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Question Paper Code : X 60852

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Fifth Semester

Mechanical Engineering

ME 2305/ME 1305/10122 ME 506/080120027 – APPLIED HYDRAULICS

AND PNEUMATICS

(Common to Automobile Engineering/Mechanical and Automation Engineering
and Mechatronics Engineering)

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks.

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Define Reynold's Number.
2. List the general types of hydraulics fluids.
3. What are the main advantages of gear motors ?
4. What is a pressure compensated vane pump, and how does it work ?
5. Differentiate fixed and variable displacement pumps.
6. List the basic arrangements in hydrostatic drives ?
7. What is the function of pressure regulator in a pneumatic system ?
8. What is a sequencing circuit ?
9. List the various methods used for designing logic circuits ?
10. Explain why interfacing is necessary in a microprocessor control of fluid power ?

**PART – B****(5×16= 80 Marks)**

11. a) Describe the applications of fluid power system and list the main components required for a power pack with circuit. (OR)
- b) State and explain the types of fluid power control systems with its advantages.
12. a) i) Explain the construction and working of bent axis type piston pump with neat sketch. (12)
- ii) Write short notes on lobe pump. (4)
- (OR)
- b) i) Explain any three types of special cylinders used in hydraulics with neat sketch. (12)
- ii) What is cylinder cushion ? (4)
13. a) Classify the direction control valves in terms of position and explain each with neat circuits. (16)
- (OR)
- b) What is the functions of a throttle valve ? Draw and explain the meter in meter out and bleed off circuits. (16)
14. a) Draw an pneumatic circuit by cascade method for following sequence of operation: $A^+ B^+ B^- A^-$ where A and B are the two cylinders and + indicates extension and – indicates retraction of the cylinder. (16)
- (OR)
- b) Briefly explain FRL unit with neat sketch. (16)
15. a) i) Briefly explain the important factors in the maintenance of hydraulic and pneumatic systems. (8)
- ii) List the various approach for entering the program in the PLC. (8)
- (OR)
- b) i) Draw the pneumatic logic cylinder sequencing circuit with neat sketch. (10)
- ii) Draw the ladder diagram for dual cylinder sequencing circuit. (6)
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