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C14–M–505

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

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. List out any three applications of fluid power system.

2. State any two advantages and disadvantages of fluid power system.

3. What is the function of hydraulic cylinder in hydraulic system?

4. State the applications of flow control valves.

5. Write a short note on pressure compensated flow-control valve.

6. What are the causes of damage to the hydraulic circuit?

7. List out any six industrial applications of pneumatic system.

8. State any two advantages and disadvantages of pneumatic system.

9. What are the desirable characteristics of seals used in hydraulic cylinder?

10. Write a short note on direct control of single-acting cylinder.

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. Name the basic types of pumps and explain the working of radial piston pump with neat sketch.

12. *(a)* Define *(i)* volumetric efficiency, *(ii)* mechanical efficiency and *(iii)* overall efficiency of pumps.

(b) Hydraulic motor has a displacement of 165 cm^3 and operates with a pressure of 70 bars and a speed of 2100 r.p.m. If actual flow rate consumed by the motor is 0 0065 m^3/s and the actual torque delivered by the motor is 175 N-m, find the *(i)* volumetric efficiency and *(ii)* mechanical efficiency. 3+7=10

13. Explain first-, second- and third-order lever systems used with hydraulic cylinders.

14. Explain the following :

(a) Pilot operated check valve

(b) Three-way directional control valve

15. Explain simple pressure relief valve with a neat sketch.

16. Describe the hydraulic circuit to control single-acting cylinders.

17. Explain the working and applications of air motors.

18. Describe the speed control of double-acting cylinder.

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