PHYS110	Final Exam	Student's name..... ….
		ID.....……

Time: 2 **hours**

Choose the best answer.

Q1. If the area on which a certain force is applied is increased 6 times, the pressure exerted will.

a) remain the same b) decrease 3 times c) increase d) decrease 6 times

Q2. A force of 453 N is applied on a body of area 22 cm2. The pressure on the body is.

a) 8 x103 Pa b) 0.5 x103 Pa c) 2.26 x105 Pa d) 9 x103 Pa

Q3. If ρ is the density, m the mass and V the volume of a body then.

a) $\rho = mV$ b) $\rho = m/V$ c) $m = \rho/V$ d) $m = V/\rho$

Q4. According to Pascal's principle if the pressure applied on an enclosed fluid at one point is 1500 Pa, the pressure at any other in the fluid will be.

a) 1500 Pa b) 2500 Pa c) 1300 Pa d) 6500 Pa

Q5. The pressure difference between two points in a liquid is given by.

a) $\Delta P = \rho g/\Delta h$ b) $\Delta P = \Delta h/\rho g$ c) $\Delta P = \Delta h.g/\rho$ d) $\Delta P = \rho g \Delta h$

Q6. A manometer is used to find the atmospheric pressure.

a) true b) false

Q7. A mercury barometer ($\rho Hg = 13600$ kg m-3) shows a pressure of 702 mmHg at 2 pm and 704 mmHg at 3 pm. What is the rate of change of pressure in Pa min-1.

a) 50 Pa min-1 b) 500 Pa min-1 c) 4.4 Pa min-1 d) 342.87 Pa min-1

Q8. Absolute pressure is the pressure measured relative to.

a) atmospheric pressure b) perfect vacuum c) none of these

Q9. The unit of pressure can be.

a) Pa b) Nm-2 c) both of these

Q10. A liquid of density 1150 kgm-3 is in a cylinder. The height of liquid is 0.27 m. What is the pressure exerted by the liquid on the base of the cylinder?

a) 2105 Pa b) 1900 Pa c) 700 Pa d) 3105 Pa

Q11. The resistance of fluid to flow, is called…

a)density b) pressure c) viscosity d) none of these

Q12. If the flow of the liquid is irregular and complex, the flow is called ------- flow.

a) turbulent b) laminar c) both of these

Q13. The number of cubic meters of a fluid collected in --------- is called volume flow rate.

a) one second b) one minute c) any time d) none of these

Q14. The velocity of a fluid multiplied by the area gives ---------- of the fluid.

a) pressure b) density c) volume flow rate d) speed

Q15. A1v1 = A2v2 is the ……..

a) Bernoulli's equation b) Reynolds number c) equation of continuity d) none of these

Q16. A water pipe carries 4150 L of water in 33 s. If the speed of the water is 2 ms-1, what is the radius of the pipe?

a)0.6 m b) 2.2 m c) 20 m d) 0.14 m

Q17. According to Bernoulli's equation, if the pressure decreases the velocity of the liquid ---------

a) decreases b) remains the same c) increases d) none of these

Q18. Water flows through a pipe of area 'A' with a speed 'v'. If the area of pipe increases to '2A', what will be the speed of water now?

a) v b) 4v c) v/2 d) 2v

Q19. The unit of viscosity is

a) Pas-1 b) Pas-2 c) Pas d) Js

Q20. According to Poiseuille's law, if the length of the pipe increases the flow rate

a) does not change b) decreases c) increases

Q21. The drug is being delivered into a patients arm at the rate of 15mLmin-1. The flow rate in m3s-1 is

a) 3.5x10-7 b) 300 c) 0.654 d) 2.5x10-7

Q22. If the Reynolds number is less than 2000, the flow is

a) turbulent b) laminar c) not known

Q 23. A fluid is flowing in a narrow pipe at a rate of 6.5x10-6 m3s-1. The internal diameter of the pipe is 1mm. if the density of the fluid is 1020 kgm-3, the flow will be?

(η = 8.90x10-4 Pas)

a) turbulent b) laminar c) none of these

Q24. $\Delta U = Q-W-E$ is

a) Bernoulli's equation b) Pascal's law c) first law of thermodynamics

Q25. Unit of pressure is.

a) Pa b) Pa m c) none of these

Q 26. Hyperthermia results if the core temperature of the body remains

a) less than 37 oC b) 37 oC c) less than 35 oC d) more than 37 oC

Q 27. The net rate of energy loss = rate of heat loss – metabolic rate

a) true b) false

Q 28. The ratio of mechanical work done by the body to the energy used for mechanical work is called

a) energy loss b) energy gain c) metabolism d) efficiency

Q29. A 70 kg man has a core temperature of 37 oC . The specific heat capacity of human tissue is 3500 Jkg-1K-1. He loses heat at a rate of 350 W to the surrounding for two hours. If the metabolic rate is 150 W, will he be hypothermic?

a) yes b) no

Q30. ------ waves are electromagnetic waves.

a) sound b) light c) water d) none of these

Q31. If the rays of light remain parallel after reflection, then it called------ reflection.

a) diffuse b) specular c) all of these

Q32. According to law of reflection, the angle of incidence is always equal to the angle of reflection.

a) true b) false

Q33. Diffuse reflection takes place from…… surfaces.

a) rough b) smooth c) both of these

Q34. The speed of light in vacuum divided by its speed in water gives……. of the water.

a) refractive index b) angle of incidence c) angle of reflection d) density

Q35. The unit for refractive index of a material is…

a) N b) Nm c) ms-1 d) none of these

Q36. Yellow light passes from air (n=1) into glass (n= 1.66). the speed of light in air is 3×108 m/s, what is the speed of light in glass?

a) 2.97×108 m/s b) 1.8×108 m/s c) 3.76×108 m/s d) 1.1×108 m/s

Q37. The critical angle is given by

a) $\sin\theta c = n2n1$ b) $\sin\theta c = n2/n1$ c) $\sin\theta c = n2 + n1$ d) $\sin\theta c = n2 - n1$

Q38. What is the critical angle for total internal reflection when light comes from diamond (n= 2.10) to air (n=1)?

a) 100 b) 200 c) 45.70 d)24.620

Q39. At high altitudes, the number of red blood cells in the blood increases, this results in --------- in the blood pressure.

a) increase b) decrease c) no change

Q40. Light is incident on water surface at an angle of 40^0 to the normal. The angle of refraction in water will be? (the refractive index of water is 1.33)

a) 450 b) 550 c) 28.90 d) 60