

B.E. (Mechanical Engineering) Eighth Semester (C.B.S.)

Elective-II : Industrial Fluid Power

P. Pages : 2

Time : Three Hours



NRT/KS/19/3666

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.
 10. Use of non programmable calculator is permitted.

1. a) Explain the various component involved in fluid power system by giving suitable example. **7**
- b) What are the basis of selection of hydraulic fluid? Give the types of hydraulic fluid, additive used in fluid power system. **7**

OR

2. a) Explain the role of following component in fluid power system. **8**
- i) Sealing
 - ii) Filters
 - iii) Strainer
 - iv) Controls
- b) Explain working of hydraulic press with help of neat sketch. **6**
3. a) Give the procedure for selection of pump for hydraulic power transmission. Which type of pump is selected for operation of machine tools. **7**
- b) Write a short note on **6**
- i) Axial piston pump
 - ii) Vane pump

OR

4. a) Explain role of hydraulic intensifier in the fluid power system. Also give comparison between accumulator and intensifier. **7**
- b) An accumulator has a ram of diameter 250 mm and a lift of 8 m. The total weight an accumulator is 70 kN. The packing friction is 5% of the load on the ram. Find power delivered to the machine if ram falls through the full height in 100 sec and at the same time the pumps are delivering 0.028 m³/s through the accumulator. **6**
5. a) Differentiate between pressure control valve direction control valve and flow control valve with suitable example. **6**

- b) Draw symbol for following direction control valve and applications. 7
 - i) 4 way 2 position D. C. valve
 - ii) 3 way 2 position D. C. valve
 - iii) Sequence valve

OR

- 6. a) Explain pressure relief valve and pressure reducing valve with neat sketch. 6
- b) Explain meter in and meter out circuits. 7
- 7. a) Explain working and symbol of linear and rotary actuators. 7
- b) Explain role of seals and gasket in hydraulic systems. Discuss material used for sealing and gasket. 7

OR

- 8. a) Explain hydraulic motor with the help of neat sketch. 7
- b) Give procedure and method of control of acceleration and deceleration in single cylinder single acting piston. 7
- 9. a) Explain with neat sketch working of milling machine and also its hydraulic circuits. 7
- b) Draw the following circuits. 6
 - i) Bleed off circuits.
 - ii) Sequencing circuits.

OR

- 10. a) Explain trouble shooting and maintenance of hydraulic circuits. 6
- b) Using double acting cylinder flow control valve with check valve, pressure relief valve, filter and D. C. valve develop a circuits for speed control during a forward stroke. 7
- 11. a) Explain general layout of pneumatic system. Write its merit and demerits over hydraulic system. 6
- b) Design a pneumatic circuits for operation of two double cylinders such that one operate after other at a certain time interval using delay valve. 7

OR

- 12. Write a shorts notes on **any three**. 13
 - i) 5×2 DC valve
 - ii) Air motor in pneumatic ckt
 - iii) Pressure relief valve in Pneumatic ckt
 - iv) FLR unit
