Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 170201 **Date: 29/11/2016**

Subject Name: Automobile Air Conditioning System

Time: 10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

1	**(a)**	Compare vapour compression and vapour absorption refrigeration system. Draw the schematic diagram of the basic components of both the systems.	**(07)**
	(b)	State the function of an expansion device in vapour compression refrigeration system. Name various types of expansion devices. Explain with neat sketch construction and working of thermostatic expansion valve.	**(07)**
2	**(a)**	Define the following terms: (i) Air conditioning (ii) Psychrometry (iii) Dew point temperature, (iv) Effective saturation, (v) Wet bulb temperature, (vi) Sensible heat Factor, (vii) Relative humidity	**(07)**
	(b)	Classify refrigerants. List desirable properties of a good refrigerant and selection criteria.	**(07)**
		OR	
	(b)	How the refrigerants are designated? List the names of refrigerants used in automobile air conditioning. What are eco friendly refrigerants?	**(07)**
3	**(a)**	Enumerate the sources of noise in air conditioning systems and list the measures which should be taken for sound attenuation.	**(07)**
	(b)	Write short note on refrigerated transport vehicles.	**(07)**
		OR	
3	**(a)**	How are air conditioning systems classified? And state the advantages of central system over unitary system of air conditioning.	**(07)**
	(b)	Write short note on : (1) Sling Psychrometer (2) Filters	**(07)**
4	**(a)**	List the variables which are involved in the estimation of cooling load for an automobile.	**(07)**
	(b)	What is an effective temperature? Explain briefly effective temperature chart and comfort chart.	**(07)**
		OR	
4	**(a)**	Discuss effect of air conditioning load on engine performance in terms of loss of available peak torque and fuel consumption.	**(07)**
	(b)	State the functions of thermostat and humidistat. Explain in brief construction and working of any one type of thermostat.	**(07)**

5	**(a)**	Define the following as applied to air distribution. (i) Grille (ii) Outlet (iii) Intake (iv) Diffuser (v) Throw (vi) Drop (vii) Primary air.	**(07)**
	(b)	Write a short note on refrigerant gas charging procedure.	**(07)**

OR

5	**(a)**	State common methods for sizing of duct for air conditioning application and explain equal friction method in brief.	**(07)**
	(b)	Write any five troubles shooting and its diagnosis of air conditioning systems.	**(07)**

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