



SCHOOL OF SCIENCE

DEPARTMENT OF PHYSICAL SCIENCES

2019/2020 FIRST MID - SEMESTER EXAMINATION

COURSE CODE/ TITLE PHY 103 – GENERAL PHYSICS III

INSTRUCTION SHADE THE CORRECT ANSWERS IN THE BOX PROVIDED

TIME: 25 MINS

S/N	A	B	C	D	S/N	A	B	C	D	S/N	A	B	C	D	S/N	A	B	C	D	S/N	A	B	C	D
1					5					9					13					17				
2					6					10					14					18				
3					7					11					15					19				
4			✓		8					12					16				✓	20				

- The reciprocal of bulk modulus is called —? (a) Young's modulus (b) Elasticity (c) Compressibility (d) volume elasticity
- The flow of fluid in which its velocity, pressure and other flow properties at each point in the fluid remain constant or varies in regular manner is called —? (a) Free flow (b) Turbulent flow (c) Laminar flow (d) Compressible flow
- When there is no external force, the shape of a liquid drop is determined by (a) Surface Tension of the liquid (b) Density of the liquid (c) Viscosity of the liquid (d) Temperature of air only
- Oil flows through a pipe 8.0cm in diameter, at an average speed of 4m/s. What is the rate of flow in m^3/s ? (a) $0.070m^3/s$ (b) $0.090m^3/s$ (c) $0.020m^3/s$ (d) $0.050m^3/s$
- A water hose 20 mm in diameter is used to fill a 20 litre bucket. if it takes 1 minutes to fill the bucket; what is the speed at which the water leaves the hose? (a) 1.061 cm/s (b) 0.106 cm/s (c) 106.1 cm/s (d) 10.61 cm/s
- If the surface of a liquid is plane, then the angle of contact of the liquid with the walls of container is (a) Acute angle (b) Obtuse angle (c) 90° (d) 0°
- Determine the density of a fluid flowing through an artery of diameter 0.2 cm would become turbulent, if the velocity of the flow is 3.86 m/s and its viscosity is $2.7 \times 10^{-3} \text{ NS/m}^2$. Take $Re = 3000$. (a) $1.05 \times 10^3 \text{ Kg/m}^3$ (b) $1.05 \times 10^2 \text{ g/m}^3$ (c) $1.05 \times 10^3 \text{ Kg/cm}^3$ (d) $1.05 \times 10^3 \text{ g/m}^3$
- If the Reynolds number of a fluid is above 3000, the flow tends to be — (a) Laminar (b) Turbulent (c) Can't be predicted (d) Translational
- On increasing the temperature, the viscosity of the fluid — (a) Viscosity increases (b) Viscosity decreases (c) Viscosity is not affected by pressure (d) None of the above
- A load of 50 N is attached to one end of a long vertical wire of length 10 m and radius 12 mm whose other end is fixed. If the extension produced on the wire is 0.5 mm, calculate the young

modulus of the material of the wire. (a) $2.2 \times 10^{11} \text{ N/m}^2$ (b) $2.2 \times 10^3 \text{ N/m}^2$ (c) $2.2 \times 10^{11} \text{ N/mm}^2$
(d) $2.2 \times 10^3 \text{ N/mm}^2$

11. What is the unit of coefficient of viscosity?
(a) kgsm^{-2} (b) kgms^{-2} (c) Nms^{-2} (d) Nsm^{-2}
12. If the shear stress in steel exceeds about $4 \times 10^4 \text{ N/m}^2$, the steel ruptures. Determine the shear force necessary to shear a steel bolt 1 cm in diameter. (a) 31420 N (b) $3.142 \times 10^3 \text{ N}$ (c) $31420 \times 10^4 \text{ N}$ (d) 3142 N
13. Rain drops are spherical in shape because of ——— (a) Surface tension (b) Capillary
(c) Downward motion (d) Acceleration due to gravity
14. A block of wood of relative density 0.65 has a volume of 0.32 m^3 . Calculate the force required to hold it under water (density of water = 1000 kg/m^3 , $g = 10 \text{ m/s}^2$) (a) 650 N (b) 2080 N (c) 6500 N (d) 208 N
15. Exactly 250 mL of fluid flows out a tube whose inner diameter is 7.0 mm in a time of 41 s. What is the average speed of the fluid in the tube? (a) 0.23 m/s (b) 1.9 m/s (c) 0.16 m/s (d) 0.19 m/s
16. When a gas transform directly into a solid without going through the liquid state, it is called —?
(a) Sublimation (b) Deposition (c) Vapourization (d) Condensation
17. When the velocity of the fluid at a point is always the same although the velocity of the fluid may be different at different points along the line of flow is called
(a) Steady flow (b) Compressible flow (c) Turbulent flow (d) Viscosity
18. If the Reynolds number of a fluid is below 2000, the flow tends to be — (a) Laminar (a) Turbulent
(c) Can't be predicted (d) Translational
19. A 14 cm inner diameter (i.d.) water main furnishes water to a 1 cm i.d faucet pipe. If the average speed in the faucet pipe is 3 cm/s. What will be the average speed it causes in the water main?
(a) 0.075 cm/s (b) 0.090 cm/s (c) 0.055 cm/s (d) 0.015 cm/s
20. 10. If the Reynolds number is above 2200, the flow tends to be —
(a) Laminar (b) Turbulent (c) Transitional (d) Can't be predicted

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