21718

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE : **12**

(a) Draw & explain working of hydraulic system with it's general layout.

(b) Explain why 4/2 DCV is preferred for hydraulic & 5/2 DCV for pneumatic systems.

(c) List out any four criteria for selection of hydraulic pump in hydraulic system. Explain in brief.

(d) State different types of pressure control valves with their applications.

(B) Attempt any ONE of the following : **6**

(a) With a neat sketch, explain principle & working of Geroter pump.

(b) Describe with neat sketch pressure & temp. compensated flow control valve.

2. Attempt any TWO of the following : **16**

(a) Explain with neat sketch, symbol & working of time delay valve.

(b) Sketch & explain meter-in hydraulic circuit to control the speed of extension of DAC. Explain why meter-in circuit is not preferred for over running loads.

(c) What is mean by FRL unit ? Explain function of FRL unit with neat sketch.

3. Attempt any FOUR of the following : **16**

(a) Write any four reasons of failure of hydraulic seals.

(b) State the use of accumulators in hydraulic circuit ? Explain spring loaded accumulator with neat sketch.

(c) Draw & explain in brief hydraulic bleed off circuit.

(d) State the causes & remedies for the following :

(i) Pump not delivering oil

(ii) Excessive pump noise

(iii) System excessively hot

(iv) Low pressure in system

(e) Draw sketch and explain working of tandem cylinder.

4. (A) Attempt any THREE of the following : **12**

(a) State the limitations of pneumatic system.

(b) List the factors to be considered for selecting the pipes while designing the pneumatic system.

(c) State any two applications of 3 × 2 DC pneumatic valve with any circuit diagram.

(d) Explain with circuit diagram a pneumatic circuit for speed control of bidirectional motor.

(B) Attempt any ONE of the following : **6**

(a) Distinguish between positive displacement pump with non-positive displacement pump.

(b) With a neat sketch, explain working of telescopic cylinder. Draw its symbol.

5. Attempt any TWO of the following : **16**

(a) Describe the term 'cushioning' of cylinders. Explain with neat sketch.

(b) Explain with neat sketch working of sequencing circuit for two single acting air cylinders.

(c) From the given circuit answer the following :

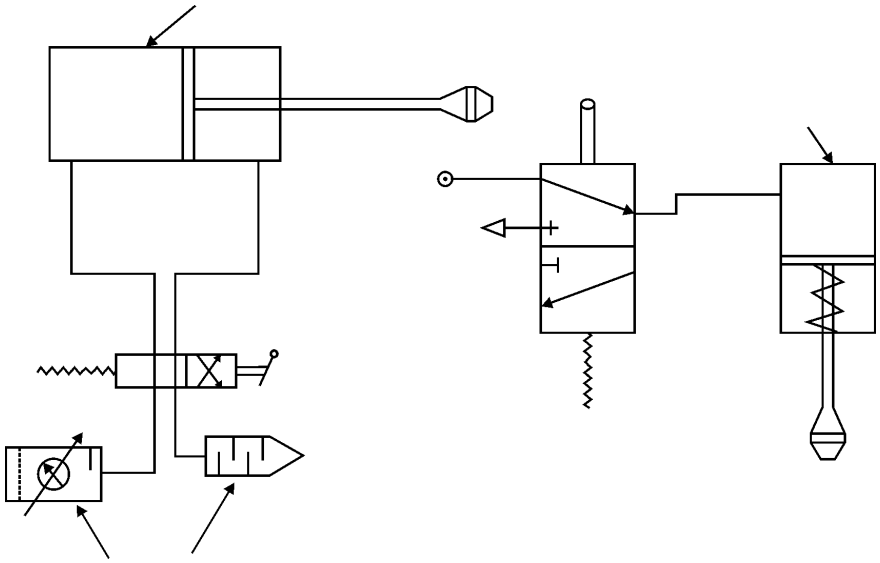

Fig. 1

(i) Name the circuit and state it's application.

(ii) Name the component indicated by arrow.

6. Attempt any FOUR of the following : **16**

(a) Explain shuttle valve with neat sketch.

(b) Explain sequence valve with neat sketch.

(c) Define any four important properties of hydraulic fluid.

(d) Sketch the two positions of rotary spool type 3/2 DCV & explain in brief.

(e) State different types of air motors. Explain any one.
