PHY125 QUESTIONS

1) A boy of mass 50kg runs up a set of total height 3m. Find the work done against gravity.

(a) 150J (b) 1500Nm (c) 150Nm (d) 1500Nm²

2) A particle moves through a circular path of radius of 0.45m at the rate of 1200 revolution per minute. What is the frequency & period?

(a) 20Hz, 0.05s (b) 25Hz, 0.15s (c) 21Hz, 0.05s (d) 20Hz, 0.5s

3) A person suffers a more severe burn from steam than from boiling water because

(a) steam is at a higher temperature than the boiling water.

(b) steam spreads more easily over the skin than water.

(c) steam penetrates more deeply into the skin than boiling water.

(d) steam possesses more kinetic energy per unit mass than the boiling water.

4) At what temperature is the value of Celsius scale equal to Fahrenheit scale

(a) 45° (b) -40° (c) -45° (d) 40°

5) A rarefraction and an adjacent compression of sound wave Travelling in air are separated by a distance of 15cm. If the velocity of sound in air is 330ms-¹, the frequency is

(a) 11Hz (b) 22Hz (c) 1100Hz (d) 2200Hz

6) When the tension in a sonometer wire is tripled . The ratio of the new frequency to the initial frequency is

(a) ⅓ (b) 3 (c) 1/√3 (d) √3

7) A motor car is approaching a roadcrossing with a speed of 75km/hr a constable standing near the crossing hears the frequency of the horns 260per sec. What is the real frequency of the horn?

(a) 260Hz (b) 244Hz (c) 270Hz (d) 256Hz

8) Which of these statements is incorrect

(a) The total entropy of the universe increases whenever an irreversible process occurs

(b) The total entropy of the universe is unchanged when a reversible process occurs

(c) All real processes are reversible

(d) All real processes are irreversible

9) Refractive index of glass is

(a) 1.33

(b) 1.333

(c) 1.323

(d) 1.3333

10) A wave is represented by the equation

$Y = 0.20\sin(0.40\pi(x-60t))$

Find the frequency of the wave

(a) 1.2Hz (b) 120Hz (c) 12Hz (d) 0.12Hz

11. Which of the following statement is correct

I The compression in a longitudinal wave corresponds to the crest in a transverse wave
II The compression in a longitudinal wave corresponds to trough in a transverse wave
III The rarefaction in a longitudinal wave corresponds to the crest in a transverse wave
IV The rarefaction in a longitudinal wave corresponds to the trough in a transverse wave

a. I b. IV c. I and III d. II and IV

12. Calculate the wavelength of a radio wave of frequency 100 MHz if the speed is 300000000m/s a. 0.03cm b. 5m c. 3cm d. 30m

13. The second overtone is the first harmonic a. true b. false c. both d. all of the above

14 Which of these thermodynamic process is not correctly matched a. Isochoric P=0
b. Isobaric Q=0 c. both d. Isothermal T=0

15. If object A is in thermal equilibrium with object C and object B is separately in thermal equilibrium with object C, then objects A and B will be in thermal equilibrium if they are placed in thermal contact. This is a. second law of thermodynamics b. first law c. zeroth law d. third law

16. Malus's law can be expressed as;

A. $I = I_0\sin^2\theta$ B. $I = I_0\cos 2\theta$ C. $I = I_0\sin 2\theta$ D. $I = I_0\cos^2\theta$

17. What temperature at constant pressure will the root mean square velocity of hydrogen be thrice its value at S.T.P?

A. 1092 B. 1258 C. 819 D. 2457

18. Given the equation of a mechanical wave

$\gamma(x,t) = 25\sin(5t-0.8x)$. The velocity of the wave is?

A.62.5m/s B. 6.25m/s C. 25m/s D. None of the above

19. Given the equation of a mechanical wave

$y(x,t) = 25\sin(5t-0.8x)$. Find the wavelength?

A. 25π B. $2.55\ \pi$ C. $2.5\ \pi$ D. $10\ \pi$

20. A carnot engine has an efficiency of 22%. It operates between constant temperature reservoirs differing in temperature by 75°C. What are the temperatures of the two reservoirs?

A. 266k and 341k B. 225k and 300k C. 300k and 375k D. 175k and 250k

21. Polarization is perculiar to

A. Transverse wave B. Longitudinal wave C. All of the above D. None of the above

22. A boy standing some distance from the foot of a tall cliff clapped his hand and hears an echo 0.5 seconds later. If the speed of the sound is 340m/s how far is he from the cliff?

A. 65.5m B. 49.9m C. 85m D. 81m

23. Two sound waves of frequencies 254Hz and 256Hz produce beats. Using the principle of superposition, the beat frequency will be

A. 20Hz B. 3/4Hz C. 2Hz D. 10Hz

24. An organ pipe closed at an end is 61.0cm long. What is the frequency of the third overtone? (v=342m/s)

A. 700 B. 420 C.980 D. 1120

PHY125 ANSWERS

1) B
2) A
3) D
4) C
5) C
6) D
7) B
8) D
9) A
10) C
11. C
12. A
13. B
14. C
15. C
16. D
17. B
18. D
19. C
20. A
21. A
22. C
23. C
24. C