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 **SAMPLE QUESTION BANK (APPLIED HYDRAULICS-I) CBGS**

1. Momentum equation is based on

(A) law of conservation of Kinetic Energy

(B) law of conservation of Potential Energy

(C) law of conservation of Momentum

(D) conservation of both kinetic and potential energy

2. In momentum equation, the force acting on the fluid mass ‘m’ is given by

(A) Newtons first law of motion

(B) Newtons second law of motion

(C) Newtons third law

(D) Both Newtons first & second law of motion

3. In bend pipes, Pressure at different sections are calculated by

(A) Bernoullis Equation

(B) Reynolds Equation

(C) Froude’s Equation

(D) Newtons second law

4. Moment of Momentum Equation is used for

(A) Analysis of flow problem in turbines and centrifugal pumps

(B) For finding torque exerted by the water on sprinkler

(C) Both a and b

(D) Calculating velocity of flow in bend pipes

5. In momentum equation, if sprinkler has to rotate freely then the external applied torque should be

(A) zero

(B) Maximum

(C) Minimum

(D) depend on the frequency of sprinkler

6. Mach number is significant in

(A) supersonics as with projectile and jet propulsion

(B) full immersions or completely enclosed flow with pipes, aircraft, etc.

(C) simultaneous motion through fluids where there is a surface of discontinuity, gravity forces, wave making effects, etc.

(D) subsonic as with projectile

#### 7. On the basis of dimensional equation, the maximum number of unknown that can be found, is

(A) One

(B) Two

(C) Three

(D) four

#### 8. If the units of mass, length, and time are doubled, unit of angular momentum will be

(A) Doubled

(B) Tripled

(C) Quadrupled

(D) remains unchanged

#### 9. Square root of the ratio of inertia force to elastic force is called as

(A) Mach's Number

(B) Cauchy's Number

(C) Both a. and b.

(D) frauds Number

#### 10. A model of with same shape is\_\_\_\_\_\_\_\_\_\_

(A) Geometric similarity

(B) Kinematic similarity

(C) Static similarity

(D) Dynamic similarity

#### 11. The dimensional formula of Relative density is

(A) [ML-3]

(B) [MLT-1]

(C) Dimensionless

(D) [ML2T-1]

#### 12. If force(F), length(L) & time(T) are the fundamental units , then the dimensional formula of mass is

(A) [FL-1T2]

(B) [FL-1T-2]

(C) [FLT-2]

(D) [FL-1T3]

#### 13. The dimensions of surface tension is

(A) [MLT-2]

(B) [MT-2]

(C) [ML2T-2]

(D) [ML2T3]

#### 14. The dimensional formula of coefficient of viscosity is

(A) [MLT-1]

(B) [M-1L2T-2]

(C) [ML-1T-1]

(D) [MLT]

Module – Impact of jet & Hydraulic Turbine

#### 15. The force exerted by a jet of water (in a direction normal to flow) impinging on a fixed plate inclined at an angle θ with the jet is

(A) ρaV2×sinθ

(B) ρaV×sinθ

(C) 0.5xρaV2×sin2θ

(D) 4ρaV×sinθ

#### 16. The force exerted by a jet of water impinging normally on a plate which due to the impact of jet, moves in the direction of jet with velocity u is

(A) ρa (V−u)/2

(B) ρa(V−u)

(C) ρa(V−u)2

(D) 2ρa(V−u)

#### 17. The ration of the normal force of a jet of water on a plane inclined at an angle of 30° as compared to that when the plate is normal to jet, is

(A) 1√2

(B) 1/2

(C) 1

(D) 0

#### 18. Braking jet in an impulse turbine is used

(A) to break the jet of water

(B) to bring the runner to rest in a short time

(C) to change the direction of runner

(D) to increase the rotation of runner

#### 19. A Pelton wheel is

(A) Tangential flow impulse turbine

(B) Inward flow impulse turbine

(C) Outward flow impulse turbine

(D) radial flow turbine

#### 20. An impulse turbine is used for

(A) Low head of water

(B) High head of water

(C) Medium head of water

(D) High discharge of water

#### 21. The gross or total head of the turbine is the …………. of the water levels at the head race and tail race.

(A) sum

(B) difference

(C) product

(D) average

#### 22. If Hg is the gross or total head and hf is the head lost due to friction, then net or effective head (H) is given by

(A) H=Hg/hf

(B) H=Hg×hf

(C) H=Hg-hf

(D) H=(Hg×hf)2

#### 23. The hydraulic efficiency of an impulse turbine is the

(A) ratio of the actual power developed by the turbine to the energy actually supplied by the turbine

(B) ratio of the actual work available at the turbine to the energy imparted to the wheel

(C) ratio of the work done on the wheel to the energy of the jet

(D) ratio of energy supplied to the turbine to the actual power developed.

#### 24. The mechanical efficiency of an impulse turbine is

(A) ratio of the actual power developed by the turbine to the energy actually supplied by the turbine

(B) ratio of the actual work available at the turbine to the energy imparted to the wheel

(C) ratio of the work done on the wheel to the energy of the jet

(D) ratio of energy of the jet to the work done on the wheel

#### 25. The hydraulic efficiency of an impulse turbine is maximum when velocity of wheel is …………… of the jet velocity.

(A) one-fourth

(B) one-half

(C) three-fourth

(D) doubled