

**Scheme – I**  
**Sample Question Paper:**

**Programme Name** : Automobile Engineering  
**Programme code** : AE  
**Semester** : Sixth  
**Course Title** : Automobile Air Conditioning (Elective II)  
**Marks** : 70

22653

**Time: 3Hrs.**

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**Instructions:**

- 1) All questions are compulsory.
- 2) Illustrate your answers with neat sketches wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Preferably, write the answers in sequential order.

**Q.1) Attempt any FIVE of the following. (10 Marks)**

- a) Define the term conduction and convection.
- b) List the operational precaution for air condition system.
- c) Name the types of duct system used in vehicles.
- d) Name the in-car temperature sensors.
- e) Enlist the service equipment required for air conditioning system of a vehicle.
- f) Mention the types of heating system used in automobile.
- g) State the significance of control valve in heating system of a vehicle.

**Q.2) Attempt any THREE of the following. (12 Marks)**

- a) Describe the controlled ventilation system.
- b) Differentiate between downstream and upstream duct system.
- c) Illustrate the air-conditioning system layout of a car.
- d) Compare conventional climate control system and electronic climate control system.
- e) Explain with sketch the working of heating system used in a car.

**Q.3) Attempt any THREE of the following. (12 Marks)**

- a) Explain the vapour compression refrigeration cycle.
- b) Illustrate with sketch the use of hybrid duct system
- c) Explain the working of rotary vane compressor with sketch
- d) Explain the working of vacuum restrictor device used in AC system.

**Q.4) Attempt any Three of the following.**

**(12 Marks)**

- a) List eight properties of refrigerant.
- b) Describe with sketch evacuation and charging procedure for refrigerant in the A.C system.
- c) Explain the working of check relay used in A.C. system
- d) Compare fluorescent leak detector and nitrogen leak detector tests.

**Q.5) Attempt any TWO of the following.**

**(12 Marks)**

- a) Describe ventilation system of a car with sketch.
- b) Enlist the symptoms of bad or failing AC pressure switch.
- c) Explain essential preventive maintenance steps for car heater system.

**Q.6) Attempt any TWO of the following.**

**(12 Marks)**

- a) Draw and explain the procedure for testing sun load sensor of A.C. system.
- b) Predict two faults in electromagnetic clutch and list causes and remedies.
- c) Draw and explain two methods of refrigerant leakage test.

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**Scheme – I**  
**Sample Test Paper I**

**Programme Name : Automobile Engineering**  
**Programme Code : AE**  
**Semester : Sixth**  
**Course : Automobile Air-conditioning**  
**Marks : 20**

**22653**

**Time:1 hour**

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**Instructions:** All questions are compulsory

1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

**Q.1 Attempt any FOUR.**

**(8 Marks)**

- a. Define the term convection & conduction.
- b. List the types of air filter used in A.C.
- c. Name the refrigerant and cylinder colour code used for its storing.
- d. List the name of components used in car A.C. system.
- e. State the function of condenser used in A.C. system
- f. List symptoms of a bad expansion valve of A.C. system

**Q.2 Attempt any TWO**

**(12 Marks)**

- a. Explain the requirements of heating and ventilation system of a car.
- b. Describe the working of blower and list its type.
- c. Draw a general layout automotive air conditioning system.
- d. Enlist the types of compressor used in A.C. Explain working of any one of them.

**Scheme – I**  
**Sample Test Paper II**

**Programme Name** : Automobile Engineering  
**Programme Code** : AE  
**Semester** : Sixth  
**Course** : Automobile Air conditioning (Elective II)  
**Marks** : 20

**22653**

**Time:1 hour**

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**Instructions:** All questions are compulsory

1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

**Q.1 Attempt any FOUR.**

**(8 Marks)**

- a. State the purpose of vacuum pump used in A.C. system
- b. State the importance of moisture removal in A.C. system
- c. List the types of switches used in A.C. system
- d. Define – Comfort Air conditioning
- e. State the purpose of using sensors in A.C. system
- f. Name the types of refrigerant leak test

**Q.2 Attempt any TWO.**

**(12Marks)**

- a. Explain refrigerant charging procedure for air conditioning system.
- b. Describe essential preventive maintenance steps for car heater system.
- c. Explain fluorescent leak detector test.