

D) Poor condensation

Answer Key: B

Question No. 14

In a refrigerator, the excess oil which is pumped by the compressor will gather in the-

A) Condenser

B) Filter drier

C) Capillary tubes

D) Evaporator

Answer Key: D

Question No. 15

Which of the following refrigerant leakages can be identified using the sulphur stick method?

A) Ammonia

B) R-12

C) R-22

D) Sulphur dioxide

Answer Key: A

Question No. 16

Which of the following is a possible cause of the AC unit raising a hum and stopping?

A) Shortage of the refrigerant

B) Defective capacitor

C) Leakage of the gas unit

D) Clogging of the compressor suction strainer

Answer Key: B

Question No. 17

The oil used with the R134a refrigerant is-

A) Mineral oil

B) Polyol ester oil

C) Capilla D

D) Lubricating oil

Answer Key: B

Question No. 18

The difference between the DBT and WBT is called-

A) Wet bulb depression

B) Dewpoint depression

C) Effective temperature

D) Adiabatic saturation temperature

Answer Key: A

Question No. 19

Solenoid valves are operated-

A) By hand

B) By gas pressure

C) By oil pressure

D) Electrically

Answer Key: D

Question No. 20

What is the freezing point of pure ammonia?

A) -77.7 °C

B) -56.5 °C

C) -111 °C

D) -157.7 °C

Answer Key: A

Question No. 21

The purpose of the receiver in a refrigerator is to-

A) Meter the flow of refrigerant to the evaporator

B) Act as a storage chamber

C) Reduce the pressure of refrigerant

D) Change the refrigerant from a gas to a liquid

Answer Key: B

Question No. 22

For ammonia refrigerating systems, the tubes of a shell and tube condenser are made of-

A) Brass

B) Aluminium

C) Steel

D) None of the options

Answer Key: C

Question No. 23

The desert cooler works on the principle of-

A) Adiabatic saturation

B) Smart cooling

C) Dehumidification

D) Cooling and dehumidification

Answer Key: A

Question No. 24

_____ helps to restore air conditioners to its original condition, which improves both efficiency and prolonging lifespan.

A) Mechanical cleaning

B) Physical cleaning

C) Chemical cleaning

D) Outer cleaning

Answer Key: C

Question No. 25

The tank capacity of a air cooler is expressed in-

A) k.cal/TR

B) Cubic feet

C) Litres

D) Tons of refrigeration

Answer Key: C

Question No. 26

To start a single-phase induction motor, which type of starting capacitor is used?

A) Polyester capacitor

B) Ceramic capacitor

C) Paper capacitor

D) Electrolytic capacitor

Answer Key: D

Question No. 27

Which is the secondary refrigerant in an window air conditioner?

- A) Water
- B) Soluble oil
- C) Brine solution
- D) None of the options

Answer Key: A

Question No. 28

Why is deep vacuuming needed in a HVAC?

- A) To clean the refrigerant
- B) To clean the oil
- C) To remove rust or corrosion
- D) To remove moisture and non-condensable gases

Answer Key: D

Question No. 29

Which of the following is a commonly used refrigerant in commercial ice plants?

- A) CO₂
- B) Ammonia
- C) Air
- D) CO

Answer Key: B

Question No. 30

Which type of condenser generally requires chemical de-scaling?

- A) Air-cooled condenser
- B) Shell and tube condenser
- C) Forced air-cooled condenser
- D) Plate-type condenser

Answer Key: B

Question No. 31

At the time of installation more than 150 mm gap should be maintained in between-

- A) Evaporator and blower
- B) Roof top and ODU
- C) Ceiling and IDU
- D) Condenser and fan blade

Answer Key: C

Question No. 32

Before a leak test, pressurize a frost-free refrigerator with-

- A) Oxygen
- B) Hydrogen
- C) Refrigerant
- D) Dry nitrogen

Answer Key: D

Question No. 33

Where is the accumulator located in a refrigeration system?

- A) Inlet of evaporator
- B) Outlet of evaporator
- C) Inlet of condenser
- D) Outlet of condenser

Answer Key: B

Question No. 34

The pinch off tool is used in copper tubes for-

- A) Swaging
- B) Bending
- C) Sealing
- D) Flaring

Answer Key: C

Question No. 35

Which of the following is the disadvantage of a reciprocating compressor?

- A) Vibration during operation
- B) Being noisy
- C) Capacity limitation
- D) All of the options

Answer Key: D

Question No. 36

Which of the following is generally used in domestic refrigerator?

- A) Air-cooled condenser
- B) Water-cooled condenser
- C) Evaporative condenser
- D) None of the options

Answer Key: A

Question No. 37

The outdoor unit of a split air-conditioner consists of the-

- A) Compressor, evaporator, and expansion valve
- B) Evaporator, condenser and fan
- C) Condenser and compressor
- D) Evaporator, compressor, condenser, and fan

Answer Key: C

Question No. 38

The _____ air conditioner has multiple air outlets, all connected to one compressor.

- A) Ductable split
- B) Multi-split
- C) Ceiling-mounted
- D) Floor-mounted

Answer Key: B

Question No. 39

If scale formation in AC is NOT controlled, it will-

- A) Reduce the rate of heat transfer
- B) Enhance the rate of heat transfer
- C) Have no effect on heat transfer
- D) Have a negligible effect on heat transfer

Answer Key: A

Question No. 40

Low pressure, low temperature vapour turns to high pressure, high temperature gas due to the-

- A) Evaporator
- B) Condenser

C) Capillary valve

D) Compressor

Answer Key: D

Question No. 41

CTC (Carbon Tetrachloride) is a-

A) Heating agent

B) Cooling agent

C) Cleaning agent

D) Lubricating agent

Answer Key: C

Question No. 42

A cooling capacity of 1.0 TR is-

A) 6000 BTU/hr

B) 12000 BTU/hr

C) 18000 BTU/hr

D) 24000 BTU/hr

Answer Key: B

Question No. 43

The hot-wire anemometer is used to measure the-

A) Moisture in air

B) Air pressure

C) Air flow rate

D) Air temperature

Answer Key: C

Question No. 44

The method of compression in the reciprocating compressor is _____ of piston.

A) Centrifugal force

B) Rotary motion

C) To and fro motion

D) Screwing force

Answer Key: C

Question No. 45

Compressor head bolts must be tightened with a-

A) Screw driver

B) Plier

C) Torque wrench

D) Pipe wrench

Answer Key: C

Question No. 46

What is the function of the slinger (ring) arrangement in the fan blade of a window air-conditioner?

A) To increase the air quantity over the condenser surface

B) To blow air uniformly on the condenser coil

C) To splash the condensate water over the condenser coil

D) To protect the motor from heavy load and increase its life

Answer Key: C

Question No. 47

Select the interval period of a defrost cycle in a frost-free refrigerator.

- A) Once in 12 hours
- C) Once in 48 hours

- B) Once in 72 hours
- D) Once in 100 hours

Answer Key: A

Question No. 48

Which of the following materials is used for making the condenser fin in the window air conditioner?

- A) Brass
- C) Stainless steel
- B) Cast iron
- D) Aluminium

Answer Key: D

Question No. 49

Which component belongs to the indoor unit of a split AC?

- A) Compressor
- C) Condenser
- B) Evaporator coil
- D) All of the options

Answer Key: B

Question No. 50

The instrument used to measure the resistance of defrost heater is-

- A) Voltmeter
- C) Energy meter
- B) Ammeter
- D) Multimeter

Answer Key: D

Question No. 51

What is the purpose of TEV in the refrigeration cycle?

- A) Compressing gas
- C) Throttling refrigerant
- B) Flushing out dry nitrogen
- D) Cooling the compressor

Answer Key: C

Question No. 52

A condenser is used in the _____ pressure side of a refrigerating system.

- A) Zero
- C) Low
- B) Unity
- D) High

Answer Key: D

Question No. 53

The _____ affords complete automatic defrosting using hot gas and a heat accumulator in the suction line.

- A) Water defrosting method
- C) Reverse cycle defrosting method
- B) Thermobank defrosting method
- D) Pressure control defrosting method

Answer Key: B

Question No. 54

The value of the resistor with a three-band colour code of red, violet and red is-

- A) 1100 ohms
- B) 2700 ohms
- C) 3200 ohms
- D) 4000 ohms

Answer Key: B

Question No. 55

What is the chemical name of the refrigerant number R-22?

- A) Dichlorotetrafluoroethane
- B) Methyl chloride
- C) Chlorodifluoromethane
- D) Ethyl chloride

Answer Key: C

Question No. 56

Which of the following refrigerants is a zeotropic blend of difluoromethane (R-32), pentafluoroethane (R-125), and 1,1,1,2-tetrafluoroethane (R-134a)?

- A) R-22
- B) R-100
- C) R-42
- D) R-407C

Answer Key: D

Question No. 57

A slip-ring rotor consists of a laminated _____ core, which has semi-closed slots at the outer periphery and carries a three-phase insulated winding.

- A) Cylindrical
- B) Square
- C) Rectangular
- D) Triangular

Answer Key: A

Question No. 58

The starting torque of a squirrel-cage induction motor is _____ compared to a slip-ring induction motor.

- A) High
- B) Low
- C) Zero
- D) Infinity

Answer Key: B

Question No. 59

A _____ connects the piston with the smaller end of a connecting rod in a reciprocating compressor.

- A) Piston pin
- B) Piston bolt
- C) Piston ring
- D) Piston sleeve

Answer Key: A

Question No. 60

Which type of rotor is used in a three phase induction motor?

- A) Squirrel-cage rotor
- B) Shaded-pole rotor
- C) Fluid rotor
- D) Both shaded-pole and fluid rotors

Answer Key: A

Question No. 61

Which of the following is the formula of slip (S) percentage of a three-phase induction motor (where Ns is synchronous speed and Nr is rotor speed)?

A) $S = ((Nr - Ns) / Nr) \times 100$

B) $S = ((Ns - Nr) / Nr) \times 100$

C) $S = ((Ns - Nr) / Ns) \times 100$

D) $S = ((Ns - 1) / Nr) \times 100$

Answer Key: C

Question No. 62

What is the full form of RSIR motor?

A) Resistance Start-Induction Run

B) Rotor Slip Induction Run

C) Resistance Slip Induction Run

D) Rotor Start-Indication Run

Answer Key: A

Question No. 63

The process of introducing impurities in small quantities into an intrinsic semiconductor is called-

A) Hole

B) Control element

C) Pollution

D) Doping

Answer Key: D

Question No. 64

When a diode is _____, no external energy source is applied.

A) Zero biased

B) Unity biased

C) Forward biased

D) Reverse biased

Answer Key: A

Question No. 65

What is the unit of Young's modulus?

A) Volt per square meter

B) Ohm per square meter

C) Newton per square meter

D) Candela

Answer Key: C

Question No. 66

The refrigerant commonly used in vapour absorption refrigeration systems is-

A) Sulphur dioxide

B) Chlorofluorocarbon

C) Freon

D) Ammonia

Answer Key: D

Question No. 67

A low-pressure liquid refrigerant from the expansion valve enters into the evaporator and changes into a-

A) Medium-pressure liquid refrigerant

B) High-pressure liquid refrigerant

C) Low-pressure vapour refrigerant

D) High-pressure solid refrigerant

Answer Key: C

Question No. 68

The temperature of air measured by an ordinary thermometer is called-

A) Dry-bulb temperature

B) Wet-bulb temperature

C) Saturation temperature

D) None of the options

Answer Key: A

Question No. 69

The temperature at which the condensation of moisture begins when the air is cooled at constant pressure is called the-

A) Dry bulb temperature

B) Dew point temperature

C) Saturation temperature

D) Condensation temperature

Answer Key: B

Question No. 70

If the relative humidity of atmospheric air is 100%, then the rate of evaporation of water will be-

A) High

B) Medium

C) Low

D) Zero

Answer Key: D

Question No. 71

Evaporative cooling systems are ideal for-

A) Hot and dry conditions

B) Hot and humid conditions

C) Cold and humid conditions

D) Moderately hot but humid conditions

Answer Key: A

Question No. 72

What will be the result of 'gas shortage' in a refrigerator?

A) Thermostat cutout occurs frequently

B) OLP trips often

C) Poor cooling is encountered

D) High cooling is achieved

Answer Key: C

Question No. 73

Which of the following characteristics is/are desirable in a refrigerant?

A) Low boiling point

B) High critical temperature

C) High latent heat of vaporization

D) All of the options

Answer Key: D

Question No. 74

To absorb moisture in a filter, a drier is filled with-

- A) Coal
- B) Sand
- C) Silica gel
- D) Chalk

Answer Key: C

Question No. 75

The temperature being maintained in the freezer of a refrigerator is-

- A) -18 °C
- B) 4 °C
- C) 77 °C
- D) 0 °C

Answer Key: A