PART – A

Answer all questions. Each question carries 2 marks.

1. What are the primary functions of hydraulics fluids?
2. Sketch the complete symbol for a variable displacement bidirectional pump.
3. Explain the system failures occur due to presence of contaminants.
4. Differentiate between a strainer and a filter.
5. What is the purpose of cylinder cushion?
6. How are single acting cylinders retracted?
7. What does an unloading valve accomplish?
8. What is the purpose of a regenerative circuit?
9. What is meant by air-over-oil system?
10. What is a fail-safe circuit? 

(2 X 10 = 20 Marks)

PART-B

Answer any one question from each module

Module-I

11. (a) What are the desirable properties considered in the selection of hydraulic fluids?
    (b) With the help of a neat sketch, explain the working of a generated rotor pump.

OR

12. (a) State the main differences between hydraulic and pneumatic systems.
    (b) How selection of hydraulic pumps done in a hydraulic system.
Module-II

13. (a) What are the design considerations for hydraulic cylinders and rams?
    (b) Explain the functions of reservoir accessories.

OR

14. (a) Explain the different types of hydro-pneumatic accumulators.
    (b) What are the considerations required in the design of filters.

Module-III

15. (a) With the help of neat sketch explain the working of a vane motor.
    (b) Sketch and explain a hydraulic circuit for heat reduction.

OR

16. (a) Explain the working of a pilot operated sequence valve.
    (b) Explain the working of a 2-stage servo valve.

Module-IV

17. How speed control is done with the help of meter-in, meter-out and bleed-off circuits.

OR

18. Draw and explain a hydraulic circuit of an extrusion press.

(4 x 20 = 80 Marks)