

Unit-I

1. A progressive wave transfers:
A) Mass only B) Energy only C) Both D) Neither
Ans: B
2. In stationary waves, nodes are points of:
A) Maximum displacement B) Zero displacement C) Maximum velocity D) Constant pressure
Ans: B
3. The phase difference between consecutive nodes is:
A) 0 B) $\pi/2$ C) π D) 2π
Ans: C
4. Group velocity is defined as:
A) Velocity of particles B) Velocity of wave packet C) Phase velocity D) None
Ans: B
5. Relation between group and phase velocity (deep water waves):
A) $v_g = v_p$ B) $v_g = 2v_p$ C) $v_g = \frac{1}{2}v_p$ D) $v_g = 0$
Ans: C
6. Energy of a wave is proportional to:
A) Amplitude B) Square of amplitude C) Frequency D) Velocity
Ans: B
7. Stationary waves are formed due to:
A) Reflection B) Refraction C) Diffraction D) Dispersion
Ans: A
8. At antinodes:
A) Displacement zero B) Energy minimum C) Displacement maximum D) Pressure zero
Ans: C
9. In progressive waves, particles execute:
A) Translatory motion B) Circular motion C) Oscillatory motion D) No motion
Ans: C
10. Group velocity represents:
A) Energy transport speed B) Phase speed C) Particle speed D) Sound speed
Ans: A

Unit-II

11. Navier-Stokes equation represents:
A) Energy conservation B) Momentum conservation C) Mass conservation D) None
Ans: B

12. For incompressible flow:
A) Density varies B) Density constant C) Pressure constant D) Velocity constant
Ans: B
13. Velocity profile in Plane Couette flow is:
A) Parabolic B) Linear C) Exponential D) Logarithmic
Ans: B
14. Velocity profile in Plane Poiseuille flow is:
A) Linear B) Parabolic C) Constant D) Sinusoidal
Ans: B
15. Maximum velocity in Poiseuille flow occurs at:
A) Wall B) Center C) Boundary D) Inlet
Ans: B
16. Hagen–Poiseuille flow applies to:
A) Turbulent flow B) Laminar pipe flow C) Compressible flow D) Gas flow
Ans: B
17. Flow between parallel plates is driven by:
A) Gravity B) Pressure gradient C) Temperature D) Density
Ans: B
18. In Couette flow, motion is caused by:
A) Pressure gradient B) Moving plate C) Gravity D) Rotation
Ans: B
19. Viscosity causes:
A) Acceleration B) Resistance C) Pressure increase D) Density change
Ans: B
20. Flow between coaxial cylinders is called:
A) Poiseuille flow B) Couette flow C) Turbulent flow D) Ideal flow
Ans: B

Unit–III

21. Reynolds number is ratio of:
A) Pressure/force B) Inertial/viscous C) Viscous/gravity D) Energy/power
Ans: B
22. Reynolds number is:
A) Dimensional B) Dimensionless C) Vector D) Scalar with unit
Ans: B
23. Buckingham π -theorem deals with:
A) Energy B) Dimensionless parameters C) Velocity D) Pressure
Ans: B

24. Number of π terms =
A) $n+k$ B) $n-k$ C) $k-n$ D) nk
Ans: B
25. Dynamical similarity requires equality of:
A) Length B) Force ratios C) Velocity D) Pressure
Ans: B
26. Low Reynolds number indicates:
A) Turbulent flow B) Laminar flow C) Supersonic flow D) Shock waves
Ans: B
27. Gauss's law relates to:
A) Magnetic field B) Electric flux C) Current D) Energy
Ans: B
28. Faraday's law relates to:
A) Static charge B) Induction C) Magnetization D) Resistance
Ans: B
29. Magnetic Reynolds number indicates:
A) Velocity B) Magnetic diffusion C) Pressure D) Density
Ans: B
30. High magnetic Reynolds number implies:
A) Diffusion dominates B) Advection dominates C) No flow D) Constant field
Ans: B

Unit-IV

31. Stokes flow is valid for:
A) High Re B) Low Re C) Compressible flow D) Turbulent flow
Ans: B
32. Stokes equation neglects:
A) Viscosity B) Inertia C) Pressure D) Velocity
Ans: B
33. Oseen's equations improve:
A) Euler eqn B) Stokes eqn C) Navier-Stokes D) Continuity
Ans: B
34. Drag force depends on:
A) Velocity B) Radius C) Viscosity D) All
Ans: D
35. Lubrication theory assumes:
A) Thick film B) Thin film C) High velocity D) Turbulent
Ans: B

36. Boundary layer is region where:

- A) Pressure zero B) Viscosity important C) Velocity zero everywhere D) Density changes

Ans: B

37. Boundary layer thickness increases with:

- A) Distance B) Pressure C) Density D) Temperature

Ans: A

38. Blasius solution applies to:

- A) Turbulent B) Laminar boundary layer C) Compressible D) Rotational

Ans: B

39. Velocity at wall is:

- A) Max B) Zero C) Infinite D) Constant

Ans: B

40. Separation occurs due to:

- A) Favorable pressure B) Adverse pressure C) Constant pressure D) Zero velocity

Ans: B