32152 – Industrial Automation

1. FLUID POWER – PUMP AND MOTOR

Part – A

1. Define fluid power?
2. State Pascal's law
3. What is reservoir?
4. Define volumetric efficiency?
5. Define mechanical efficiency?
6. Define overall efficiency?
7. What is single acting cylinder?
8. What is hydraulic actuator?
9. What is meant by pump noise?
10. Name the types of hydraulic motors?
11. Define term of shock absorbers?
12. What is hydraulic system?

Part – B

1. What are the elements of hydraulic system?
2. Write applications of hydraulic system?
3. What are advantages of hydraulic system?
4. Write classification of pump.
5. Write about pump selection?
6. Write pump selection procedure?
7. Write various cylinder mountings?
8. Write about hydraulic cylinder cushions?
9. Write short notes about shock absorbers.
10. Write about double acting cylinder.
11. What are classification hydraulic motors?

Part – C

1. Explain about basic components of hydraulic systems?
2. Explain about gear pumps.
3. Explain construction and working vane pump?
4. With neat sketches explain the working of lobe pump?
5. With neat sketches explain about piston pumps?
6. Explain three types of lever systems.
7. Explain about hydraulic shock absorber?
8. Explain the gear motor?
9. Explain about vane motor?

2. CONTROL VALVES AND CIRCUITS

Part – A

1. What are hydraulic valves?
2. What are the types of hydraulic valves?
3. What are flow control valves?
4. What are types of flow control valves?
5. What is function of flow control valves?
6. What are direction control valves?
7. What is the function of check valves?
8. What are the types of check valves?
9. What is a servo valve?
10. What is an accumulator?
11. What are type's accumulators?

Part – B

1. Explain short notes about simple pressure relief valve?
2. What is a pressure reducing valve?
3. Write a note on unloading valve?
4. Draw symbol of pressure reducing valve, 4/3 DCV, unloading valve.
5. Write about needle valve.
6. Write types of servo valves.
7. Write types of accumulators?

Part – C

1. Explain construction and operation of compound pressure relief valve with neat sketch?
2. With neat sketches explain unloading valve with application circuit.
3. Explain counter balance valve with application circuit.
4. Explain pilot operated check valve with neat sketch?
5. Write in brief about hydro mechanical servo valve with neat sketch?
6. Explain about two stage electro hydraulic servo valve with neat sketch.
7. With a neat sketch explain about types of accumulators.
8. Explain fail safe control circuit by using emergency cut of valve with neat sketch?
9. Explain two hand safety control circuit with neat sketch?

3. SELECTIONS OF DEVICES

Part – A

1. What is meant by cylinder cushioning?
2. What is piston rod buckling?
3. What are materials for gaskets?
4. What is cylinder thrust?
5. What is local deceleration?
6. Name types of seals?
7. What are types of filters?
8. What is meant by fluid reservoir?
9. Define hydro static drive?
10. What is meant by seal?

Part – B

1. What is the purpose filter?
2. How the speed of cylinder selected?

3. Define term sizing accumulator.
4. What are functions of fluid reservoirs?
5. How braking of hydrostatic drive is done?
6. Name the types filter?
7. List types of contact seals?
8. On what standard preferred sizes are selected?

Part – C

1. Explain in detail the selection of hydraulic cylinder?
2. Explain about preferred sizes.
3. Explain the types of seals in details.
4. Write short notes on selection of relief valve and flow control valve, direction control valve.
5. Explain the reservoirs and its design.
6. Explain the types of filters?
7. How sizing of accumulators is done? Explain.
8. Explain the details of pressure losses.
9. Explain the selection of pump.
10. Explain about hydro static drives.

4. PNEUMATIC SYSTEMS

Part – A

1. What is pneumatic system?
2. Write important elements of pneumatic system?
3. What is function of regulator?
4. What is direction control valve?
5. What is meant by 3/2 DCV?
6. Define pneumatics.
7. What is function of check valve?
8. What is function exhaust valve?
9. Define limit switch
10. What is purpose of lubricator?
11. Define pressure sensor.
12. What is muffler?

Part – B

1. Draw the symbol of filter, check valve, air compressor?
2. Explain of operation of single acting cylinder.
3. Write applications of pneumatic systems.
4. What are basic components of pneumatic circuit?
5. Write advantages of pneumatic system
6. What is hydro pneumatic system?
7. What are MPL elements?
8. Draw symbol of flow control valve, pressure relief valve, 4/2 DCV?
9. What is air oil reservoir?
10. What are types of pneumatic position sensors?

Part – C

1. Explain basic elements pneumatic systems with neat sketch.
2. Explain about air filter.
3. Explain about FRL unit.
4. Explain about types of DCV's?
5. Explain about rotary spool valves?
6. With circuit diagram explain direct control of double acting cylinder?
7. Explain air pilot control of double acting cylinder with circuit
8. Explain two step speed control circuit?
9. Explain two hand safety control circuit with neat sketch?

5. PROGRAMMABLE LOGIC CONTROLLERS

Part – A

1. What is PLC?
2. What are timers?
3. What are PID functions?
4. What are PWM functions?
5. What about SCADA?
6. What is rung?
7. What is ladder diagram?
8. Define I/O module
9. What are major unit of PLC?

Part – B

1. What are applications of PLC?
2. Name programming methods of PLC
3. What are types programming devices?
4. Write advantages of PLC?
5. Write criteria of selection of PLC?
6. List components PLC?
7. Explain about memory in PLC?
8. Write variety of programming languages
9. Write requirements of PLC.
10. What is CPU in PLC?
11. Write some ladder instructions types.

Part – C

1. Explain the components of PLC block diagram with sketch.
2. What are programming methods in PLC and explain it.
3. Write brief notes of timers and its types.
4. Explain about four floor lift system with neat ladder diagram
5. Explain about automatic star delta starter.
6. With neat sketch explain about SCADA and its advantages.
7. How to convert simple relay diagram into PLC relay ladder diagram.
8. Explain about PID and PWM functions.
9. Explain about configuration of SCADA.