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Question Paper Code: 45706

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Fifth Semester

Mechanical Engineering

14UME506 - APPLIED HYDRAULICS AND PNEUMATICS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Which fluid is used in hydraulic power systems
 - Water
 - Oil
 - Non Compressible Fluid
 - All the above
- One litre of water occupies a volume of
 - 100 cm^3
 - 250 cm^3
 - 500 cm^3
 - 1000 cm^3
- Rotary motion in a hydraulic power unit is achieved by using
 - hydraulic cylinder
 - pneumatic cylinder
 - hydraulic and pneumatic cylinder
 - one of the above
- _____ converts pressure energy of fluid into mechanical work.
 - Pump
 - Actuator
 - Compressor
 - Motor
- The most common accumulator circuit is
 - supplementing pump flow
 - making up for system leaks
 - emergency power supply
 - none of these

6. Check valve is a type of
- (a) pressure reducing valve (b) pressure relief valve
(c) directional control valve (d) pressure sequencing valve
7. The lubricator in a pneumatic circuit is the
- (a) first element in line (b) second element in line
(c) last element in line (d) middle element in the line
8. Which of the following is used to sense the initial and final positions of a piston rod?
- (a) lever operated direction control valve (b) roller lever valve
(c) limit switch (d) all the above
9. The inability of any pump to draw full charge of oil is known as
- (a) cavitation (b) efficiency (c) deficiency (d) none of these
10. Fluid Power circuits use schematic drawings to
- (a) simplify component function details
(b) make the drawing look impressive
(c) make it so only trained persons can understand the functions
(d) all the above

PART - B (5 x 2 = 10 Marks)

11. Define the term fluid power.
12. Define Pascal's law.
13. List applications of fluid power in the automotive industry.
14. Write down the basic criteria to select the Pneumatic Cylinders
15. What is servo mean in servo valve system?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Compare different power systems used in industry based on their properties. (8)
(ii) Discuss any four applications of hydraulic systems. (8)

Or

- (b) Explain the major and minor losses in pipes with suitable sketches. (16)

17. (a) Explain any three types of special cylinders used in hydraulic circuit with neat sketch. (16)

Or

(b) Represent the working principle of external gear pump and determine its performance measures. (16)

18. (a) (i) Explain the working of four way two position direction control valve. (8)

(ii) With neat sketch describe the construction and operation of pressure regulated valve. (8)

Or

(b) Illustrate the working of bladder type accumulator and its application. (16)

19. (a) Discuss the construction and working principle of a rotary vane and lobe compressors. (16)

Or

(b) What is the synchronizing? Explain the synchronizing circuit with suitable approaches. (16)

20. (a) Explain the hydro mechanical servo system with suitable application. (16)

Or

(b) How the PLC is used in fluid power control Explain with suitable example. (16)
