

CBSE | DEPARTMENT OF SKILL EDUCATION

Air Conditioning and Refrigeration (SUBJECT CODE - 827)

Blue-print for Sample Question Paper for Class XI (Session 2023-2024)

Max. Time: 3 Hours

Max. Marks: 60

PART A - EMPLOYABILITY SKILLS (10 MARKS):

UNIT NO.	NAME OF THE UNIT	OBJECTIVE TYPE QUESTIONS	SHORT ANSWER TYPE QUESTIONS	TOTAL QUESTIONS
		1 MARK EACH	2 MARKS EACH	
1	Communication Skills- III	1	1	2
2	Self-Management Skills- III	2	1	3
3	Information and Communication Technology Skills- III	1	1	2
4	Entrepreneurial Skills- III	1	1	2
5	Green Skills- III	1	1	2
TOTAL QUESTIONS		6	5	11
NO. OF QUESTIONS TO BE ANSWERED		Any 4	Any 3	07
TOTAL MARKS		1 x 4 = 4	2 x 3 = 6	10 MARKS

PART B - SUBJECT SPECIFIC SKILLS (50 MARKS):

UNIT NO.	NAME OF THE UNIT	OBJECTIVE TYPE QUESTIONS	SHORT ANS. TYPE QUES.- I	SHORT ANS. TYPE QUES.- II	DESCRIPTIVE/ LONG ANS. TYPE QUESTIONS	TOTAL QUESTIONS
		1 MARK EACH	2 MARKS EACH	3 MARKS EACH	4 MARKS EACH	
1	Unit 1: Meaning of Air Conditioning and Refrigeration etc.	6	1	1	1	9

2	Unit 2 : Vapour Compression Cycle, Working of a Domestic	5	1	1	1	8
3	Unit 3 : Meaning of Compressors, Compressor construction	5	1	1	1	8
4	Unit 4 : Meaning of Alternating Current etc., Wiring circuit diagrams	6	1			7
5	Unit 5 : Psychometrics– Composition of air, Human comfort etc	5	1		1	7
6	Unit 6 : Applications of Air Conditioning, Measurement of air velocity	5			1	6
TOTAL QUESTIONS		32	5	3	5	45
NO. OF QUESTIONS TO BE ANSWERED		26	Any 3	Any 2	Any 3	34
TOTAL MARKS		1 x 26= 26	2 x 3 = 6	3 x 2 = 6	4 x 3 = 12	50 MARKS

CBSE | DEPARTMENT OF SKILL EDUCATION

Air Conditioning and Refrigeration (SUBJECT CODE - 827)

Sample Question Paper for Class XI (Session 2023-2024)

Max. Time: 3 Hours

Max. Marks: 60

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **24 questions** in two sections – Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (6 + 18 =) 24 questions, a candidate has to answer (6 + 11 =) 17 questions in the allotted (maximum) time of 3 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (30 MARKS):**
 - i. This section has 06 questions.
 - ii. There is no negative marking.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (30 MARKS):**
 - i. This section contains 18 questions.
 - ii. A candidate has to do 11 questions.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q. 1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)	
i.	1. What is the purpose of communication? (a) Inform (tell someone about something) (b) Influence (get someone to do something you want) (c) Share thoughts, ideas, feelings (d) All of the above	1
ii.	What makes you complete your work or studies without others cheering you? (a) Self-confidence (b) Communication (c) Self-motivation (d) Self-esteem	1
iii.	Ravi works hard to get the best student award at the end of the year. What type of motivation is this? (a) Internal (b) External (c) Both internal and external (d) Not any specific type of motivation	1
iv.	Which shortcut key is used to create a new document? (a) Ctrl+ c (b) Ctrl + n (c) Ctrl + m (d) Ctrl + d	1
v.	Which of the following actions would not help a green agriculture sector? (a) Using chemical fertilisers (b) Using organic manure (c) Growing vegetables using vermi-compost (d) Buying or selling organic potatoes	1
vi.	_____ is a process of developing a business plan, launching and running a business using innovation to meet customer needs and to make a profit. (a) ownership (b) Entrepreneurship (c) leadership (d) non of above	1

Q. 2	Answer any 5 out of the given 7 questions (1 x 5 = 5 marks)	
i	Branch of physics that deals with the relationship between heat and other forms of energy. (a) Thermodynamics (b) Sociology (c) Psychology (d) None of above	1
ii	When a substance is heated and the temperature rises as the heat is added, the increase in heat is called..... (a) Hidden Heat (b) latent Heat (c) sensible heat (d) None of above	1

iii	_____ may be defined as the process of removing heat from a substance under controlled conditions. (a) Refrigeration (b) Air-Conditioning (c) Freezing (d) None of above	1
iv	The process of cooling the refrigerant below the condensing temperature for a given pressure is known as. (a) Pressure cooling (b) Sub- Cooling (c) Freezing (d) None of above	1
v	Use of compressor in Mechanical refrigeration system. (a) for Refrigeration (b) for Air-Conditioning (c) for compression of gas (d) None of above	1
vi	Effects of Heat. (a) Change in temperature. (b) Change in shape & size (c) change in color (d) all above	1
vii	The heat which brings about a change of state with no change in temperature is called_____ (a) Hidden Heat (b) latent Heat (c) sensible heat (d) None of above	

Q. 3	Answer any 6 out of the given 7 questions (1 x 6 = 6 marks)	
i	Unit of Refrigeration. (a) TR (b) Watt (c) Ampere (d) None of above	1
ii	The expansion device used in domestic refrigerator is (a) Expansion valve (b) Thermostatic expansion valve (c) Open type expansion valve (d) Capillary tube.	1
iii	The major parts of a domestic refrigerator are (a) Insulated cabinet (b) Refrigerating system (c) Both (a) and (b) (d) None of the above	1

iv	The simple Vapour compression Refrigeration system is made up of four fundamental processes (a) (i) expansion (ii) vaporization (iii) compression (iv) condensation (b) (i) Heating (ii) compression (iii) condensation (iv) contraction (c) (i) Heating (ii) expansion (iii) compression (iv) contraction (d) (i) expansion (ii) vaporization (iii) condensation (iv) contraction	1
v	Ohm's law is related to (a) current, voltage and resistance (b) Power, energy and resistance (c) watt, voltage and Resistance (d) All Above	1
vi	Voltmeter is used for measuring the (a) current (b) Power (c) voltage (d) All Above	1
vii	P-H chart means (a) Pressure – Heat chart (b) Performance – Enthalpy chart (c) Pressure- Enthalpy chart (d) Performance- Heat chart	

Q. 4	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i	_____ is that branch of engineering science, which deals with the study of air. (a) Psychrometry (b) Quantum Physics (c) Organic Chemistry (d) All Above	1
ii	The evaporator in a refrigeration system is also known as (a) heating coil (b) cooling coil (c) electric coil (d) magnetic coil	1
iii	The types of Copper tubing used in air conditioning and Refrigeration are (a) Hard drawn copper tubing (b) Soft copper tubing (c) Both (a) and (b) (d) None of the above	1
iv	OLP stands for (a) over land pilot (b) over load protector (c) over load parameter (d) None of the above	1

v	Full form of EMF (a) Electromotive Force (b) Electro Magnetic Force (c) Electro metric Force (d) None of the above	1
vi	The property of a substance which opposes the flow of electric current through it. (a) power (b) watt (c) Resistance (d) None of the above	1

Q. 5	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i	Unit of Power (a) Joule/second (b) watt (c) Kw (d) All above	1
ii	The condenser used in a conventional domestic refrigerator is (a) Natural type air cooled condenser (b) Forced draft type air cooled condenser (c) Water cooled condenser (d) None of the above.	1
iii	What is the cooling capacity of normal windows AC. (a) 1.5 ton (b) 2 ton (c) 5 ton (d) 7 ton	1
iv	In a Centralised air conditioner plant which type of condenser is used (a) water cooled (b) air cooled (c) both (a) and (b) (d) none of above	1
v	Dry bulb temperature lines shown on Psychrometric chart are (a) Vertical lines (b) Curved lines (c) horizontal lines (d) Zig- Zag lines.	1
vi	What type of air conditioners used for small commercial establishments? (a) Packaged air conditioners (b) Windows air conditioners (c) Centralised air conditioners (d) None of the above.	1

Q. 6	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i	A Centralised air conditioner plant is used (a) Year round (b) only in summer (c) only in winter (d) None of the above	1
ii	For cooling of circulating water in a water cooled condenser, the device used is (a) Fan (b) Cooling tower (c) Geyser (d) None of the above	1
iii	It is the temperature of air recorded by a thermometer, when its bulb is surrounded by a wet cloth exposed to the air. (a) Air temperature (b) wet Bulb temperature (c) Surrounding Temperature (d) None of the above.	1
iv	It is the difference between the dry bulb temperature and dew point temperature of air. (a) Dry bulb depression (b) Dew point depression (c) Wet bulb depression. (d) None of the above.	1
v	How much temperature and Relative humidity is required for human Comfort. It is the difference between the dry bulb temperature and dew point temperature of air. (a) 24 °C and 40% Humidity (b) 21 °C and 50% Humidity (c) 24 °C and 50% Humidity (d) None of the above.	1
vi	Wet bulb temperature lines shown on Psychrometric chart are (a) Vertical lines (b) Curved lines (c) inclined straight lines (d) Zig- Zag lines.	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 marks)

Answer each question in 20 – 30 words.

Q. 7	What is Communication? Give its type also.	2
Q. 8	What is time Management?	2
Q. 9	What are the steps to change the alignment of text in word processing?	2
Q. 10	Define Values. Also write their types.	2

Q. 11	What are five basic components of a Green Economy?	2
--------------	--	----------

Answer any 3 out of the given 5 questions in 20 – 30 words each (2 x 3 = 6 marks)

Q. 12	Define the Meaning of Refrigeration.	2
Q. 13	Define vapour compression refrigeration system.	2
Q. 14	Define Compressor.	2
Q. 15	What is Ohm's Law?	2
Q. 16	Define wet-bulb temperature.	2

Answer any 2 out of the given 3 questions in 30– 50 words each (3 x 2 = 6 marks)

Q. 17	How does a reciprocating compressor work?	3
Q. 18	Write down effect of heat. Any three	3
Q. 19	Write down types of Cooper and their use.	3

Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)

Q. 20	Draw Wiring Circuit Diagram of domestic Refrigerator.	4
Q. 21	Write down some safety Precautions while handling refrigerant cylinders. Any five	4
Q. 22	Define simple vapour- compression refrigeration cycle. And also explain it four main processes.	4
Q. 23	Draw block diagram of any compressor with all part labels.	4
Q. 24	Explain Packaged air conditioner.	4