29. a. i Explain the working of rotary direction control value. (4 Marks)

ii. With diagram explain the working principle of pressure compensated flow control value. (8 Marks)

(OR)

b.i. With circuit explain the operation of electro hydraulic servo system. (8 Marks)

ii. Discuss the difference between servo and proportional values. (4 Marks)

30. a. What are fluid conditioners? Explain air line filter and lubricator. Draw the symbol.

(OR)

b.i. Explain the need of fluid sensor. (2 Marks)

ii. Explain the operation of cone jet proximity sensor. (4 Marks)

iii. Explain the operation of AND/ NAND fluidic device with truth table. (6 Marks)

31. a. Design a circuit to generate the cycle $B^{-}D^{+}D^{-}C^{-}B^{+}C^{+}$. Explain neatly the procedure to be followed:
'B, D and C' indicate cylinders and
'+' means extension of cylinders and
'–' means retraction of cylinder

(OR)

b. A double acting cylinder is controlled by a 4/3 DCV which holds the regenerative neutral. The pressure relief regenerative neutral. The pressure relief value is set at 9 N/mm^2. Piston area is 175 cm^2 and rod are is 60cm^2. If pump flow is 20 gallons/ min [1 gallon = 3.785 (liters)], find the cylinder speed, load carrying capacities for various positions of the DCU.

32. a. Explain with suitable circuit how in an industry
(i) Production of cylinder from free falling be achieved.
(ii) Safety of operator by suing two handed push button.

(OR)

b.i List out the probable cause for overheating hydraulic fluid, actuator fails to move and noisy. (9 Marks)

ii. Discuss the steps to be taken to eliminate pump cavitation. (3 Marks)

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Reg. No.															

B.Tech. DEGREE EXAMINATION, DECEMBER 2016
Fifth Semester

ME1025 – FLUID POWER CONTROL
(For the candidates admitted during the academic year 2013 – 2014 and 2014 -2015)

Note:
(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.
(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

1. Slip of a reciprocating pump is defined as the
(A) Sum of actual discharge and the theoretical discharge
(B) Ratio of actual discharge to the theoretical discharge
(C) Product of theoretical and actual discharge
(D) Difference of theoretical discharge and the actual discharge

2. A hydraulic coupling belongs to the category of
(A) Energy transfer machines
(B) Power developing machines
(C) Power absorbing machines
(D) Energy generating machines

3. In order to avoid cavitation in centrifugal pumps
(A) The suction pressure should be low
(B) The delivery pressure should be high
(C) The suction pressure should be high
(D) The delivery pressure should be low

4. The working of which of the following hydraulic units is based on Pascal's law?
(A) Hydraulic coupling
(B) Hydraulic press
(C) Jet pump
(D) Air lift pump

5. Which energy is used to transmit power in hydrostatic system?
(A) Pressure energy
(B) Kinetic energy
(C) Potential energy
(D) Dynamic energy

6. For which of the following purpose hydraulic film acts as a seal between the machined cavity and spool
(A) To reduce leakage
(B) For cooling purpose
(C) For lubrication purpose
(D) To improve surface finish

7. What is the relation between temperature and viscosity for hydraulic oil?
(A) Temperature and viscosity vary linearly
(B) As temperature decreases viscosity decreases at atmospheric pressure
(C) As temperature increases viscosity decreases at atmospheric pressure
(D) No relation with temperature and viscosity