

Scheme – I
Sample Question Paper:

Programme Name : Automobile Engineering
Programme code : AE
Semester : Sixth
Course Title : Hydraulic and Pneumatic Controls
Course code : 22650
Marks : 70

22650

Time: 3 Hrs.

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 Specific Gravity.
- b) State law of continuity.
- c) List two applications of manometer.
- d) Define hydraulic actuator
- e) List valves for hydraulic systems.
- f) Write two applications of pneumatic circuits.
- g) List two applications of hydraulic circuits in an automobile.

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

- a) Explain with sketch construction and working of pitot tube. Show how the discharge is measured with it.
- b) Classify fluids.
- c) Compare centrifugal and reciprocating pumps.
- d) Explain negative slip in reciprocating pump.

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

- a) Derive an expression for measurement of velocity of flow by Pitot tube.
- b) Explain with sketch the working principle of hydraulic jack.
- c) Explain with sketch the working of gear pump.
- d) Differentiate between gear pump and vane pump on the basis of construction, pressure, speed and application.

Q.4) Attempt any Three of the following. (12 Marks)

- a) Explain piston type air motor with sketch.
- b) Explain working of sequencing valve with sketch.
- c) Sketch and explain working of 4/2 direction control valve used in hydraulic system
- d) Sketch and explain working of sequencing valve.
- e) Differentiate between spool and poppet type valves (4 points).

Q.5) Attempt any TWO of the following.

(12 Marks)

- a) Predict two faults relevant to centrifugal pump. Write 2 causes and 2 remedies for each fault.
- b) Describe seals and gaskets with their function, types and material used.
- c) Justify use of flexible hose in hydraulic braking system. Draw relevant connector.

Q.6) Attempt any TWO of the following.

(12 Marks)

- a) Explain with sketch the hydraulic power steering.
- b) Sketch and describe hydro-pneumatic ram circuit.
- c) Compare hydraulic and pneumatic circuits (6 points).

Scheme – I
Sample Test Paper I

Programme Name : Automobile Engineering
Programme Code : AE
Semester : Sixth
Course : Hydraulic and Pneumatic Controls
Marks : 20

22650

Time: 1 hour

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 gauge pressure.
- b. State the reason for using mercury in manometer.
- c. State the maximum suction head for a positive displacement pump and centrifugal pump.
- d. Define NPSH.
- e. Sketch plunger pump and label its components.
- f. Sketch gear pump and label its components.

Q.2 Attempt any TWO

(12 Marks)

- a. State Bernoulli's theorem and give its assumption.
- b. The centrifugal pump fails to start pumping. Give two causes and remedies thereof.
- c. Explain with sketch the working principle of hydraulic press.

Scheme – I
Sample Test Paper II

Programme Name : Automobile Engineering
Programme Code : AE
Semester : Sixth
Course : Hydraulic and Pneumatic Controls
Marks : 20

22650

Time:1 hour

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. Sketch hydraulic telescopic cylinder and label its components.
- b. Sketch single acting pneumatic cylinder and label its components.
- c. State function of filter and strainer
- d. Explain FRL unit.
- e. Draw symbol for 4/3 direction control valve and directly operated pressure relief valve.
- f. Explain with sketch 2 symbols used in milling machine hydraulic circuit.

Q.2 Attempt any TWO.

(12Marks)

- a. Explain with sketch the working of non-return valve.
- b. Classify filters and state their applications
- c. Compare meter-in and meter-out circuit.