Self-Study Sheet-10 Part-2, on Chapter-10: Fluid Conductors

1-What are the functions, types, materials, and the characteristics of fluid conductors? Discuss how do we determine the working pressure for each type of fluid conductor?

2-Discuss the usage, types, the main advantages and disadvantages, sizing method, installation precautions, and engineering standards applied for using &selecting **Flexible Hoses** in hydraulic circuits.

3-Discuss the usage, types, the main advantages and disadvantages, sizing method, installation precautions, and engineering standards applied for using &selecting **Steel Pipes** in hydraulic circuits.

4- 25gpm flows in 1" nominal size steel pipe. Find flow area &velocity for schedule 40, 80, 160 steel pipe.

5-Discuss the usage, types, the main advantages and disadvantages, sizing method, installation precautions, and engineering standards applied for using &selecting **Steel Tubes** in hydraulic circuits.

6- Select True (√) or False (x) for each statement:

#	True	False	statement
1			Fluid conductors carry fluid to all components in hydraulic circuits through flexible hose, steel tubing & steel pipe.
2			A safety factor of 0.4 is recommended on the pressure rating of hydraulic conductor's material. The working pressure of the conductor is taken as the rated burst pressure divided by the safety factor of 0.4
3			Flexible hoses are used inhydraulic circuits where linesmust not flexorbend. Hoses should be replaced every fewyears
4			Using flexible hoses in hydraulic circuits depends on system pressure, pressure pulses, velocity, fluid compatibility& environmental conditions.
5			Flexible hoses construction is standardized by Society of Automotive Engineers under SAE J5-17, known as R series.
6			The pressure ratings of flexible hoses depend on types and amounts of wall reinforcement which may be natural or synthetic fiber type, metal wire type, or braided or spiral bond reinforcement.
7			Flexible hoses should not be installed with any twist to avoid significant reduction of hose life
8			All rubber slowly deteriorates with contact from various substances, such as solvents, water, sunlight, heat, etc. Hose life is greatly reduced with system temperature increases.
9			Flexible hoses costs more & perform less than steel piping which is difficult to assemble, because welding is required to give maximum leak protection. Steel pipe requires costly flushing to insure a contaminant system at startup.
10			Flexible hoses are specified by internal diameter but steel pipes are specified by nominal outside diameter.
11			Steel tubing is used if rigid lines are needed with no welding but easy to assemble and form to achieve leak-free lines.
12			Steel tubing is specified by its wall thickness and outside diameter.
13			As flow rate is increased through a conductor, the flow velocity is decreased.
14			Maximum recommended velocitiesin suction lines are higherthan maximum recommended velocities inpressure lines
15			Steel tubing must be large enough to carry the required flow rate but not strong enough to withstand working pressure

********** **End of Fluid Conductors** **********