Reg. No. :

Question Paper Code: 45706

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fifth Semester

Mechanical Engineering

14UME506 - APPLIED HYDRAULICS AND PNEUMATICS

(Regulation 2014)

Duration: 1.15 hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The engineering science pertaining liquid pressure and flow is

    (a) hydraulics   (b) pneumatics
    (c) both (a) and (b)   (d) none of the above

2. How is power transmitted in fluid power systems?

    (a) gradually   (b) instantaneously
    (c) both (a) and (b)   (d) very slowly

3. Rotary motion in a hydraulic power unit is achieved by using

    (a) hydraulic cylinder   (b) pneumatic cylinder
    (c) hydraulic and pneumatic cylinder   (d) one of the above

4. _____ converts pressure energy of fluid into mechanical work.

    (a) Pump   (b) Actuator   (c) Compressor   (d) Motor

5. A _____ is designed into most hydraulic systems to prevent damage due to excessive pressure

    (a) Directional control valve   (b) Relief valve

    (c) Lift control valve   (d) Flow control valve

6. The most common accumulator circuit is

    (a) supplementing pump flow   (b) making up for system leaks

    (c) emergency power supply   (d) none of the above

7. In which of the following compressors, air is drawn in axially, accelerated to high velocity and then expelled in a radial direction.

    (a) reciprocating piston compressor   (b) rotary screw compressor

    (c) rotary vane compressor   (d) turbo compressor

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. Find the sequence for the operations mentioned below
    1. Cylinder *A* undergoes forward stroke
    2. Cylinder *B* undergoes forward stroke
    3. Cylinder *A* undergoes backward stroke
    4. Cylinder *B* undergoes backward stroke

    (a) $A^- B^- A^+ B^+$ (b) $A^+ B^- A^+ B^-$ (c) $A^+ B^+ A^- B^-$ (d) $A^+ B^- A^+ B^-$

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.   Compare different power systems used in industry based on their properties.   (8)

12.   Explain with neat sketch the working principle of external gear pump.   (8)

13.   Explain with a neat sketch about the construction of pilot operated check valve.

                                                                            (8)

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14   What is the synchronizing? Explain the synchronizing circuit with suitable approaches?   (8)

15.   Elaborate in detail about the capabilities of electro-hydraulic servo system and also discuss why hydraulic servo system is preferred than electrical motor drives.   (8)

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