Total No. of Printed Pages:2

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 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 <u>any three</u> 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