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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2017

DME—FIFTH SEMESTER EXAMINATION

FLUID POWER CONTROL SYSTEMS

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State any three differences between fluid and pneumatic power system.

2. Write any three applications of fluid power system.

3. What is the function of cushioning in cylinders?

4. Draw the graphic symbols for flow control valves.

5. Write the advantages of pressure compensated flow control valve over non-pressure compensated flow control valves.

6. Differentiate between series and parallel synchronization circuits.

7. Write any three advantages and disadvantages of compressed air.

8. Compare hydraulic and pneumatic system.

9. Write a short note on spring return single-acting cylinder.

10. State the functions of shuttle value and draw its symbol.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Explain the working of vane pump with neat sketch.

12. Describe the hydraulic vane motor with neat diagram.

13. *(a)* Derive an expression for force, velocity and power for hydraulic cylinders.

(b) A cylinder with a bore diameter of 40 mm is required to extend a minimum speed of 0·75 m/s. What is the flow rate?

14. Write short notes on the following :

(a) Ball-type check valve

(b) Two-way direction control valve

15. Explain the pilot-operated pressure relief valve with a neat diagram.

16. Explain the hydraulic circuit to control double-acting hydraulic cylinders.

17. Explain the installation methods of air cylinders.

18. Explain control of single-acting cylinder with OR valve.

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