Roll No

PRESIDENCY UNIVERSITY
BENGALURU

G9H⁻6

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024

Semester : Semester VII - 2020
Course Code : MEC3062
Course Name : Hydraulics and Pneumatics
Program : B.Tech. Mechanical Engineering

Date : 03-JAN-2024
Time : 9:30AM - 12:30 PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS   5 X 2M = 10M

1. A hydraulic motor is a device which converts ___ energy into _____ energy

(CO1) [Knowledge]

2. The performance of hydraulic motors depends on ___ & ____

(CO1) [Knowledge]

3. Define Mechanical Efficiency.

(CO2) [Knowledge]

4. Explain Pascal's Law.

(CO2) [Knowledge]

5. . Examples for non-displacement (dynamic pumps) are ___ & ___

(CO1) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS   5 X 10M = 50M

6. Distinguish between balanced vane pump and unbalanced vane pump with a neat diagrams

(CO2) [Comprehension]

7. Write the symbols for the following pneumatic parts,
    a. Push button operated valve   b. Pedal operated valve   c. Spring return/reset
    d. roller-lever operated limit switch   e. Pilot operated valve

(CO3) [Comprehension]

8. Explain construction and working of compressed air filter.

(CO4) [Comprehension]

9. A hydraulic cylinder is to compress a car body in 10 seconds. The operation requires a stroke of 3 m and a force of 40,000 N. If a 7.5 N/mm^2 pump has been selected, find the following:
   i) Required piston area and piston diameter.
   ii) The necessary pump flow rate(m^3/sec)
   ii) The hydraulic power capacity in kW

(CO5) [Comprehension]

10. Explain two way,three way and four way control valves with help of neat and clean diagram

(CO5) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS   2 X 20M = 40M

11. A) Define Air-Compressor
    B) Explain the classification of air compressors.
    C) Explain signal overlap with help of circuit diagram.

(CO3) [Application]

12. With help of neat and clean diagram explain structure and working of pneumatic control system.

(CO4) [Application]