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Question Paper Code : X10710

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020 AND
APRIL/MAY 2021

Fifth/Sixth Semester

Mechanical Engineering

ME 8694 – HYDRAULICS AND PNEUMATICS

(Common to Manufacturing Engineering/Mechanical Engineering (Sandwich)/
Robotics and Automation)

(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. List the application of fluid power.
2. Why the Fluid Power System is called muscle of Industry ?
3. Explain the term cylinder cushioning.
4. What is the difference between pressure relief valve and pressure reduce valve ?
5. What is the function of intensifier ? Mention the application.
6. What is the advantages of using sequencing circuit ?
7. Define fluidics.
8. What is FRL Unit and give the standard graphical symbol for FRL unit ?
9. Explain the low cost automation.
10. Describe the important component of hydraulic power pack.

PART – B

(5×13=65 Marks)

11. a) List out the selection procedure of oil in Industrial hydraulic application.

(OR)

- b) What is the difference between a fixed displacement pump and variable displacement pump ? Explain with neat sketch construction and working of external gear pump.



12. a) Explain the construction, working of gear type motor and vane type motor.
(OR)
b) Explain any three types of special cylinder used in hydraulics with neat sketch.
13. a) Draw and explain the Air-over-oil circuit used in the hydraulic circuit.
(OR)
b) With help of circuit diagram explain types and applications of accumulator.
14. a) Explain with ANSI symbols a) All the types of Actuators used in pneumatics
b) Quick exhaust valve and 5/2 direction control valve.
(OR)
b) With the aid of circuit diagram explain the working principle of impulse operation circuit in pneumatics.
15. a) How would you describe the failure and trouble shooting is carried out in hydraulic system.
(OR)
b) How would you show and describe a hydraulic circuit to actuate a shaping machine ram. Incorporate the following features in the circuit. i) Rapid tool approach ii) Slow cutting and iii) Rapid tool retraction/return.

PART – C

(1×15=15 Marks)

16. a) Design and explain the fluid power circuit for a drilling machine to discuss the following functions, (i) Clamping the work piece (ii) drilling the work piece (iii) unclamping the work piece.
(OR)
b) Three pneumatic cylinders A, B, C are used in an automatic sequence of operation. A cylinder extends, B cylinder extends, B cylinder retracts, and then A cylinder retracts, C cylinder extends and C cylinder retracts develop pneumatic circuit by cascade method. Sketch also travel step diagram and explain briefly.
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