R18 Regulation *Subject code:2P7CA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VII Semester Supplementary Examinations, May 2026

REFRIGERATION & AIR CONDITIONING

(ME)

Maximum Marks: 70 Date: 05.05.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	What is tonne of refrigeration?	2M	1	L1
2	List out the various processes in Vapor compression refrigeration cycle.	2M	1	L1
3	What is the purpose of a compressor in Vapor compression refrigeration cycle?	2M	2	L1
4	Mention the various functions of an expansion device.	2M	2	L1
5	What is the function of an absorber in vapor absorption refrigeration system?	2M	3	L1
6	What are the main advantages of vapor absorption system over vapor compression refrigeration system?	2M	3	L1
7	Define dewpoint temperature in psychometric chart.	2M	4	L1
8	What is meant by Sensible heating?	2M	4	L1
9	What are the methods of obtaining humidification and dehumidification?	2M	5	L1
10	What is meant by dehumidification?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Explain the heat engine, refrigerator and heat pump with neat diagrams.	10M	1	L2
	OR			
12	With the help of T-S and P-h diagrams explain the effect of sub-cooling in vapor compression refrigeration cycle.	10M	1	L2
13	With the help of P-V and T-S diagrams derive an expression for the work done by a reciprocating compressor during polytropic compression	10M	2	L2
	OR			
14	Describe the working of a thermostatic expansion valve with neat diagrams.	10M ~~5M~~	2	L2
15	a) Write down the various advantages of Vapour absorption refrigeration system over Vapour compression refrigeration system	5M 5M	3	L2

	b) With the help of a neat sketch explain the working of Ammonia-Hydrogen refrigerator			
	OR			
16	Draw a neat diagram of lithium bromide water absorption system and explain its working.	10M	3	L2
17	What are the various factors affecting the comfort air conditioning.	10M	4	L2
	OR			
18	a) What are the different factors considered in load estimation sheet for comfort application b) What is a fog? Show on psychometric chart when two air stream yield fogged state of air.	5M 5M	4	L2
19	Explain the various various types of axial flow fans.	10M	5	L2
	OR			
20	a) What is a function of fan in air conditioning system? b) Define specific speed for a centrifugal fan. Derive its expression	5M 5M	5	L2