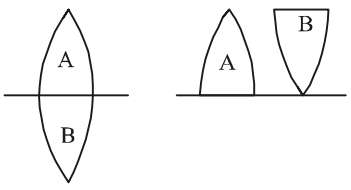


NEET ENTRANCE EXAM

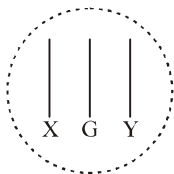
PHYSICS

- The moment of inertia of a collapsing star changes to one-third of its initial value. The ratio of the new rotational kinetic energy to the initial rotational kinetic energy is—
(A) 3 : 1 (B) 1 : 3
(C) 9 : 1 (D) 1 : 9
- A body of 10 kg is dropped from infinite height towards earth's surface. What will be its velocity just before touching the earth's surface. (Gravitational potential energy of the body at earth's surface is 6.25×10^8 Joule).
(A) 22.4 km/sec (B) 11.2 km/sec
(C) 6.4 km/sec (D) Infinite
- The vertical escape velocity of a body from earth's surface is 11.2 km/sec. If the body is projected at an angle of 45° from the vertical, its escape velocity will be—
(A) $11.2 \times \sqrt{2}$ km/s (B) $\frac{11.2}{\sqrt{2}}$ km/s
(C) 11.2×2 km/s (D) 11.2 km/s
- Which of the following equations represents a simple harmonic wave ?
(A) $y = a \sin \omega t$ (B) $y = a \sin \omega t \cos kx$
(C) $y = a \sin (\omega t - kx)$ (D) $y = a \cos kx$
- The focal length of a convex lens is f . When it is divided in two parts by a plane parallel to the principal axis, focal length of each part will be—
(A) f (B) $\frac{f}{2}$
(C) $2f$ (D) Zero
- During negative β -decay—
(A) Atom electron is ejected
(B) Electron, already present in the nucleus is ejected
(C) Neutron of the nucleus decays ejecting the electron
(D) A part of binding energy is converted into an electron
- The maximum intensity in the interference pattern of two equal and parallel slits is I . If one of the slits is closed, the intensity at the same point is I_0 . Then—
(A) $I = I_0$
(B) $I = 2I_0$
(C) $I = 4I_0$
(D) There is no relation between I and I_0
- X-rays coming out of an X-ray tube—
(A) Are monochromatic
(B) Have all wavelengths below a certain minimum wavelength
(C) Have all wavelengths above a certain minimum wavelength
(D) Have all wavelengths between a certain minimum and maximum wavelength
- The current amplification of common base N-P-N transistor is 0.96. What will be the current gain if it is used as common emitter amplifier ?
(A) 16 (B) 24
(C) 20 (D) 32
- Who discovered neutron and positron respectively ?
(A) Thomson and Rutherford
(B) Rutherford and Thomson
(C) Anderson and Chadwick
(D) Chadwick and Anderson
- Amplification factor of a triode is 20 and its plate resistance is 20 k Ω . Its mutual conductance will be—
(A) 2×10^5 mho (B) 2×10^4 mho
(C) 500 mho (D) 2×10^{-3} mho
- The co-ordinates of a moving particle at time t are given by $x = at^2$, $y = bt^2$. The speed of the particle is—
(A) $2(a + b)t$
(B) $(a^2 + b^2)^{1/2} \times t$
(C) $2(a^2 + b^2)^{1/2} \times t$
(D) $(a + b)t$
- If p is the pressure of a gas and ρ is its density, then dimension² of velocity is given by—
(A) $p^{1/2} \rho^{-1/2}$ (B) $p^{1/2} \rho^{1/2}$
(C) $p^{-1/2} \rho^{1/2}$ (D) $p^{-1/2} \rho^{-1/2}$
- If R , X and Z represent respectively the resistance, reactance and impedance of an electric circuit carrying alternating current, then the power factor is given by—
(A) $\frac{R}{Z}$ (B) $\frac{Z}{R}$

- (C) $\frac{R}{X}$ (D) $\frac{X}{R}$
15. If the horizontal range of a projectile is equal to the maximum height reached, then the corresponding angle of projection is—
 (A) $\tan^{-1} 1$ (B) $\tan^{-1} \sqrt{3}$
 (C) $\tan^{-1} 4$ (D) $\tan^{-1} 12$
16. Two electrons move parallel to each other with equal speeds v . The ratio of magnetic and electrical forces between them is—
 (A) $\frac{v}{c}$ (B) $\frac{c}{v}$
 (C) $\frac{v^2}{c^2}$ (D) $\frac{c^2}{v^2}$
17. The acceleration of a particle performing S.H.M. is 12 cm/s^2 at a displacement of 3 cm from the mean position. Its time period is—
 (A) 6.28 s (B) 3.14 s
 (C) 10.0 s (D) 5.0 s
18. The displacement of a particle is given by $x = 6 \cos \omega t + 8 \sin \omega t$ metre. This equation represents a S.H.M. having amplitude—
 (A) 14m (B) 12m
 (C) 10m (D) 5m
19. An electron of mass $9 \times 10^{-31} \text{ kg}$ revolves in a circle of radius 0.53 \AA around the nucleus of hydrogen atom with a velocity of $2.2 \times 10^6 \text{ ms}^{-1}$. What is the angular momentum of the electron ?
 (A) $\frac{h}{2\pi}$ (B) $\frac{3h}{3\pi}$
 (C) $\frac{h}{\pi}$ (D) $\frac{h}{3\pi}$
20. To maintain a rotor at uniform angular speed of 200 rad/s^{-1} , an engine needs to transmit a torque of 180 Nm . The required power of the engine is—
 (A) 36 W (B) 63 W
 (C) 36 KW (D) 63 KW
21. According to Rutherford model of atom the atom consists of—
 (A) Positively charged nucleus surrounded by a cloud of negative charge
 (B) Electrons orbiting a positively charged nucleus in definite orbits
 (C) Same as (B) with electrons spinning
 (D) A rigid sphere only
22. The magnetic moment of a circular orbit of radius r carrying a charge q and rotating with velocity v is given by—
 (A) $\frac{qvr}{2\pi}$ (B) $\frac{qvr}{2}$
 (C) $qv\pi r$ (D) $qv\pi r^2$
23. Along with β -particle emission from a radioactive nucleus one more particle with zero charge is emitted to conserve the energy and momentum. This particle is called—
 (A) Meson
 (B) Positron
 (C) Antineutrino
 (D) Neutron
24. In a cyclotron the time required to move a charged particle of charge q and mass m in a plane perpendicular to the magnetic field B in a semicircular path is—
 (A) $t = \frac{m\pi}{Bq}$ (B) $t = \frac{Bqv}{\pi m}$
 (C) $t = \frac{B}{\pi m q}$ (D) $t = \pi m Bq$
25. A doubly ionised lithium atom is hydrogen like with atomic number $Z = 3$. The wavelength of radiation required to excite the electron in Li^{2+} from first to third Bohr orbit will be—
 (Ionisation energy of hydrogen atom is 13.6 eV)
 (A) 72.53 \AA (B) 113.74 \AA
 (C) 212.52 \AA (D) 17.72 \AA
26. A parallel monochromatic beam of light is incident normally on a formed on a screen placed perpendicular to the direction the incident beam. At the first minimum of diffraction pattern the phase difference between the rays coming from the two edges of the slit is—
 (A) 0 (B) $\frac{\pi}{2}$
 (C) π (D) 2π
27. A current carrying coil is freely suspended in a uniform magnetic field. The coil tends to set its plane—
 (A) Parallel to the magnetic field
 (B) Perpendicular to the magnetic field
 (C) Inclined to the magnetic field
 (D) Continuously rotating
28. An equiconvex lens has power D . It is cut into two symmetrical halves by a plane containing the principal and the two pieces are joined as shown in figure. The power of the combination will be—

 (A) P (B) 2P

- (C) $\frac{P}{2}$ (D) Zero

29. The figure shows the view through the eyepiece of a prism spectrometer with its slit illuminated by a source of light emitting wavelengths corresponding to yellow (Y), green (G) and an unknown colour (X). The colour X may be—




- (A) Red (B) Orange
(C) Pink (D) None of these
30. In a prism which of the following phenomena may take place—
(A) Total internal reflection
(B) Deviation
(C) Dispersion
(D) All of these
31. SI unit of Stefan's constant is—
(A) $\text{Nm}^{-2}\text{K}^{-4}$ (B) $\text{Jm}^{-1}\text{K}^{-4}$
(C) $\text{Jm}^{-2}\text{K}^{-4}$ (D) $\text{Wm}^{-2}\text{K}^{-4}$
32. The colour of light emitted by star gives an idea of its—
(A) Size (B) Weight
(C) Distance (D) Temperature
33. The radioactive constant of radium is 4.28×10^{-4} per year, its half period is approximately—
(A) 2000 year (B) 1240 year
(C) 1620 year (D) 2440 year
34. What is the difference between ${}_{92}\text{U}^{235}$ and ${}_{92}\text{U}^{238}$ atoms ?
(A) U^{238} has 3 protons more
(B) U^{238} has 3 neutrons more
(C) U^{238} has 3 protons and 3 electrons more
(D) U^{238} has 3 neutrons and 3 electrons more
35. Energy equivalent to 1 kg of matter is about—
(A) 10^{11} joule (B) 10^{16} joule
(C) 10^{17} joule (D) 10^{20} joule
36. The binding energy of hydrogen atom in the lowest orbit of electron is 13.6 eV. To eject electron from the three lowest orbits of hydrogen atoms, the required energies (in eV) are—
(A) 13.6, 6.8, 8.4
(B) 13.6, 10.2, 3.4
(C) 13.6, 27.2, 40.8
(D) 13.6, 3.4, 1.5

37. If the elements with principal quantum number $n > 4$ did not exist in nature, the number of possible element would be—
(A) 60 (B) 32
(C) 4 (D) 64
38. Express 1 BeV in joule—
(A) 1.6×10^{10} J
(B) 1.6×10^{-9} J
(C) 1.6×10^{-10} J
(D) None of these
39. An electron moving with uniform velocity enters a uniform electric field perpendicular to its direction of motion. The path of the electron will be—
(A) Circular
(B) Parabolic
(C) Straight line
(D) Helical
40. In Thomson's method of determining e/m of cathode rays, magnetic field (B) and electric field (E) are parallel, a parabola is not obtained on the screen. The reason is—
(A) Cathode rays consist of electrons which carry negative charge
(B) Electron is a very light particle
(C) There is no velocity distribution in cathode rays
(D) Parallel fields B and E do not interact with electrons
41. A body is projected vertically upward from point A, the top of a tower. It reaches the ground in t_1 sec. If it is projected vertically downwards from A with the same velocity, it reaches the ground in t_2 sec. If it falls freely from A, it would reach the ground in—
(A) $\frac{t_1 + t_2}{2}$ sec (B) $\frac{t_1 - t_2}{2}$ sec
(C) $t_1 t_2$ sec (D) $\sqrt{t_1 t_2}$ sec
42. The acceleration of a particle performing S.H.M. is 12cm/sec^2 at a distance of 3 cm from the mean position. Its time period is—
(A) 2 sec (B) 4 sec
(C) 1.54 sec (D) 3.14 sec
43. Which is the correct relation between inter-atomic force-constant, Young's modulus and the normal distance a_0 between the atoms of a wire ?
(A) $Y = k \times r_0$ (B) $k = Y \times r_0$
(C) $k = Y \times r_0^2$ (D) $k = \sqrt{Y \times r_0}$
44. To decrease the magnifying power of an astronomical telescope—
(A) Focal length of objective should be increased
(B) Focal length of eyepiece should be decreased
(C) Focal length of eyepiece should be increased
(D) Focal length of objective should be increased and that of eyepiece should be decreased

45. The aperture of the objective of a telescope is 0.1 m and wavelength of light is 6000 Å. The resolving limit of the telescope will approximately be—
 (A) 6×10^{-5} rad. (B) 6×10^{-4} rad. (C) 6×10^{-3} rad. (D) 6×10^{-6} rad.

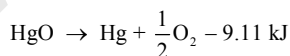
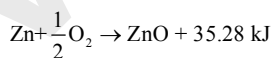
CHEMISTRY

1. The vapour density of a gas A is four times that of B. If molecular mas of B is M, then molecular mas of A is—
 (A) M (B) 4M
 (C) $\frac{M}{4}$ (D) 2M
2. Which metal has maximum tendency to get oxidised ?
 (A) Mg (B) Zn
 (C) Cu (D) Ag
3. Which of the following does not form hydrogen bond ?
 (A) Glycerine (B) Hydrogen fluoride
 (C) Water (D) Hydrogen sulphide
4. Which of the following is not a colligative property ?
 (A) Osmotic pressure (B) Vapour pressure
 (C) Elevation of b.p. (D) Depression of f.p.
5. Which of the following is the strongest reducing agent ?
 (A) Formaldehyde (B) Acetaldehyde
 (C) Benzaldehyde (D) P-Anisaldehyde
6. An anhydride of HClO_4 is—
 (A) Cl_2O (B) ClO_2
 (C) Cl_2O_6 (D) Cl_2O_7
7. The transition of electron in H atom will emit maximum energy, when—
 (A) $n_3 \rightarrow n_2$ (B) $n_4 \rightarrow n_3$
 (C) $n_5 \rightarrow n_4$ (D) $n_6 \rightarrow n_5$
8. Which of the following will reduce acidic $\text{K}_2\text{Cr}_2\text{O}_7$ solution ?
 (A) White vitriol (B) Mohr's salt
 (C) Chile salt petre (D) Potash alum
9. On heating $[(\text{C}_2\text{H}_5)_4\text{N}]^+ \text{OH}^-$ we do not obtain—
 (A) $(\text{C}_2\text{H}_5)_3\text{N}$ (B) C_2H_4
 (C) NH_3 (D) H_2O

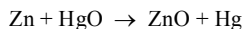
10. The IUPAC name of  is—

- (A) Trans-3-methyl pent-2-ene
 (B) (Z)-3-methyl pent-2-ene
 (C) Trans-2-ethyl but-2-ene
 (D) (E)-3-methyl pent-2-ene

11. Given that



The heat of reaction



is—

- (A) 26.17 kJ (B) 44.39 kJ
 (C) -44.39 kJ (D) 2.617 kJ

12. Which of the following is strongest acid ?

- (A) Phenol (B) o-Nitrophenol
 (C) m-Nitrophenol (D) 2, 4-Dinitrophenol

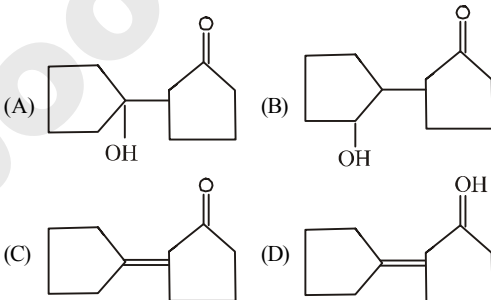
13. Which of the following has a T-shape ?

- (A) PCl_3 (B) DIF_3
 (C) XeF_2 (D) H_3O^+

14. Mercury(II) forms a complex with—

- (A) H_2S (B) SnCl_2
 (C) KI (D) NaOH

15. Self condensation of cyclopentanone in presence of dil. NaOH gives—



16. Oxidation of NH_3 by CuO yields a molecule in which oxidation state of nitrogen is—

- (A) +6 (B) +3
 (C) 0 (D) +4

17. 50 ml of 0.1 (M) HCl and 5 ml of 0.2 (M) NaOH are mixed. The pH of the resulting solution is—

- (A) 1.30
 (B) 4.2
 (C) 12.70
 (D) 11.70

18. Epsom salt is—

- (A) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
 (B) $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$
 (C) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$
 (D) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$



The product 'Z' may be—

- (A) $\text{CH}_2=\text{CH}-\text{COOH}$

33. Which of the following undergoes spermiogenesis?
 (A) Primary spermatocytes
 (B) Secondary spermatocytes
 (C) Spermatides
 (D) Spermatogonia
34. A pair of centrioles are found in the human sperm in the :
 (A) Head region
 (B) Neck region
 (C) Middle region
 (D) Tail
35. When a population is small, there is a greater chance of :
 (A) Gene flow (B) Genetic drift
 (C) Natural selection (D) Mutations
36. Most animals that live in deep oceanic waters are :
 (A) Producers
 (B) Primary consumers
 (C) Secondary consumers
 (D) Detritivores
37. The continued occurrence of sickle-cell disease with malaria is due to :
 (A) Continuous mutation
 (B) Gene flow between populations
 (C) Fitness of the heterozygote
 (D) Disruptive selection
38. Lotic ecosystem is associated with :
 (A) Lakes and ponds
 (B) Rivers and streams
 (C) Oceans
 (D) All the above
39. Owls move freely during night because they have :
 (A) Only cones in their retina
 (B) Only rods in the retina
 (C) Adjustable pupil
 (D) None of these
40. Milk protein is curdled into calcium paracaseinate by the enzyme :
 (A) Maltase (B) Trypsin
 (C) Lactase (D) Rennin
41. Which of the following is least dangerous form of skin cancer?
 (A) Basal-cell carcinoma
 (B) Teratocarcinoma
 (C) Sarcomas
 (D) Myelomas
42. Which of the following is the cancer of connective tissue?
 (A) Sternum (B) Sarcosoma
 (C) Mylomas (D) None of the above
43. Which of these is included in the category of irregular bone?
 (A) Sternum (B) Scapula
 (C) Femur (D) Zygomatic bone
44. Muscle cramps often result when muscle cells :
 (A) Lack sufficient ATP
 (B) Are irritated by lactic acid
 (C) Have reduced ion concentration
 (D) All the above
45. Excretion of hypertonic urine in humans is associated with :
 (A) Glomerular capsule
 (B) Proximal convoluted tubule
 (C) Loop of Henle
 (D) Distal convoluted tube

Physics Answersheet

- | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (A) | 2. (B) | 3. (D) | 4. (C) | 5. (A) | 26. (D) | 27. (B) | 28. (D) | 29. (D) | 30. (D) |
| 6. (C) | 7. (C) | 8. (C) | 9. (B) | 10. (D) | 31. (D) | 32. (D) | 33. (C) | 34. (B) | 35. (B) |
| 11. (D) | 12. (C) | 13. (A) | 14. (A) | 15. (C) | 36. (D) | 37. (A) | 38. (C) | 39. (B) | 40. (C) |
| 16. (C) | 17. (B) | 18. (C) | 19. (A) | 20. (C) | 41. (D) | 42. (D) | 43. (B) | 44. (C) | 45. (D) |
| 21. (B) | 22. (B) | 23. (C) | 24. (A) | 25. (B) | | | | | |

Explanatory Notes

1. Rotational K.E., $E = \frac{1}{2} I\omega^2$
 or, $2EI = (I\omega)^2$
 Angular momentum $I\omega = \sqrt{2EI}$
 In absence of any external torque, the net angular momentum of the system remains conserved. Thus,
 $\sqrt{2E_1I_1} = \sqrt{2E_2I_2}$

$$\frac{E_2}{E_1} = \frac{I_1}{I_2} = \frac{3}{1}$$

2. The gravitational potential energy is obtained as kinetic energy

$$\therefore \frac{1}{2}mv^2 = 6.25 \times 10^8$$