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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18MEE322T - FLUID POWER CONTROL

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks)

Answer **all** Questions

		Marks	BL	CO
1.	Fluid power may be defined as the technology that deals with the _____, _____ & _____ (A) Generation, Control, Transmission (B) Generation, Store, Transmission (C) Generation, Control, Utilizing (D) Generation, Control, convert	1	1	1
2.	Which is not the basic components of hydraulic system? (A) Tank (B) Prime mover (C) Pump (D) Timer	1	1	1
3.	Which is not the function of the fluid (A) To transmit power (B) To reduce noise of the system (C) To lubricate moving parts (D) To prevent rust and corrosion	1	2	1
4.	Intermolecular attraction between molecules of the same liquid is called as _____ (A) Adhesion (B) Viscosity (C) Cohesion (D) Volatility	1	2	1
5.	Select the unidirectional valve in the below list (A) Shuttle valve (B) Check valve (C) Throttle (D) Rotary spool valve	1	2	2
6.	Pressure intensifier are also known as _____ (A) pressure gauge (B) accumulator (C) pressure relief valve (D) pressure boosters	1	1	2
7.	_____ is used to compensate any possible loss of energy due to internal or external leakage in a system. (A) Accumulator (B) Tank (C) Servo system (D) Intensifier	1	1	2
8.	_____ is used to identify the extreme limits of the cylinder actuation. (A) Make switch (B) Limit switch (C) Break switch (D) Relays	1	1	2
9.	The function of the _____ is to control the noise (A) Mufflers (B) Silencer (C) Air pressure regulator (D) Air dryers	1	2	3
10.	_____ is used to control the time duration of a working cycle. (A) Regulator (B) Counter (C) Timer (D) DCV	1	1	3

11.	Which device is used to safeguard the solenoids (A) Regulator (B) Relays (C) Solenoid (D) Timer	1	2	3
12.	_____ switches are mainly used for starting and stopping of the cycle. (A) Pressure (B) Temperature (C) Push button (D) Limit	1	1	3
13.	The ratio of work done per cycle to the stroke volume of the compressor is known as _____ (A) System pressure (B) Mean effective pressure (C) Average pressure (D) Work pressure	1	2	4
14.	Shuttle valve can be used as logic _____ valve (A) AND (B) NOR (C) NAND (D) OR	1	2	4
15.	_____ consists of a pump, motor, coupling, oil tank, filters, coolers and valves assembled as a single unit to supply pressurized fluid. (A) Hydraulic power pack (B) Single power unit (C) Pneumatic supply unit (D) Energy unit	1	2	4
16.	Which circuit is not having the arrangement of flow control? (A) Meter in circuit (B) Meter out circuit (C) Bleed off circuit (D) Cascading circuit	1	2	4
17.	In breakdown maintenance, troubleshooting is done after the _____ (A) failure of components (B) replace of components (C) proper information (D) purchase of spare parts	1	1	5
18.	In servicing the air cylinder, it is good practice to replace O-rings and _____ (A) filter (B) air hose (C) packing (D) DCV	1	1	5
19.	Which of the following not the causes for excessive noise in compressor? (A) Piston scratched (B) Loose motor fan (C) Broken diaphragm (D) Carbon on top of the piston	1	1	5
20.	In pneumatic system, _____ are the main reason for pressure drop. (A) capacity of compressor (B) parallel output (C) issues in compressor (D) air leaks	1	2	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	Explain any five advantages of fluid power system.	4	1	1
22.	Explain the working principle of check valve and throttle valve with sketches.	4	1	2
23.	Define pneumatic system and explain the need of FRL unit.	4	1	3
24.	Explain the benefits of cascading circuit.	4	2	4
25.	List any four common types of pump faults.	4	1	5
26.	What are limit switches? How do they differ from push button switches?	4	2	3
27.	Differentiate between meter-in and meter-out circuits with respect to speed control circuits.	4	2	4

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO

28.	(a) Discuss the principle of working and applications of the external gear pumps with a neat sketch.	12	2	1
	(OR)			
	(b) Describe the unbalanced vane pump with neat sketch and highlight its benefits over gear pump.			
29.	(a) Enumerate the working of compound pressure relief valve with a neat sketch.	12	2	2
	(OR)			
	(b) Elaborate the working mechanism of proportional directional valve.			
30.	(a) List the types of compressors. Explain the piston type compressor with a suitable diagram. List out its advantages and applications.	12	2	3
	(OR)			
	(b) What is fluidics? List the different pneumatic position sensors. Explain any two sensors with neat sketch.			
31.	(a) Design a hydraulic circuit for the following sequence A+C+B+B-C-A-, list the component and explain the step by operations of the circuit.	12	3	4
	(OR)			
	(b) Draw the suitable leakage compensator using accumulator. List its component and explain the step by operation of the circuit			
32.	(a) Discuss the probable causes of hydraulic system failure. Give the suitable remedies for the same.	12	1	5
	(OR)			
	(b) Draw the hydraulic circuit of hydraulic press and explain its working sequence.			

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