

1. A body is moving in a circular path with acceleration  $a$ . If its velocity gets doubled then find the ratio of acceleration after and before the change of velocity?

- A. 1:4
- B. 1:2
- C. 2:1
- D. 4:1

2. Weightlessness of an astronaut moving in a satellite is a situation of -

- A. Zero velocity
- B. No gravity
- C. Zero mass
- D. Free fall

3. For which of the following metals, the resistance decreases on increasing the temperature?

- A. Copper
- B. Tungsten
- C. Germanium
- D. Aluminium

4. What is the angle of dip at magnetic poles of earth?

- A. Zero
- B.  $45^\circ$
- C.  $90^\circ$
- D.  $180^\circ$

5. A charge moves in a circle perpendicular to a magnetic field. Upon which of the following, the time period of revolution, does not depend?

- A. Magnetic field
- B. Charge
- C. Mass of the particle
- D. Velocity of the particle

6. Atomic number of a nucleus is  $Z$  and atomic mass is  $M$ . Find the number of neutrons.

- A.  $M-Z$
- B.  $M$
- C.  $Z$
- D.  $M+Z$

7. The electrical circuit, used to get smooth dc output from a rectifier circuit is called \_\_\_\_\_.

- A. Oscillator
- B. Filter
- C. Amplifier
- D. Logic gate

8. Two bodies of 2 Kg & 4 Kg are moving with velocities 20 m/s and 10 m/s respectively towards each other under mutual gravitational attraction. Find the velocity of their centre of mass in m/s.

- A. 5
- B. 6
- C. 8
- D. Zero

9. The radius of gyration of a solid sphere of radius  $r$  about a certain axis is  $r$ . Find the distance of this axis from the centre of the sphere.

- A.  $r$
- B.  $0.5r$
- C.  $\sqrt{0.4} r$
- D.  $\sqrt{0.2} r$

10. Which of the following statements is correct, in case of adiabatic expansion?

- A.  $\Delta U = 0$
- B.  $\Delta U = \text{negative}$
- C.  $\Delta U = \text{positive}$

D.  $\Delta W = 0$

11. The velocity of a particle, executing S.H.M, is \_\_\_\_\_ at its mean position.

- A. maximum
- B. minimum
- C. infinity
- D. zero

12. A coil of an area  $2 \text{ m}^2$  is placed in a magnetic field which changes from  $4 \text{ Wb/m}^2$  to  $8 \text{ Wb/m}^2$  in 2 seconds. Find the induced e.m.f. in the coil.

- A. 4 V
- B. 5 V
- C. 6 V
- D. 7 V

13. The process by which an alternating current is converted into direct current is called \_\_\_\_.

- A. Purification
- B. Amplification
- C. Rectification
- D. Current amplification

14. If the threshold wavelength for photoelectric effect on sodium metal is  $5000 \text{ \AA}$  then find its work function.

- A. 15 J
- B.  $4 \times 10^{-19} \text{ J}$
- C.  $4 \times 10^{-14} \text{ J}$
- D.  $4 \times 10^{-22} \text{ J}$

15. Through which mode of wave propagation, are the radio waves sent from one place to another?

- A. ground wave propagation
- B. sky wave propagation
- C. space wave propagation

D. all of the above

16. What is the wavelength range of visible light?

- A.  $4 \times 10^{-7} \text{ m} - 8 \times 10^{-7} \text{ m}$
- B.  $4 \times 10^{-6} \text{ m} - 8 \times 10^{-8} \text{ m}$
- C.  $4 \times 10^5 \text{ m} - 8 \times 10^{-9} \text{ m}$
- D.  $4 \times 10^{10} \text{ m} - 8 \times 10^{10} \text{ m}$

17. What is the dimensional formula for the universal gravitational constant?

- A.  $M^{-1} L^3 T^{-2}$
- B.  $M^{-1} L^3 T^{-1}$
- C.  $M^{-1} L^2 T^{-2}$
- D.  $M^0 L^0 T^0$

18. Two balls are dropped from heights  $h$  and  $2h$  respectively. What would be the ratio of times taken by the balls to reach the earth?

- A.  $\sqrt{2}:1$
- B.  $1:\sqrt{2}$
- C.  $2:1$
- D.  $4:1$

19. When a spring is stretched by 2 cm, the energy stored is 100 J. If it is stretched further by 2 cm, its energy increases by \_\_\_\_\_.

- A. 300
- B. 400
- C. 200
- D. 100

20. At what temperature, will the surface tension of water, be minimum?

- A.  $0^\circ \text{ C}$
- B.  $25^\circ \text{ C}$
- C.  $60^\circ \text{ C}$

D.  $75^{\circ}\text{C}$

21. Diameters of 2 water drops are 1cm and 1.5 cm respectively. Find the ratio of excess pressures inside them.

- A. 1:1
- B. 5:3
- C. 3:2
- D. 2:3

22. In Young's double slit experiment, using sodium light ( $\lambda = 5898 \text{ \AA}$ ), 92 fringes are seen. If another colour ( $\lambda = 5461 \text{ \AA}$ ) is used then find the number of fringes.

- A. 62
- B. 99
- C. 67
- D. 85

23. Two plates are at potentials -10V and +30V. If the separation between the plates is 2 cm then find the electric field between them.

- A. 2000 V/m
- B. 1000 V/m
- C. 500 V/m
- D. 3000 V/m

24. If red light is replaced by blue light illuminating the object in a microscope, the resolving power of the microscope \_\_\_\_\_.

- A. will decrease
- B. will increase
- C. will get halved
- D. will remain unchanged

25. In gases of diatomic molecules, Find the ratio of the two-specific heat of gases  $C_p/C_v$ .

- A. 1.66
- B. 1.33

C. 1.4  
D. 1.00

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