

Code No: **R42245****R10****Set No. 1****IV B.Tech II Semester Regular Examinations, April/May - 2014****AUTOMOTIVE AIR CONDITIONING****(Automobile Engineering)****Time : 3 hours****Max. Marks: 75****Answer any Five Questions****All Questions carry equal marks**

- 1 a) Explain the effect of pressure on boiling and condensation. [7]
b) Write the desirable properties of an ideal refrigerant and explain the pressure and temperature relationship of R-12 refrigerant. [8]
- 2 a) With a neat sketch explain the working of a thermostat expansion valve. [8]
b) With a neat sketch explain the working of a variable displacement piston type compressor. [7]
- 3 a) Explain how air conditioning system can be protected for the engine heat in an automobile. [8]
b) What is automotive air conditioning? Explain its importance in providing comfort to the passenger in an automobile. [7]
- 4 a) Explain the factors that affect the load on refrigeration & air conditioning systems. [8]
b) Explain role of refrigerants in the depletion of ozone layer. [7]
- 5 a) Explain the role of return ducts, grills, diffusers, and ventilation in air distribution system of automotive air conditioning. [8]
b) Discuss on the recent advancements in automotive air conditioning which helps in increasing the comfort of the passenger and reduce the load on the engine. [7]
- 6 a) Write the objectives of Air Routing and Temperature Control system of automotive air conditioning and explain its role in providing comfort to the passenger in an automobile. [8]
b) Explain any two methods of testing for leakage in air conditioning system. [7]
- 7 a) Explain the procedure for Evacuating of automotive air conditioning system. [8]
b) Explain about trouble shooting of automotive air conditioning system. [7]
- 8 a) Explain with a neat sketch the role of thermostat in air conditioning control [8]
b) Explain the procedure for charging of automotive air conditioning. [7]

Code No: **R42245****R10****Set No. 2****IV B.Tech II Semester Regular Examinations, April/May - 2014****AUTOMOTIVE AIR CONDITIONING****(Automobile Engineering)****Time : 3 hours****Max. Marks: 75****Answer any Five Questions****All Questions carry equal marks**

- 1 a) Define human comfort and explain the requirements for comfort air conditioning. [7]
b) Write the desirable properties of an ideal refrigerant and explain about Refrigerant-12 (R-12). [8]
- 2 a) With a neat sketch explain the working of a rotary vane type compressor. [7]
b) With a neat sketch explain the working of a simple automotive air conditioning system. [8]
- 3 a) What are the different types of heaters used in an automobile? Explain the working of any one with a neat sketch. [7]
b) With a neat sketch explain the working of a condenser and evaporator. [8]
- 4 a) Explain how air conditioning load affect the performance of the engine. [8]
b) Explain how servicing of heater and air conducting ducts done. [7]
- 5 a) Explain the layout of duct systems for automobiles and their impact on load calculations. [8]
b) With a neat sketch explain the working of Valves-in-receiver system. [7]
- 6 a) Explain the testing of air control in air handling systems. [8]
b) Explain how air routing through the re-circulating unit is done in air conditioning system. [7]
- 7 a) Explain the procedure of finding leaks using an electronic leak tester in an automotive air conditioning unit. [8]
b) What is meant by dehydration? Explain in detail any one method of dehydration done in automotive air conditioning system. [7]
- 8 a) Explain the role of humidistat and control dampers in air conditioning control. [8]
b) Explain the procedure for evacuating of automotive air conditioning. [7]

Code No: **R42245****R10****Set No. 3****IV B.Tech II Semester Regular Examinations, April/May - 2014****AUTOMOTIVE AIR CONDITIONING****(Automobile Engineering)****Time : 3 hours****Max. Marks: 75****Answer any Five Questions****All Questions carry equal marks**

- 1 a) Differentiate between Automotive air conditioning and house hold air conditioning. [7]
b) With a neat sketch explain the working of air conditioning system using an expansion valve. [8]
- 2 a) With a neat sketch explain the working of a scroll type compressor. [7]
b) What is Automotive air conditioning? Explain the purpose and functioning of low pressure cut out switch, high pressure cut out switch and ambient temperature switch in an Automotive air conditioning system. [8]
- 3 a) Discuss the importance of heating system in an automobile. Write the desirable properties of ideal heating system. [7]
b) Discuss on the recent advancements in automotive air conditioning which helps in increasing the comfort of the passenger and reduce the load on the engine. [8]
- 4 a) Explain the factors that affect the performance of an air conditioning system [8]
b) With a neat sketch explain the working of reciprocating air compressor. [7]
- 5 a) Explain the layout of duct systems for automobiles and their impact on load calculations. [8]
b) Explain role of refrigerants in the depletion of ozone layer. [7]
- 6 a) Explain how automatic temperature control system works in an automotive air conditioning. [8]
b) Explain the procedure to be followed while evacuating an automotive air conditioning system. [7]
- 7 a) Explain the procedure of finding leaks using a vacuum pump in an automotive air conditioning unit [8]
b) What safety precautions are to be followed while servicing automotive air conditioning system? [7]
- 8 a) Explain the role of relays and pressure cut outs in air conditioning control [8]
b) Explain how servicing of heater system is done in an automobile [7]

Code No: **R42245****R10****Set No. 4****IV B.Tech II Semester Regular Examinations, April/May - 2014****AUTOMOTIVE AIR CONDITIONING****(Automobile Engineering)****Time : 3 hours****Max. Marks: 75****Answer any Five Questions****All Questions carry equal marks**

- 1 a) What are the different methods of controlling the temperature? Discuss their relative merits. [7]
b) With a neat sketch explain the working of a scroll type compressor. [8]
- 2 a) What is accumulator? What is its importance in a refrigeration system? Explain its working with a neat sketch. [7]
b) Explain with a neat sketch the working of a refrigeration system using an orifice tube. [8]
- 3 a) Explain how air conditioning system can be protected for the engine heat in an automobile. [8]
b) What is automotive air conditioning? Explain its importance in providing comfort to the passenger in an automobile. [7]
- 4 a) Explain the inside and outside factors that are to be considered in the design of automobile air conditioning system. [8]
b) Explain role of refrigerants in the depletion of ozone layer. [7]
- 5 a) Explain about the air distribution system used in automobile air conditioning system. [8]
b) Differentiate between reciprocating and rotary compressors. [7]
- 6 a) Explain how automatic temperature control system works in an automotive air conditioning. [8]
b) Explain any two methods of testing for leakage in air conditioning system. [7]
- 7 a) Explain in detail the causes of air conditioner failure in an automotive air conditioning system. [8]
b) With a neat sketch explain the duct system used in automotive air conditioning system. [7]
- 8 a) Explain with a neat sketch the role of thermostat in air conditioning control. [8]
b) Explain how automotive air conditioning system maintenance done. [7]