KUMARAGURU
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M.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2014)

Second Semester

CAD/CAM

P14CCTE13**:** Design of Hydraulic and Pneumatic System

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The measure of internal resistance offered to flow is called   [K₁]

    a) Viscosity.   b) demulsibility

    c) Stability.   d) Lubricity.

2. A device which converts mechanical power into fluid power is called   [K₁]

    a) Pump.   b) Engine.

    c) Motor.   d) Accumulator.

3. Cylinders used for long working strokes is called   [K₁]

    a) Telescoping cylinder   b) Through rod cylinder

    c) Impact cylinder   d) Tandem cylinder

4.

List I	List II
A. Hydraulics	i. High pressure air
B. Pneumatics	ii. Preventing vertical movement of piston
C. Hydro pneumatics	iii. High pressure oil
D. Counterbalance valve	iv. Combination of air and oil

[K₁]

	A	B	C	D
a)	iii	i	iv	ii
b)	i	iii	ii	iv
c)	ii	iii	iv	i
d)	i	ii	iv	iii

5. Assertion (A): Hydraulics provides good accurate positioning   [K₂]

Reason (R): It uses incompressible fluid

    a) Both A and R are true   b) A is true but R is not correct

    c) R is true but A is not true   d) Both A and R are false

6. Regenerative circuit is used to speed up the [K1]

    a) Extending speed of the double acting cylinder   b) Retracting speed of the double acting cylinder

    c) Intermittent operation   d) None of the above

7. A device which is used to control the noise caused by the exhausting air stream is called [K1]

    a) Muffler   b) Pneumatic cylinder

    c) Lubricator   d) None of the above

8. Assertion (A): The quick exhaust valve is fitted nearer to the cylinder port [K2]

Reason (R): It reduces the frictional losses and save energy

    a) Both A and R are false   b) Both A and R are true

    c) A is true but R is not correct   d) R is true but A is not true

9. Assertion (A): Accumulator can be used for absorbing shock load [K2]

Reason (R): It stores potential energy of fluid

    a) A is true but R is not correct   b) Both A and R are false

    c) Both A and R are true   d) R is true but A is not true

10. In Pneumatics the air flows through the following sequence [K1]

    a) Filter, regulator, lubricator   b) Regulator, filter, lubricator

    c) Lubricator, compressor, cylinder   d) Filter, cylinder, lubricator

PART B (10 x 2 = 20 Marks)

11. Differentiate hydraulics and pneumatics. [K1]

12. Define linear and rotary actuator. [K1]

13. Draw the symbol for pressure relief valve. [K1]

14. What is the function of pressure sequencing valve? [K1]

15. Brief the function of pressure switch. [K1]

16. Discuss the function of pressure intensifier in a hydraulic circuit. [K2]

17. Explain the working of twin pressure valve. [K2]

18. Give the function of shuttle valve in pneumatics. [K2]

19. What do you mean by logic control? [K1]

20. State the advantages of fluidic elements? [K1]

PART C (10 x 5 = 50 Marks)

21. Explain the properties of hydraulic fluids. [K₃]

22. Explain construction and working principle of unbalanced vane pump with neat sketch. [K₃]

23. Discuss the construction and working of counter balance valve with neat sketch. [K₃]

24. Discuss the construction and working of pressure compensated flow control valve with neat sketch. [K₃]

25. Draw and explain meter in and meter out circuit. [K₃]

26. Explain the different types of accumulators. [K₃]

27. Draw and explain the working of lubricator. [K₃]

28. Draw and explain the working of quick exhaust valve. [K₃]

29. Explain the construction of PLC with block diagram [K₃]

30. Write short notes on ladder logic diagrams. [K₃]

PART D (2 x 10 = 20 Marks)

31. Explain any two applications of accumulator with the help of circuits. [K₃]

32. Construct the pneumatic circuit for the following sequence of operations using cascade method . $A^+B^+B^-A^-$ [K₃]

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