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Question Paper Code: BCC004



INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)

M.Tech II Semester End Examinations (Supplementary) - January, 2019

Regulation: IARE-R16

DESIGN OF HYDRAULIC AND PNEUMATIC SYSTEMS (CAD/CAM)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) Explain the physical properties of fluids with suitable examples. [7M]
(b) What are fluid power systems? Explain the applications of fluid power systems. [7M]
2. (a) Differentiate electrical system and hydraulic system. Enumerate their importance in respective fields. [7M]
(b) What is the importance of pneumatic system. Describe the components of pneumatic system with neat sketches. [7M]

UNIT – II

3. (a) With neat sketch explain the construction and working of piston pump. [7M]
(b) Describe the cap end cushioning of hydraulic cylinder with a neat diagram.. [7M]
4. (a) Illustrate the importance of hydraulic pumps. How can a pump be selected for a particular application. [7M]
(b) List out the various efficiencies of the pump. Explain the importance of efficiency while designing a pump. [7M]

UNIT – III

5. (a) What are the different elements of power pack. Explain them with neat sketch. [7M]
(b) Write the design procedure for design of gear pump. What precautions should be taken while designing a gear pump. [7M]
6. (a) Design a hydraulic power pack of 10 liter capacity with a gear pump and induction motor and other required elements. [7M]
(b) Describe the heating system used for hydraulic power pack. [7M]

UNIT – IV

7. (a) Design a synchronizing circuit used for hydraulic system [7M]
(b) With neat sketch explain the construction and working of any one type of gas accumulator. [7M]
8. (a) Classify the direction control valves and explain the working of check valve. [7M]
(b) Where do you use double acting hydraulic cylinder. Design a circuit for operation of double acting hydraulic cylinder. [7M]

UNIT – V

9. (a) Explain the relay circuit used for automation with a neat sketch. Discuss the importance of relay circuit. [7M]
- (b) Explain how micro controllers are used for automation. Why micro controllers are so important while going for automation. [7M]
10. (a) Explain the functions of Programmable logic circuit with block diagram. [7M]
- (b) Explain the common troubles and their causes for pneumatic circuits. [7M]

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