قائمة الاسئلة
ميكانيكا الموائع ـ كلية الهندسة ـ قسم الميكاترونكس ـ المستوى الثاني ـ 3 ساعات ـ درجة هذا الاختبار (50)
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1) The gauge pressure is defined as:
   1) + Density × gravity × height.
   2) - Surface tension.
   3) - Density × height.
   4) - Density × gravity × diameter.

2) The fluid engineering applications are:
   1) - Blood Flow.
   2) - Pumps.
   3) - Turbines.
   4) + All of them.

3) The digital manometer is:
   1) - Very accurate for small temperature difference.
   2) + Very accurate for small pressure difference.
   3) - Very accurate for small volume difference.
   4) - It is concerned with the density only.

4) The MLT units for a power are:
   1) - M L T -2.
   2) - M L -1 T 2.
   3) + M L 2 T -3.
   4) - M L -2 T -3.

5) The specific gravity of a gas is:
   1) + Density of a gas / density of an air.
   2) - Density of an air/ density of water.
   3) - Density of a gas + density of an air.
   4) - Density of a gas – density of an air.

6) 1 bar is equal to:
   1) - 10 6 Pascal.
   2) - 10 5 N / m 3.
   3) + 10 5 Pascal.
   4) - 10 – 5 Pascal.

7) The viscosity is the resisting property of a fluid to a shearing force is related to:
   1) - μ / (du / dy).
   2) - μ – (du / dy).
   3) - μ + (du / dy).
   4) + μ × (du / dy).

8) The analysis of flow in an open channel depends on:
   1) - Momentum equation only.
   2) - Energy equation only.
   3) - Continuity equation only.
   4) + None of them.

9) In liquids:
   1) - The viscosity increases with increasing the temperature.
   2) + The viscosity decreases with increasing the temperature.
   3) - The viscosity remains the same.
   4) - None of them.

10) For the supersonic flow, the value of Mach number is:
1) - 0.5.
2) - Less than 1.
3) + More than 1.
4) - 1

11) The diffuser is used to:
1) + Convert the kinetic energy into pressure energy.
2) - Convert the pressure energy into kinetic energy.
3) - Convert the kinetic energy into electrical energy.
4) - None of them.

12) The "CFD" software is defined as:
1) - Computational fluid direction.
2) - Computational fluid depth.
3) + Computational fluid dynamics.
4) - Computational fluid density.

13) The capillary effect is defined as:
1) - The fall of a liquid in a small diameter tube.
2) - The rise or fall of a liquid in a big diameter tube.
3) + The rise or fall of a liquid in a small diameter tube.
4) - None of them.

14) The minor losses occur due to:
1) + The valves and tees.
2) - The tees only.
3) - The bends only.
4) - None of them.

15) For the transitional flow, the range of Reynolds number is:
1) - More than 4000.
2) - Between 1000 and 2000.
3) - Between 2000 and 5000.
4) + None of them.

16) The friction loss is known as:
1) - The average loss.
2) - The minor loss.
3) - It is a secondary cause of energy loss in a pipe line.
4) + None of them.

17) Mach number is defined as:
1) + Velocity of fluid / velocity of sound.
2) - Velocity of sound / velocity of fluid.
3) - Velocity of fluid – velocity of sound.
4) - Velocity of fluid + velocity of sound.

18) The ratio of the coefficient of dynamic viscosity to the density of fluid is known as:
1) - Non-absolute viscosity.
2) + Kinematic viscosity.
3) - Non-Newtonian viscosity.
4) - Velocity gradient.

19) In the rotameter device:
1) + The peripheral velocity is constant.
2) - The cross-sectional area must be fixed.
3) - The peripheral velocity is not constant.

4)   -   The cross-sectional area is not important.

20)   The MLT units for the energy are:
1)   +   M L 2 T -2.
2)   -   M L T -2.
3)   -   M 2 L 2 T 2.
4)   -   M L -3 T -3.

21)   The constant density of water at 40 0 C is:
1)   -   1000 g / cm 3.
2)   -   1000 kg / m 3.
3)   -   998 kg / m 3.
4)   +   None of them.

22)   The Energy Grade Line (EGL) is having:
1)   -   Only pressure head.
2)   -   Only kinetic head.
3)   -   Only velocity gradient.
4)   +   None of them.

23)   Reynolds number is defined as:
1)   -   Viscous force + Inertia.
2)   -   Inertia – Viscous force.
3)   +   Inertia / Viscous force.
4)   -   Newtonian number.

24)   The aerodynamics deals with:
1)   +   The flow of gases over bodies such as an air craft.
2)   -   The flow of gases over bodies such as a capillary tube.
3)   -   The flow of gases in pumps only.
4)   -   None of them.

25)   The unit of absolute viscosity is:
1)   -   Pa/sec.
2)   +   Pa.sec.
3)   -   Pa+sec.
4)   -   Pa-sec.

26)   The gas is a state of matter in which the molecules are:
1)   +   Practically unrestricted by cohesive forces.
2)   -   Practically restricted by cohesive forces.
3)   -   Practically restricted by adhesive forces.
4)   -   Practically is same as surface tension.

27)   What happens in the sudden enlargement of the pipes?
1)   -   Laminar pattern.
2)   +   Turbulence pattern.
3)   -   Transitional pattern.
4)   -   None of them.

28)   The relative density is defined as:
1)   -   Density of substance + density of water.
2)   -   Density of substance – density of water.
3)   -   Density of substance × density of water.
4)   +   None of them.

29)   The mass flow rate is defined as:
1)   -   Density / discharge.
2)   +   Density × discharge.

3)   -   Density + discharge.

4)   -   Density – discharge.

30)   The SI unit of the density of the fluid is:

1)   -   g / cm 3.

2)   -   kg / cm 3.

3)   -   g / mm 3.

4)   +   None of them.

31)   A cylindrical shaft of 90 mm diameter rotates about a vertical axis inside a fixed cylindrical tube of length 50 cm and 95 mm internal diameter. If the space between the tube and the shaft is filled by a lubricant of dynamic viscosity 2.0 poise. Determine the approximate circumferential velocity of the shaft where the speed of shaft is 4 (revolutions per second). Where: The circumferential velocity of the shaft is equal to: Angular velocity × radius.

1)   -   1.131 cm/sec.

2)   +   1.131 m/sec.

3)   -   1.131 km /hr.

4)   -   None of them.

32)   A car has a frontal projected area of 1.6 m 2 and travels at 60 km/h. It has a drag coefficient of 0.35 based on frontal area. Calculate the approximate power required to overcome wind resistance by the car for the density of air as 1.2 kg/ m 3. Where: Drag force "F D" = C D × Area × density × V 2 ×0.5 and Power required = F D × velocity.

1)   +   1.556 kW.

2)   -   1.556 Watt.

3)   -   1.556 kW.m.

4)   -   None of them.

33)   Water flows in a 2 cm diameter pipe. Taking the kinematic viscosity of water as 0.0098 stoke. Calculate the largest discharge approximately for which the flow will be definitely laminar for the critical Reynolds number as 2000. 'Where: 1 stoke = 10 – 4 m 2 /sec and Re = ρ × V × D / μ.

1)   -   0.03079 m 3 /sec.

2)   -   0.03 m 3 /min.

3)   +   0.03079 L/sec.

4)   -   None of them.

34)   Oil of R.D. =0.85 is flowing in a 150 m long smooth pipe at the rate of 80 L/sec. The loss of head in the line is h f = 67 m. If the kinematic viscosity of the oil is 0.1 cm 2/s. Calculate the diameter of the pipe. Use the correlation for the friction factor "f" as: h f = f L v 2/ 2gD = 8 LQ 2 f/ π 2 g D 5. Where g = 9.81 m/sec 2 and assume friction factor as 0.02. Calculate the approximate diameter.

1)   +   0.1188 m.

2)   -   0.1188 cm.

3)   -   0.2 m.

4)   -   None of them.