The term $\rho V^2/2$ in the Bernoulli equation is named as_____.

page 73

Choices:

- hydrostatic pressure
- total pressure
- static pressure
- dynamic pressure

correct

Which mathematician formulated and applied the buoyancy principle in history's first nondestructive test to determine the gold content of the crown of a king?

page 4

Choices:

- Galileo
- Pascal
- Aristotle
- Archimedes

correct

Question: 4 (Marks: 1)

The flow in which all fluid variables remain constant in time is called _____

Choices:

- uniform flow
- non-uniform flow
- steady flow
- unsteady flow

correct

Question: 3 (Marks: 1)

By the Pascal's law the pressure applied to a confined fluid increases the pressure throughout by_____

pg#27

Choices:

the larger amount

the same amount

correct

the shifting amount

the smaller amount

Question 2 (Marks: 1)

The solid body dropped in the fluid will ____ if the density of a solid body is smaller than the density of the fluid

Choices:

- esallate
- suspend
- sink
- float

correct

Question: 6 (Marks: 1)

In fluids, stress is proportional to _____.

pg#1

Choices:

strain

strain rate

correct

displacement

force

Question: 7 (Marks: 1)

The gas flows are assumed to be incompressible for Mach number _____

pg#75

Choices:

< 0.3

correct

> 0.3

< 0.5

> 0.5

Question: 8 (Marks: 1)

The fully developed flow in a circular pipe, in cylindrical coordinate system, is ___

pg#11

Choices:

one dimensional

correct

two dimensional

three dimensional

zero dimensional

Question: 9 (Marks: 1)

Any physical quantity can be characterized by _____

pg#14

Choices:

dimensions

correct

units

SI system

English units

Question: 11 (Marks: 1)

The correct relation for mass, density and volume is _____

(V=M/d) or (d=M/V)

Choices:

density =mass + volume

density =mass - volume

density =mass / volume

correct

density =mass ×volume

Question: 10 (Marks: 1)

A liquid is said to wet the surface when contact angle _____

pg#24

Choices:

$\phi < 90^0$

correct

$\phi = 90^0$

$\phi > 90^0$

for not wet

$\phi = 0^0$

Question: 10 (Marks: 1)

A liquid is said to wet the surface when contact angle _____

Choices:

$\phi < 90^0$

correct

$\phi = 90^0$

$\phi > 90^0$

$\phi = 0^0$

Question: 9 (Marks: 1)

Any physical quantity can be characterized by _____

Choices:

- dimensions
- units
- SI system
- English units

correct

Question: 13 (Marks: 1)

Flow visualization is useful not only in physical experiments but also in _____ as well

pg#34

Choices:

numerical solutions

correct

analytical solutions

Question: 14 (Marks: 1)

_____ acceleration is zero for steady flows

local acceleration is non zero for unsteady flow

Choices:

local

advective

convective

correct

normal

Question: 14 (Marks: 1)

_____ acceleration is zero for steady flows

Choices:

local

advective

convective

correct

normal

Question: 17 (Marks: 1)

The Reynolds transport theorem provides the link between the system and _____ approaches.

Choices:

control volume

correct

control mass

control surface

control area

Question: 16 (Marks: 1)

$\vec{\omega}$ = _____, $\vec{\omega}$ is rotation vector and $\vec{\zeta}$ is vorticity vector.

psi/2

Choices:

- $\vec{\omega} = \frac{\vec{\zeta}}{2}$

correct

- $\vec{\omega} = \frac{\vec{\zeta}}{2}$
- $\vec{\omega} = 2\vec{\zeta}$
- $\vec{\omega} = 3\vec{\zeta}$

Question: 15 (Marks: 1)

Which one of the following represent local part of pressure (P)?

Choices:

$(\vec{V}.\vec{\nabla})P$

$(\vec{F}.\vec{V})P$

$\frac{\partial P}{\partial t}$

∇P

Question: 15 (Marks: 1)

Which one of the following represent local part of pressure (P)?

Choices:

- $(\vec{V}.\vec{\nabla})\,P$
- $(\vec{\nabla}.\vec{V})\,P$
- $\frac{\partial P}{\partial t}$
- ∇P

Question 22 (Marks: 1)

The Bernoulli equation is valid in regions of _____ _____ flow

Choices:

steady, incompressible

correct

unsteady, incompressible

steady, compressible

unsteady, compressible

Question 26 (Marks: 1)

For some extensive property B or its corresponding intensive property b, the material derivative is given as _____

Choices:

Question: 29 (Marks: 3)

What is stagnation pressure? Write it mathematically

Answer:

Question: 30 (Marks: 5)

Determine the density, and mass of gasoline in a rectangle-shaped container whose dimensions are $2\ m \times 3\ m \times 4\ m$ at 100 kPa and 0°C and specific gravity is 0.7

Answer:

Question: 31 (Marks: 3)

Consider the following steady, two dimensional velocity field given as: $V = (u, v) = y^2 i + 3x^2 j$. Find an analytical expression for the flow streamlines

Answer:

Fluid Mechanics (MTH304)

Question: 31 (Marks: 5)

Consider the following steady, two dimensional velocity field given as $V = (u, v) = y^2 i + 3x^2 j$. Find an analytical expression for the flow streamlines.

Answer:

Question: 28 [Marks: 3]

Give an example illustrating the importance of choosing the most appropriate coordinate system for dimensionality

Answer:

Question: 27 (Marks: 1)

Which of the following represents the x-component of the rate of rotation vector?

Choices:

- ○
- ○
- ○
- ○