Code No: 157BQ **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, December-2023/January-2024
FLUID POWER SYSTEMS
(Mechanical Engineering)

Time: 3 Hours **Max.Marks:75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A
(25 Marks)

1.a) Define Fluid power Systems. [2]
b) What is the selection criterion for pneumatic components? [3]
c) Define underlap and overlap in the context of servo valve spools. [2]
d) Draw the hydraulic symbols for a pressure-temperature compensated flow control valve. [3]
e) Distinguish between pressure control valve and pressure relief valve? [2]
f) What is the use of high low circuit? [3]
g) What is meter-out circuit? What are its applications? [2]
h) What is the use of bleed-off circuits? [3]
i) How is a counter represented in a ladder diagram? [2]
j) Explain and draw the displacement time diagram? [3]

PART – B
(50 Marks)

2.a) What are the important considerations taken while selections of a pump for particular application? Explain the procedure.
b) Discuss in detail the future of fluid power industry in India in detail. [5+5]

OR

3.a) Brief the various advantages, disadvantages and applications of fluid power system in detail.
b) What are the desirable properties of fluid in hydraulic system? Explain. [5+5]

4.a) What are actuators? How are they classified? Explain any one of them briefly.
b) Write the various types of direction, pressure and flow control valves in detail. [5+5]

OR

5.a) What are the different forces acting in longitudinal and lateral directions of spool valve? Discuss them.
b) Explain pressure override in pressure control valves. [5+5]

6. Differentiate between servo valve and proportional control valve in detail. [10]

OR

7. What do you understand by the synchronization of control circuits? Explain with a suitable example. [10]

8. Describe with a circuit diagram the construction and working of a counterbalance valve in hydraulic circuit. [10]

OR

9. What is a time delay valve? What are its components? Explain the principle of operation and applications of a time delay valve. [10]

10. Explain electro pneumatic control of double acting cylinder with a suitable circuit.[10]

OR

11. Explain the following in detail?
a) Air hydraulic control.
b) Will-dependent control. [5+5]

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