INTRODUCTION
PART A

1. A soap bubble is formed when the inside pressure is 5 N/m2 above the atmospheric pressure. If surface tension in the soap bubble is 0.0125 N/m, find the diameter of the bubble formed. [APRIL'10/1]

2. The converging pipe with inlet and outlet diameters of 200 mm and 150 mm carries the oil whose specific gravity is 0.8. The velocity of oil at the entry is 2.5 m/s, find the velocity at the exit of the pipe and oil flow rate in kg/sec. [APRIL'10/2]

3. What is the variation of viscosity with temperature for fluids? [NOV'09/1]

4. Find the height of a mountain where the atmospheric pressure is 730 mm of Hg at Normal conditions. [NOV'09/2]

5. What is meant by vapour pressure of a fluid? [APRIL'10 R-04/1]

6. Distinguish between atmospheric pressure and gauge pressure. [APRIL'10 R-04/2]

7. What are Non-Newtonian fluids? Give examples. [NOV'09 R-04/1]

8. Mention the uses of a manometer. [NOV'09 R-04/2]

9. What do you mean by absolute pressure and gauge pressure? [MAY'09 R-04/1]

10. Define the term Kinematic Viscosity and give its dimension. [MAY'09 R-04/2]

11. What is meant by continuum? [NOV'08 R-04/1]

12. State Pascal's hydrostatic law. [NOV'08 R-04/2]

13. What is specific gravity? How is it related to density? [APRIL'08 R-04/1]

14. How does the dynamic viscosity of liquids and gases vary with temperature? [APRIL'08 R-04/2]

15. How does the dynamic viscosity of (a) liquids and (b) gases vary with temperature? [NOV'07 R-04/1]

16. What is the difference between gauge pressure and absolute pressure? [NOV'07 R-04/2]

17. Differentiate between solids and liquids. [MAY'07 R-04/1]

18. Define the following terms: [MAY'07 R-04/2]
    (a)Total pressure (b) Centre (or) position of pressure

19. What is meant by capillarity? [NOV'06 R-04/1]

20. Define buoyancy. [NOV'09 R-04/2]

21. What is viscosity? What is the cause of it in liquids and in gases? [NOV'05/1]

22. State Pascal's law. [NOV'05/2]

DIMENSIONAL ANALYSIS

1. What do you understand by fundamental units and derived units? [JUNE '10/6]

2. What is Dimensionally Homogeneous equation and give an example? [JUNE '09-R04/3]

3. State the advantages of Dimensional and model analysis. [JUNE'09R-04/4]

4. State Buckingham's π theorem. [DEC '06/7]

5. What is meant by dynamic similarity? [DEC '08/4]

6. What is dynamic similarity? [DEC '09/5]

7. Define Froude's number. [DEC '09/6]

8. Define Reynolds number and Mach number. [APR'07/9]

9. What are the applications of model testing? [APR'10/9]

10. Give two examples of a fluid flow situation where Froude model law in applied. [NOV'09 /10]

12. What is a distorted model?What are its advantages? [APR'10R-04/10] [APR'08/10] [NOV'06 /10] [NOV'05 /10]

13. What are the types of similarities? [APR'07/10]

14. What is kinematic similarity? [NOV'06 /9]

15. What is meant by similitude? [NOV'08 /10]

FLOWTHROUGH CIRCULAR CONDUITS

1. Differentiate between laminar and turbulent flow. [NOV/DEC '2005/5]

2. Write down four examples of laminar flow. [NOV/DEC '2006/5]

3. Sketch velocity distribution curves for laminar and turbulent flows in a pipe. [NOV/DEC '2006/6]

4. What is the physical significance of Reynold's number? [MAY/JUNE '2007/5]

5. Define boundary layer and give its significance. [APR'10/3] [DEC '09/6]

7. Define the term Drag and Lift [APR'09/6] [NOV '09/6] [NOV '05/6]

8. List any four minor losses in a pipe flow. [MAY/JUNE '2007/6] [JUNE'10 R-4/4]

9. What is meant by equivalent pipe? (6) [NOV/DEC '2006/13b(i)]

10. Find the loss of head when a pipe of diameter 200 mm is suddenly enlarged to a diameter of 400 mm. Rate of flow of water through the pipe is 250 litres/s. [JUNE '10/4]

11. List the causes of minor energy losses in flow through pipes. [DEC '09/3]

12. What is T.E.L.? [DEC '09/4]

13. What is Hydraulic Gradient Line? [JUNE '09/6]

TURBINES

1. Differentiate between the turbines and pumps. [NOV/DEC '2007/7]

2. How are Hydraulic turbines classified? [MAY/JUNE '2009/8]

3. Classify turbines according to flow. [NOV/DEC '2005/8]

4. What are high head turbines? Give examples. [NOV 2009 R-04/9]

5. Define hydraulic efficiency of a turbine. [NOV/DEC '2006/9]

6. The mean velocity of the buckets of the Pelton wheel is 10 m/s. The jet supplies water at 0.7 m3/s at a head of 30 m. The jet is deflected through an angle of 160° by the bucket. Find the hydraulic efficiency. Take Cv = 0.98. [APRIL 2010/7]

7. Define specific speed. [NOV/DEC '2009/7] [NOV/DEC '2005/7] [MAY/JUNE '2007/10] [NOV/DEC '2007/8]

8. What are the different types of draft tubes? [APRIL 2010 R-04/8] [NOV 2009/8]

9. What are the functions of a draft tube? [NOV 2009 R-04/10] [MAY/JUNE '2007/9]

10. What is a draft tube for Kaplan turbine? [NOV/DEC '2006/10]

PUMPS

Centrifugal Pumps

1. The following data refer to a centrifugal pump which is designed to run at 1500 rpm. D1 - 100 mm, D2 = 300 mm, B1 = 50 mm, B2 = 20 mm, Vf1 = 3 m/s, β = 60°. Find the velocity of flow at outlet. [APRIL 2010/7]

2. What is meant by priming of pumps? Why is priming necessary in centrifugal pumps? [APRIL 2010 R-04/9] [MAY 2007 /8] [APRIL 2008/9]

3. Define cavitation in a pump. [MAY/JUNE '2007/7]

4. What is the maximum theoretical suction head possible for a centrifugal pump? [APRIL 2008/10]

5. What is the role of volute chamber of a centrifugal pump? [NOV/DEC '2005/10]

Reciprocating PumpS

1. Define slip of reciprocating pump. [APRIL 2010/7]

2. Mention the working principle of an Air-vessel. [APRIL 2010/10]

3. Can actual discharge be greater than theoretical discharge in a reciprocating pump? [NOV/DEC '2009/9]

4. Which factor determines the maximum speed of a reciprocation pump? [NOV/DEC'2009/10]

5. What are the functions of an air vessel? [APRIL 2010 R-04/10] [MAY 2009/9]

6. What is specific speed of a pump? How are pumps classified based on this number? [MAY/JUNE '2009/9]

7. When do negative slip occur? [NOV 2008/10]

8. Define slip of a reciprocating pump. [NOV 2007/10]

9. When will you select a reciprocating pump? [NOV 2005/9]

10. Write the classification of rotary pumps pumps?