

CBCS Scheme

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15AU553

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Automotive Air Conditioning and Refrigeration

Time: 3 hrs.

Max. Marks: 80

- Note: 1. Answer any FIVE full questions, choosing one full question from each module.
2. Missing data if any may suitably be assumed.

Module-1

- 1 a. Explain the following :
i) Dry air and moist air
ii) Dry bulb and wet bulb temperature
iii) Specific and Relative humidity (10 Marks)
b. What are the advantages and disadvantages of gas cycle refrigeration system? (06 Marks)

OR

- 2 a. Derive an expression for the COP of Bell-Coleman refrigeration cycle. Draw PV and TS diagrams. (08 Marks)
b. A Bell Coleman refrigeration cycle works between 1 bar and 5 bars. The adiabatic efficiency of compression is 85% and expansion is 90%. Find out the COP of the system and its tonnage when the air flow rate is 1 kg/sec. The ambient temperature is 27°C and refrigerator temperature is 0°C. (08 Marks)

Module-2

- 3 a. List the different type of air conditioning systems and explain them in brief. (10 Marks)
b. Explain the different types of condensers used in air conditioning systems. (06 Marks)

OR

- 4 a. Mention the various expansion devices used and explain them in brief. (06 Marks)
b. Write a brief note on :
i) Engine protection
ii) Automotive heating. (10 Marks)

Module-3

- 5 Write a note on effect of air conditioning load on engine performance. Also explain the measures to reduce the air conditioning loads on the engine. (16 Marks)

OR

- 6 Explain the various loads that are to be considered in the design of automobile air conditioning system. (16 Marks)

Module-4

- 7 a. Explain in brief the different types of ventilation systems. (06 Marks)
b. What are the sources of noise in Air – Conditioning system? Explain the methods used to control the noise. (10 Marks)

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OR

- 8 a. Explain the various types of thermostats used to control the temperature. (08 Marks)
b. Explain how air routing through the recirculating unit is done in air conditioning system. (08 Marks)

Module-5

- 9 a. What are the safety precautions to be followed for servicing automotive air conditioning system? (08 Marks)
b. What is dehydration? Explain any one method of dehydration done in automotive air conditioning system. (08 Marks)

OR

- 10 a. Explain any two methods of testing for leakage of air conditioning system. (08 Marks)
b. Write brief note on the following : (08 Marks)
i) Pressure cut outs and relays
ii) Humidistat
