

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER IV (NEW) – EXAMINATION – SUMMER - 2017

Subject Code: 2741101**Date: 03/05/2017****Subject Name: HYDRAULIC & PNEUMATIC SYSTEMS IN AUTOMOTIVE VEHICLES****Time: 02:30PM-05:00PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** In meter-in-circuit, a cylinder with 100 mm bore diameter and 70 mm bore diameter is used to exert a forward thrust of 100 kN, with a velocity of 0.5 m/min. Neglect the pressure drop through piping and valves. If the pump flow is 20 litre/min, find **07**
1. Pressure required at pump on extend
 2. Flow through the flow control valve
 3. Relief valve setting
 4. Flow out of pressure relief valve
 5. System efficiency during extend.
- (b)** Define following properties of fluid **07**
1. Demulsibility 2. Pour Point 3. Viscosity Index 4. Kinematic Viscosity
 5. Fire point 6. Neutralisation Number 7. Absolute viscosity
- Q.2 (a)** What is the cracking pressure of relief valve and how does it affect the selection of relief valve? **07**
- (b)** Explain the failure criteria of Dynamic Seal? **07**
- OR**
- (b)** Explain the hydraulic pressure fuse with neat sketch **07**
- Q.3 (a)** Describe the maintenance and troubleshooting of pneumatic system. **07**
- (b)** Describe construction and working of swash plate axial piston hydro-motor. **07**
- OR**
- Q.3 (a)** Short note on Hydraulic tipping mechanism with sketch. **07**
- (b)** What is anti-lock braking system (ABS) in vehicle? How the pneumatic and hydraulic system works in this system? **07**
- Q.4 (a)** Explain the hydrostatic steering for heavy vehicle of 50 tonnes with neat sketch. **07**
- (b)** Classify air compressors. What is its function in pneumatic system? Write selection criteria for air compressor in pneumatic system. **07**

OR

- Q.4** (a) Explain the current developments in Hydraulic and pneumatic system. **07**
- (b) Explain selection criteria for motors. **07**
- Q.5** (a) Classify the pneumatic cylinders and briefly explain according to construction. **07**
- (b) Describe working of air brake used in automobiles with sketch. **07**

OR

- Q.5** (a) What is the main advantages of bellows type accumulator over piston and Diaphragm type accumulators? **07**
- (b) Explain PLC Construction. **07**
