Unit 3 - Week 1 : Review of Basic Concepts

Course outline

Assessment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

1) Oxygenated blood from the heart flows __________ *1 point*

- Arterioles → Capillaries → Aorta → Arteries
- Arterioles → Aorta → Capillaries → Arteries
- Aorta → Arteries → Arterioles → Capillaries
- Aorta → Arterioles → Arteries → Capillaries

No, the answer is incorrect.
Score: 0
Accepted Answers:
Aorta → Arteries → Arterioles → Capillaries

2) Pressure in the brain is known as _____. *1 point*

- Intracranial Pressure
- Arterial pressure
- Blood pressure
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Intracranial Pressure

3) Choose the correct combination *1 point*

a.	RBC	a.	Leukocytes
b.	Platelets	b.	Erythrocytes
c.	WBC	c.	thrombocytes

- a→a, b→b, c→c
- a→b, b→c, c→a
- a→c, b→a, c→b
- a→c, b→b, c→a

No, the answer is incorrect.
Score: 0
Accepted Answers:
a→b, b→c, c→a

4) Flow of blood in aorta and arteries are in nature *1 point*

- Steady in arteries and aorta
- Compressible in aorta and arteries
- Pulsatile in arteries and aorta
- Inviscid in arteries and aorta

No, the answer is incorrect.
Score: 0
Accepted Answers:
Pulsatile in arteries and aorta

5) Choose the correct sentence. *1 point*

- Pressure is maximum during systole in a cardiac cycle
- Pressure is minimum during systole in a cardiac cycle
- Pressure is maximum during diastole in a cardiac cycle
- Pressure during systole and diastole is equal

No, the answer is incorrect.
Score: 0
Accepted Answers:
Pressure is maximum during systole in a cardiac cycle

6) Prosthesis is ___ *1 point*

- Mucus formation
- Blood flow in aorta
- Plasma separation from blood
- Artificial organ

No, the answer is incorrect.
Score: 0
Accepted Answers:
Artificial organ

7) Choose the correct combination *1 point*

a.	Eularian approach	a.	Tracking of fluid particles
b.	Lagrangian approach	b.	Analysis in a control volume
		c.	Tracking of particle in control volume
		d.	Tracking of particle and control volume

- a→a, b→b
- a→b, b→a
- a→c, b→d
- a→d, b→c

No, the answer is incorrect.
Score: 0
Accepted Answers:
a→b, b→a

8) Which of the following terms would be zero for laminar flow of an incompressible, Newtonian liquid? *1 point*

- $\nabla . v$
- $\partial v / \partial t$
- $\nabla^2 v$
- ∇p

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\nabla . v$

9) Momentum is diffused between two fluid layer because of the property_______ *1 point*

- Density
- Viscosity
- Surface tension
- Pressure

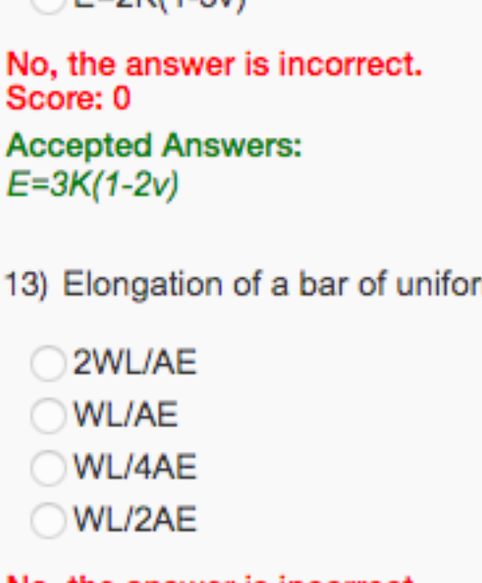
No, the answer is incorrect.
Score: 0
Accepted Answers:
Viscosity

10) Elastic modulus (E) throughout the homogeneous material is __ *1 point*

- Constant
- Zero
- Cubic
- Square

No, the answer is incorrect.
Score: 0
Accepted Answers:
Constant

11) Which one is correct representation of stress shown in the image below *1 point*



- $\tau_{ij} = -\tau_{xy}$
- $\tau_{ij} = \tau_{yx} \cos(45°)$
- $\tau_{ij} = \tau_{zy}$
- $\tau_{ij} = -\tau_{yz}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\tau_{ij} = -\tau_{yz}$

12) The relationship between Young's modulus (E), Bulk modulus (K) and Poisson's ratio (v) is given by *1 point*

- E=2K(1+3v)
- E=3K(1-2v)
- E=3K(1+2v)
- E=2K(1-3v)

No, the answer is incorrect.
Score: 0
Accepted Answers:
E=3K(1-2v)

13) Elongation of a bar of uniform cross section *A* of length *L* due to its own weight *W* is given by *1 point*

- 2WL/AE
- WL/AE
- WL/4AE
- WL/2AE

No, the answer is incorrect.
Score: 0
Accepted Answers:
WL/2AE

14) Poisson's ratio is defined as *1 point*

- Lateral strain / Longitudinal strain
- Shear strain / Lateral strain
- Longitudinal strain / Lateral strain
- Lateral strain / Volumetric strain

No, the answer is incorrect.
Score: 0
Accepted Answers:
Lateral strain / Longitudinal strain

15) A rod, 100 mm long and 2 mm diameter is subjected to an axial pull of 18.85 mN. The stress in kPa is. *1 point*

- 6000
- 6.0
- 0.006
- 600

No, the answer is incorrect.
Score: 0
Accepted Answers:
6.0

16) Engineering stress-strain curve and True stress-strain curve are equal at *1 point*

- Proportional Limit
- Yield Point
- Elastic Limit
- Tensile Strength Point

No, the answer is incorrect.
Score: 0
Accepted Answers:
Yield Point

17) Continuum hypothesis for a fluid indicates that *1 point*

- A fluid deforms continuously.
- The properties of a small averaging volume are the same as those for a macroscopic fluid
- Fluid properties do not undergo a jump at a boundary
- Pressure changes as a continuous function in space.

No, the answer is incorrect.
Score: 0
Accepted Answers:
The properties of a small averaging volume are the same as those for a macroscopic fluid

18) Increases in which of the following variables tend to decrease resistance to blood flow *1 point*

- Blood hematocrit
- Radius of the blood vessel
- Viscosity of the blood
- Length of the blood vessel

No, the answer is incorrect.
Score: 0
Accepted Answers:
Radius of the blood vessel

19) Which of these blood vessels in systemic circulation has the smallest diameter *1 point*

- Capillaries
- Venules
- Arterioles
- Aorta

No, the answer is incorrect.
Score: 0
Accepted Answers:
Capillaries

20) Design of a thin shell under pressure is done on the basis of *1 point*

- Radial stress
- Shear stress
- Longitudinal stress
- Hoop stress

No, the answer is incorrect.
Score: 0
Accepted Answers:
Hoop stress

21) Fill in the blank using following key words: *1 point*
Arteries:

- Have strong vascular wall
- Spherical shape
- Returns blood to the heart
- Collect blood from capillaries

No, the answer is incorrect.
Score: 0
Accepted Answers:
Have strong vascular wall

22) Vena cava: *1 point*

- Have strong vascular wall
- Known as resistance vessels
- Returns blood to the heart
- Collect blood from capillaries

No, the answer is incorrect.
Score: 0
Accepted Answers:
Returns blood to the heart

23) Arteriole: *1 point*

- Known as resistance vessels
- Have strong vascular wall
- Spherical shape
- Have discoid shape

No, the answer is incorrect.
Score: 0
Accepted Answers:
Known as resistance vessels

24) RBC: *1 point*

- Spherical shape
- 2 microns in size
- Known as resistance vessels
- Have discoid shape

No, the answer is incorrect.
Score: 0
Accepted Answers:
Have discoid shape

25) Platelet: *1 point*

- Have discoid shape
- 10 micron in size
- 2 microns in size
- Known as capacitance vessels

No, the answer is incorrect.
Score: 0
Accepted Answers:
2 microns in size

26) Aorta: *1 point*

- Returns blood to the heart
- Collect blood from capillaries
- Known as capacitance vessels
- Biggest artery

No, the answer is incorrect.
Score: 0
Accepted Answers:
Biggest artery

27) Veins: *1 point*

- Known as capacitance vessels
- Biggest artery
- Have strong vascular wall
- Known as resistance vessels

No, the answer is incorrect.
Score: 0
Accepted Answers:
Known as capacitance vessels

28) Capillary: *1 point*

- 2 microns in size
- Biggest artery
- Returns blood to the heart
- 10 micron in size

No, the answer is incorrect.
Score: 0
Accepted Answers:
10 micron in size

29) Venules: *1 point*

- Collect blood from capillaries
- Have strong vascular wall
- Biggest artery
- Known as resistance vessels

No, the answer is incorrect.
Score: 0
Accepted Answers:
Collect blood from capillaries

30) White blood cells *1 point*

- 10 micron in size
- 2 microns in size
- Spherical shape
- Have discoid shape

No, the answer is incorrect.
Score: 0
Accepted Answers:
Spherical shape

31) The mass and momentum conservation equation for the fluid flow can be written as: *1 point*

Mass conservation: $\partial \rho / \partial t + \nabla . \rho v = 0$

Momentum conservation: $\rho(\partial v / \partial t + (v . \nabla) v) = -\nabla P + \mu \nabla^2 v + \rho g$

Which of the following terms in the momentum conservation equation represents convective acceleration?

- $\mu \nabla^2 v$
- $\partial v / \partial t$
- g
- $(v . \nabla) v$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$(v . \nabla) v$

32) Which of the following term represents local acceleration? *1 point*

- $\mu \nabla^2 v$
- $\partial v / \partial t$
- g
- $(v . \nabla) v$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\partial v / \partial t$

33) For an incompressible fluid which of these is NOT correct? *1 point*

- $\partial \rho / \partial t = 0$
- $\nabla . v = 0$
- $\partial \rho / \partial t + \nabla . \rho v = 0$
- $\partial v / \partial t = 0$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\partial v / \partial t = 0$

34) Which of the following represents substantial derivative? *1 point*

- $\partial v / \partial t$
- $(v . \nabla) v$
- $\partial v / \partial t + (v . \nabla) v$
- $(v . \nabla)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\partial v / \partial t + (v . \nabla) v$

35) No-slip boundary condition refers the following for the fluid in contact with the moving wall: *1 point*

- Velocity of the fluid tangential to the wall is zero
- Velocity of the fluid normal to the wall is zero
- Velocity of the fluid tangential to the wall is equal to the wall velocity
- Velocity of the fluid is constant

No, the answer is incorrect.
Score: 0
Accepted Answers:
Velocity of the fluid tangential to the wall is equal to the wall velocity

36) Fully developed flow refers to: *0 points*

- Velocity gradient along the streamwise direction is zero
- Velocity gradient along the streamwise direction is zero
- Pressure gradient along the streamwise direction is zero
- Velocity and pressure gradients along the streamwise direction are zero

No, the answer is incorrect.
Score: 0
Accepted Answers:
Velocity gradient along the streamwise direction is zero

37) Flow through a vessel of reducing diameter along the flow direction can be approximated by one-dimensional velocity distribution $u = 3(1 + x)$ *1 point*
The fluid acceleration in the nozzle is:

- zero
- $9(1 + x)$
- $(1 + x)$
- $9x(1 + x)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$9(1 + x)$

38) A two-dimensional incompressible flow has the velocity components $u = x$ and $v = -y$ The acceleration would be: *1 point*

- $x\hat{\imath} + y\hat{\jmath}$
- $x\hat{\imath} - y\hat{\jmath}$
- 1
- 0

No, the answer is incorrect.
Score: 0
Accepted Answers:
$x\hat{\imath} + y\hat{\jmath}$

39) The x component of velocity in a steady, incompressible flow is $u = 1/x$ Which of the following can be y-component for this flow field? *1 point*

- $1/x$
- y/x
- $1/x^2$
- y/x^2

No, the answer is incorrect.
Score: 0
Accepted Answers:
y/x^2

40) Which of these represent a two-dimensional, incompressible velocity field? *1 point*

- $x\hat{\imath} + y\hat{\jmath}$
- $x\hat{\imath} - y\hat{\jmath}$
- $-x\hat{\imath} - y\hat{\jmath}$
- $x\hat{\imath} + x^2\hat{\jmath}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$x\hat{\imath} - y\hat{\jmath}$