

**SUBJECT CODE - 218**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(Mech) Examination Nov/Dec 2015**  
**Industrial Hydraulics and Pneumatics**  
**(Revised)**

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B i) Solve any three questions from each section.  
ii) Assume suitable data, if necessary.

**Section-A**

- Q1. a) Draw a basic hydraulic circuit showing various components of a circuit. Explain the function and working of each of the component 09  
b) What are the different oil additives? Why they are used in hydraulic oils? 04
- Q.2 Draw the following symbols: 13
- i. F.R.L unit
  - ii. Pressure relief valve, hydraulic and pneumatic
  - iii. Quick disconnect coupling with check
  - iv. Solenoid operated four way three position direction control valve
  - v. Double acting cylinder with single end rod
- Q.3 a) What is the function of hydraulic pumps and motors in the hydraulic systems? What are oscillators? 04  
b) With neat sketch explain the construction and working of a radial piston pump 09
- Q.4 a) With a neat sketch explain the construction and function of a hydraulic oil reservoir 06  
b) With a neat sketch explain the construction and working of a Lobe type compressor 07
- Q.5 Write short note on (any three) 14
- i. Heat exchanges used in hydraulic systems
  - ii. Accumulators
  - iii. Pressure boosters
  - iv. Laws governing the hydraulic & pneumatic systems
  - v. Hydraulic fluids used in hydraulic systems

**Section-B**

- Q.6 a) What are the types of control valves used for the following functions in the hydraulic and pneumatic system. Explain in brief each of them. 07
- i. Speed control
  - ii. Force control
  - iii. Movement direction control
  - iv. Safety of the system
- b) With a neat simple circuit diagram explain working of a unidirectional flow control valve used in circuit in pneumatic system 06

- Q.7 Draw a speed control hydraulic circuit for the operation of a reversible hydraulic motor using a meter and circuit 13 for speed control in both the direction. Use a 4 way three position. Land lever operated valve and other standard components required for the circuit. Explain the working of the circuit and give its application 13
- Q.8 Draw a circuit for a hydraulic press where, for safety, the operator is required to engage his both the hands to operate the stroke of the press. Consider a double activity cylinder, press button operated control valves and other standard components. Explain the working of the circuit. 13
- Q.9 What is PLC? How is it used in the electro hydraulic and electro pneumatic systems? State its advantages and limitations 13
- Q.10 Write short notes on any three 14
- i. Refrigeration air drier separation
  - ii. Sensors used in electro hydraulic systems
  - iii. Limit switches used in circuits
  - iv. Counter balance circuit
  - v. Hydraulic and pneumatic seals