

Physics Model Question Paper 2: (For Class 11 and 12 and Pre-Medical/Engineering Entrance)

Question 1 : A certain current on passing through a galvanometer produces a deflection of 100 divisions. When a shunt of one ohm is connected, the deflection reduces to 1 division. The galvanometer resistance is

- (A) 100 W
- (B) 99 W
- (C) 10 W
- (D) 9.9 W

Answer : (B)

Question 2 : A closed organ pipe and an open organ pipe of same length produce 2 beats/second while vibrating in their fundamental modes. The length of the open organ pipe is halved and that of the closed pipe is doubled. Then, the number of beats produced per second while vibrating in the fundamental mode is _____.

- (A) 8
- (B) 7
- (C) 2
- (D) 6

Answer : (B)

Question 3 : A convex and a concave lens separated by distance d are then put in contact. The focal length of the combination

- (A) decreases
- (B) increases
- (C) becomes 0
- (D) remains the same

Answer : (B)

Question 4 : A current of 5A is flowing at 220 V in the primary coil of a transformer. If the voltage produced in the secondary coil is 2200 V and 50% of power is lost, then the current in the secondary will be

- (A) 2.5 A
- (B) 5 A
- (C) 0.25 A
- (D) 0.5 A

Answer : (C)

Question 5 : A fish in water (refractive index n) looks at a bird vertically above in the air. If y is the height of the bird and x is the depth of the fish from the surface, then the distance of the bird as estimated by the fish is

(A) $x + y \left(1 - \frac{1}{n}\right)$

(B) $x + ny$

(C) $x + y \left(1 + \frac{1}{n}\right)$

(D) $y + x \left(1 - \frac{1}{n}\right)$

Answer : (B)

Question 6 : A horizontal metal wire is carrying an electric current from the north to the south. Using a uniform magnetic field, it is to be prevented from falling under gravity. The direction of this magnetic field should be towards the _____.

- (A) east
- (B) west
- (C) north
- (D) south

Answer : (A)

Question 7 : A mass of 10 kg is suspended from a spring balance. It is pulled aside by a horizontal string so that it makes an angle of 60° with the vertical. The new reading of the balance is

- (A) 20 kg.wt
- (B) 10 kg.wt

(C) $10\sqrt{3}$ kg.wt

(D) $20\sqrt{3}$ kg.wt

Answer : (A)

Question 8 : A metal wire is subjected to a constant potential difference. When the temperature of the metal wire increases, the drift velocity of the electron in it.

(A) increases, thermal velocity of the electron decreases

(B) decreases, thermal velocity of the electron decreases

(C) increases, thermal velocity of the electron increases

(D) decreases, thermal velocity of the electron increases

Answer : (D)

Question 9 : A motorboat covers a given distance in 6 hours moving downstream on a river. It covers the same distance in 10 hours moving upstream. The time it takes to cover the same distance in still water is _____.

(A) 6.5 hours

(B) 8 hours

(C) 9hours

(D) 7.5 hours

Answer : (D)

Question 10 : A radioactive sample S_1 having the activity A_1 has twice the number of nuclei as another sample S_2 of activity A_2 . If $A_2 = 2A_1$, then the ratio of half life of S_1 to the half life of S_2 is

(A) 0.25

(B) 0.75

(C) 4

(D) 2

Answer : (C)

Question 11 : A body of mass M hits normally a rigid wall with velocity V and bounces back with the same velocity. The impulse experienced by the body is

- (A) Zero
- (B) MV
- (C) 1.5 MV
- (D) 2 MV

Answer : (D)

Question 12 : A body projected vertically from the earth reaches a height equal to earth's radius before returning to the earth. The power exerted by the gravitational force is greatest

- (A) At the instant just after the body is projected
- (B) At the highest position of the body
- (C) At the instant just before the body hits the earth
- (D) It remains constant all through

Answer : (C)

Question 13 : A charge Q is enclosed by a Gaussian spherical surface of radius R. If the radius is doubled, then the outward electric flux will

- (A) Be doubled
- (B) Increase four times
- (C) Be reduced to half
- (D) Remain the same

Answer : (D)

Question 14 : A convex lens of focal length 30 cm produces 5 times magnified real image of an object. What is the object distance?

- (A) 36 cm
- (B) 25 cm
- (C) 30 cm
- (D) 150 cm

Answer : (A)

Question 15 : A count rate meter shows a count of 240 per minute from a given radioactive source. One hour later the meter shows a count rate of 30 per minute. The half-life of the source is _____.

- (A) 20 min
- (B) 30 min
- (C) 80 min
- (D) 120 min

Answer : (A)

