

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014****Subject Code: 170201****Date: 22-05-2014****Subject Name: Automobile Air Conditioning System****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of psychrometric chart and table is permitted.

- Q.1** (a) Compare vapour compression and vapour absorption refrigeration system. List basic components of both systems. **07**
- (b) A sample of moist air has a dry bulb temperature of 43°C and wet bulb temperature of 29 °C. Calculate the following properties using psychrometric tables only: partial pressure of water vapour, specific humidity, relative humidity, dew point temperature, dew point temperature, enthalpy, degree of saturation. **07**
- Q.2** (a) How are refrigerants classified? Explain designation of refrigerants. **07**
- (b) Explain following psychrometric terms: **07**
1. Heating and humidification
 2. Cooling and dehumidification
 3. Adiabatic saturation
 4. Sensible cooling
- OR**
- (b) Define effective saturation. List factors affecting effective saturation. **07**
- Q.3** (a) Sketch typical layout of central air-conditioning plant. Explain different circuits with neat sketch and list advantages of central air-conditioning plant. **07**
- (b) Explain effect of air conditioning load on engine performance in terms of loss of available Peak Torque/Power and Fuel consumption. **07**
- OR**
- Q.3** (a) With neat sketch explain construction and working of thermostatic expansion valve. **07**
- (b) Write short note on refrigerated transport vehicles. **07**
- Q.4** (a) Explain layout of duct systems for automobiles. **07**
- (b) List different faults in compressor of an automobile air conditioning system and their remedies. **07**
- OR**
- Q.4** (a) Explain following refrigeration terms: Charging, Evacuation, Adding oil to system. **C**
- (b) Classify fans and explain fan laws. **07**
- Q.5** (a) Explain the following: All air system, all water system, air water system **07**
- (b) Describe different methods of duct design. **07**
- OR**
- Q.5** (a) Write short notes on: Thermostats, Relays. **07**
- (b) Define following psychrometric terms: dry bulb temperature, dew point temperature, relative humidity, sensible heat factor, sling psychrometer. **07**
