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# OUAT U G Common Entrance Examination 2022 9th and 12th Aug 2022

| | |
|---|---|
| Participant ID | |
| Participant Name | |
| Test Center Name | |
| Test Date | 09/08/2022 |
| Test Time | 10:00 AM - 12:00 PM |
| Subject | OUAT U.G Common Entrance Examination 2022 |
| Physics (Compulsory) | |
| Chemistry (Compulsory) | |
| Mathematics (Optional) | |
| Biology (Optional) | |
| Marks Obtained | |

Option highlighted in green color with ✔ is the correct answer

Section : **Physics (Compulsory)**

**Q.1** **Which of the following stresses produces a change in volume of the body in which it developed?**

**Ans**
- ✗ A. Shear stress
- ✗ B. Tensile stress
- ✔ C. Hydraulic stress
- ✗ D. Compressive stress

Question Type : **MCQ**
Question ID : **95001726**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.2** **An object is placed at 12 cm in front of a concave mirror of radius of curvature 22 cm. Find the distance of the image from mirror.**

**Ans**
- ✗ A. 125 cm
- ✗ B. 115 cm
- ✔ C. 132 cm
- ✗ D. 144 cm

Question Type : **MCQ**
Question ID : **95001759**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.3 Match the Column I with the Column II correctly.

| Column I | Column II |
|---|---|
| (A) DC Motor | (1) Eddy current |
| (B) AC Generator | (2) Slip rings |
| (C) Solenoid | (3) Split rings |
| (D) Dead beat galvanometer | (4) A cylindrical coil wrapped by insulated cooper wire |

Ans
✗ A. (A)-(1) ; (B)-(2) ; (C)-(4) ; (D)-(3)
✗ B. (A)-(3) ; (B)-(2) ; (C)-(1) ; (D)-(4)
✓ C. (A)-(3) ; (B)-(2) ; (C)-(4) ; (D)-(1)
✗ D. (A)-(2) ; (B)-(4) ; (C)-(3) ; (D)-(1)

Question Type : **MCQ**
Question ID : **95001753**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.4 **The kinetic energy of a moving particle with respect to any other particle will always be:**

Ans
✗ A. zero
✗ B. negative
✓ C. positive
✗ D. infinite

Question Type : **MCQ**
Question ID : **95001713**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.5 **The unit of electric current can also be written as:**

Ans
✓ A. $Cs^{-1}$
✗ B. $C^2s^{-1}$
✗ C. $Vm^{-2}$
✗ D. $Vm^{-1}$

Question Type : **MCQ**
Question ID : **95001746**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.6 What is the possible situation of a system in the event that heat is injected to the system from a source?

Ans
✔ A. A positive work will be done by the system.
✘ B. The internal energy of system remains unchanged.
✘ C. System will not reject any heat to the surrounding
✘ D. The system will not do any work.

Question Type : **MCQ**
Question ID : **95001735**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.7 At a marble surface a block of mass 4 kg slides with an initial velocity of 8 m/s. Find out the coefficient of friction of the surface if after 10 seconds the velocity of the block is reduced to half.

Ans
✘ A. 0.08
✘ B. 0.06
✘ C. 0.02
✔ D. 0.04

Question Type : **MCQ**
Question ID : **95001712**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.8 Which of the following laws is NOT stated by Kepler?

Ans
✔ A. Law of gravity
✘ B. Law of periods
✘ C. Law of areas
✘ D. Law of orbits

Question Type : **MCQ**
Question ID : **95001721**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.9 With the application of a constant load P on a spring a tension T is developed in it. If the energy stored inside the spring is E by the x elongation of spring, calculate the spring constant.

Ans
✔ A. $\frac{T^2}{2E}$
✘ B. $\frac{T^2}{4E}$
✘ C. $\frac{4E}{T^2}$
✘ D. $\frac{2T}{E^3}$

Question Type : **MCQ**
Question ID : **95001727**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.10 There are two distinct band of energies (called valence band and conduction band) in which the electrons in a material lie. Which of the following statements correctly Describe the properties of energy bands?

Ans
✗ A. Valence band energies are high as compared to conduction band energies.

✓ B. All energy levels in the valence band are filled while energy levels in the conduction band may be fully empty or partially filled.

✗ C. The electrons in the valence band are free to move in a solid and are responsible for the conductivity

✗ D. The extent of conductivity depends upon the energy gap between the bottom of valence band and the top of the conduction band.

Question Type : **MCQ**
Question ID : **95001766**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.11 The property of a thermodynamic substance that is independent of its bulk mass is.

Ans
✗ A. Temperature

✗ B. Entropy

✗ C. Enthalpy

✓ D. Specific heat capacity

Question Type : **MCQ**
Question ID : **95001730**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.12 What is the accurate relationship between water density and temperature?

Ans
✗ A. Density linearly decreases with temperature

✓ B. Density first increases with temperature then decreases

✗ C. Density remains constant with increase in temperature

✗ D. Density first decreases with temperature then increases

Question Type : **MCQ**
Question ID : **95001736**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.13 In the number 0.0003364 how many significant figures are there?

Ans
✗ A. 3

✗ B. 7

✓ C. 4

✗ D. 5

Question Type : **MCQ**
Question ID : **9500171**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.14 If a bullet fired by a gunman has a mass of 60 g and velocity of 300 m/s, after traveling in an air resistance force of 20 N the kinetic energy of the bullet is reduced to 20%. Find out the reduction in velocity of the bullet.

Ans
✗ A. 20%
✗ B. 80%
✓ C. 55.3%
✗ D. 44.7%

Question Type : **MCQ**
Question ID : **95001716**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.15 At an angle of 30 degrees, a proton enters a magnetic field of $4.8 \times 10^{-4}$ T with a velocity of $5 \times 10^{5}$ m/s. The electron's circular path has a radius of:

Ans
✓ A. 1.18 cm
✗ B. 13 cm
✗ C. 4.3 cm
✗ D. 1.3 cm

Question Type : **MCQ**
Question ID : **95001750**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.16 The primary coil of a transformer receives a 60 Hz AC with a peak value of 1.2 Ampere. The approximate average value of the induced voltage is _____ if the primary and secondary mutual inductances are 1.8 Henry.

Ans
✗ A. 240 volts
✗ B. 482 volts
✓ C. 518 volts
✗ D. 380 volts

Question Type : **MCQ**
Question ID : **95001755**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.17 A ball is dropped from a bus moving with constant acceleration. If the air resistance is neglected, in which direction the acceleration will act on the ball after the moment of dropping off?

Ans
✓ A. In vertical direction only
✗ B. In both the direction
✗ C. No acceleration will be there
✗ D. In horizontal direction only

Question Type : **MCQ**
Question ID : **95001710**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.18** For a hydrogen-like atom or ion, how many times wider is the gap between the energy levels with n = 4 and n = 5 than the space between the energy levels with n = 9 and n = 10?

**Ans**
✗ A. 0.63
✗ B. 0.58
✗ C. 0.38
✓ D. 0.47

Question Type : **MCQ**
Question ID : **95001763**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.19** Calculate a medium's refractive index in which a plane electromagnetic wave $E_x = 50\cos(8 \times 10^8 t + 6x)$ V/m travels.

**Ans**
✗ A. 4.2
✗ B. 2
✗ C. 3.25
✓ D. 2.25

Question Type : **MCQ**
Question ID : **95001758**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.20** For a projectile if the escape speed from Earth is $V_E$ and from another planet the escape speed is $2V_E$ What should be the radius of the planet. Consider the acceleration due to the gravity of the planet is same as the Earth.

**Ans**
✗ A. Equal to the radius of Earth
✗ B. Twice the radius of Earth
✗ C. Half the radius of Earth
✓ D. Four times the radius of Earth

Question Type : **MCQ**
Question ID : **95001722**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

**Q.21** What should be the minimum value of energy corresponding to 7000 nm wavelength so that it can be detected by a P-N photodiode having the semiconductor with band gap of 3.5 eV?

**Ans**
✗ A. $4.8 \times 10^{-21}$ J
✗ B. $2.83 \times 10^{-20}$ J
✗ C. $5.6 \times 10^{-20}$ J
✓ D. $5.6 \times 10^{-19}$ J

Question Type : **MCQ**
Question ID : **95001765**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.22 Which of the following laws talks about momentum?

Ans
✗ A. Newton's first law of motion
✗ B. Newton's third law of motion
✗ C. Galileo's law
✓ D. Newton's second law of motion

Question Type : **MCQ**
Question ID : **95001711**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.23 What does 200°C translate to in Fahrenheit?

Ans
✓ A. 392 °F
✗ B. 300 °F
✗ C. 360 °F
✗ D. 292 °F

Question Type : **MCQ**
Question ID : **95001733**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.24 In a specific situation, a rabbit's heart is pounding at 156 beats per minute. What time period does this heartbeat have?

Ans
✓ A. 0.38 seconds
✗ B. 2.6 seconds
✗ C. 0.86 seconds
✗ D. 1.2 seconds

Question Type : **MCQ**
Question ID : **95001738**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.25 Fermi is a unit to measure length is having dimensions of order:

Ans
✗ A. $10^{-12}$ m
✓ B. $10^{-12}$ mm
✗ C. $10^{-15}$ mm
✗ D. $10^{-12}$ cm

Question Type : **MCQ**
Question ID : **9500173**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.26 A light bulb filament has a resistance of 50 Ω at room temperature (25 °C). If the resistance is 120 Ω and the resistor's material has a temperature coefficient of $1.4 \times 10^{-3}$ °$C^{-1}$, what temperature is the element at?

Ans
✗ A. 780 °C
✗ B. 1125 °C
✓ C. 1025 °C
✗ D. 850 °C

Question Type : **MCQ**
Question ID : **95001747**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.27 What are the magnitude and kind of the force between two tiny charged particles with charges of $5 \times 10^{-6}$ C and $9 \times 10^{-6}$ C that are separated by 90 cm in air?

Ans
✗ A. 0.5 N, attractive
✗ B. $5 \times 10^{-2}$ N, repulsive
✗ C. 0.45 N, attractive
✓ D. 0.5 N, repulsive

Question Type : **MCQ**
Question ID : **95001743**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.28 Adiabatic walls are insulating structure's that prevent flow of _____ through them.

Ans
✓ A. heat
✗ B. mass
✗ C. charge
✗ D. work

Question Type : **MCQ**
Question ID : **95001729**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.29 If the position-time curve of particle is a horizontal line then it represents that the:

Ans
✗ A. Particle moving with constant acceleration.
✓ B. Particle is at rest.
✗ C. Particle is moving with positive velocity.
✗ D. Particle is moving with negative velocity.

Question Type : **MCQ**
Question ID : **9500176**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.30 The moment of a linear force taken from a certain distance is called:

Ans
✗ A. pressure
✓ B. torque
✗ C. momentum
✗ D. work

Question Type : **MCQ**
Question ID : **95001717**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.31 Two metal wires, one of Aluminium and the other of steel, are connected end to end. The lengths of both the wires are 3.2 m and 2.4 m, respectively. They are elongated with a constant load and total change in length is found to be 100 mm. Calculate the value of load if the diameter of both wires is 5 mm.
(Given that Young's modulus of Aluminium is $70 \times 10^9$ N/m$^2$ and of steel is $200 \times 10^9$ N/m$^2$.)

Ans
✗ A. 8.95 kN
✗ B. 4.55 kN
✓ C. 34 kN
✗ D. 2.5 kN

Question Type : **MCQ**
Question ID : **95001728**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.32 The time period of a satellite orbiting at the height of five times the radius of Earth is T. Find out the time period of another satellite orbiting at a height of ten times of the radius of Earth.

Ans
✗ A. $\frac{2T}{\sqrt{2}}$
✗ B. $3\sqrt{2}\,T$
✗ C. $8\sqrt{2}\,T$
✓ D. $2\sqrt{2}\,T$

Question Type : **MCQ**
Question ID : **95001724**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.33 In an expander, an ideal gas goes through the adiabatic expansion process. If the adiabatic expansion coefficient is γ, the accurate expression for P, V, and T of the gas is:

Ans
✗ A. $PV\gamma\text{-}1 = \text{constant}$
✓ B. $TV\gamma\text{-}1 = \text{constant}$
✗ C. $T/V\gamma\text{-}1 = \text{constant}$
✗ D. $TV\gamma = \text{constant}$

Question Type : **MCQ**
Question ID : **95001732**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.34 A 14.5 MeV a-particle is 180° deflected away from a silver nucleus while approaching towards it. What is its minimum distance from the nucleus?

Ans
✗ A. $5.8 \times 10^{-15}$ m
✓ B. $9.3 \times 10^{-15}$ m
✗ C. $2.8 \times 10^{-15}$ m
✗ D. $3.4 \times 10^{-15}$ m

Question Type : **MCQ**
Question ID : **95001764**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.35 A mass m is thrown vertically upward. The velocity-time variation of the motion is a/an:

Ans
✓ A. inclined straight line
✗ B. parabola
✗ C. vertical straight line
✗ D. horizontal straight line

Question Type : **MCQ**
Question ID : **9500177**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.36 The Pressure-Volume curve shows two processes: an isothermal process and an adiabatic process. Which of the following about both processes is true?

Ans
✗ A. The slope of the isothermal process is greater than that of the adiabatic process and both have non-linear curves.
✗ B. The slope of the isothermal process is greater than that of the adiabatic process and both have linear curves.
✓ C. The slope of the adiabatic process is greater than that of the isothermal process and both have non-linear curves.
✗ D. The slope of the adiabatic process is greater than that of the isothermal process and both have linear curves.

Question Type : **MCQ**
Question ID : **95001731**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.37 A planet is being observed from two different points on Earth. The parallax angle made by the planet between the two points is 2°37'. Calculate the distance between Earth and the planet considering the diameter of earth is $1.276 \times 10^7$ m.

Ans
✗ A. $2.9 \times 10^{10}$ m
✓ B. $2.8 \times 10^{8}$ m
✗ C. $2.9 \times 10^{9}$ m
✗ D. $3.5 \times 10^{7}$ m

Question Type : **MCQ**
Question ID : **9500174**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.38 A block with 1.5 kg of mass will lengthen a particular light spring that is hanging vertically by 10 cm when suspended from it. When a 3 kg block is suspended from a spring and pulled through 15 cm before being let go, its maximum velocity is:

Ans
✗ A. 0.85 m/s
✗ B. 1.5 m/s
✗ C. 2.04 m/s
✓ D. 1.06 m/s

Question Type : **MCQ**
Question ID : **95001741**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.39 A particle with a mass of 500 g and a charge of 20 μC is released after being held at rest in an even electric field of 15 v/m. The kinetic energy that the particle attains after travelling 5 cm is:

Ans
✓ A. $15 \times 10^{-6}$ Joules
✗ B. $7.75 \times 10^{-3}$ Joules
✗ C. $3.5 \times 10^{-6}$ Joules
✗ D. $2.46 \times 10^{-7}$ Joules

Question Type : **MCQ**
Question ID : **95001745**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.40 By taking a reading of the balancing point length l, a meter bridge is used to calculate the resistance of an unknown wire. The new balancing point is anticipated to be _____ if the wire is replaced by another wire made of the same material but with thrice the length and half the thickness if l = 2 cm.

Ans
✗ A. 10 cm
✗ B. 12 cm
✗ C. 6 cm
✓ D. 24 cm

Question Type : **MCQ**
Question ID : **95001748**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.41 The rectilinear motion of any particles is a motion that follows a:

Ans
✗ A. circular path
✗ B. parabolic path
✓ C. straight line path
✗ D. random path

Question Type : **MCQ**
Question ID : **9500175**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.42 Match the electromagnetic waves in Column I with their correct use in Column II

| Column I | Column II |
|---|---|
| (A) Microwaves | (1) In satellites to be used by the military |
| (B) Radio Waves | (2) Aircraft navigation using RADAR |
| (C) UV rays | (3) To provide signal to television and cellular phones |
| (D) Infrared waves | (4) To test the mineral sample |

Ans
✗ A. (A)-(2) ; (B)-(1) ; (C)-(4) ; (D)-(3)
✓ B. (A)-(2) ; (B)-(3) ; (C)-(4) ; (D)-(1)
✗ C. (A)-(1) ; (B)-(4) ; (C)-(3) ; (D)-(2)
✗ D. (A)-(3) ; (B)-(2) ; (C)-(4) ; (D)-(1)

Question Type : **MCQ**
Question ID : **95001757**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.43 Determine the energy value of 2.5 g of the matter.

Ans
✗ A. $15.8 \times 10^{10}$ kJ
✗ B. $2.5 \times 10^{10}$ kJ
✓ C. $22.5 \times 10^{10}$ kJ
✗ D. $3 \times 10^{10}$ kJ

Question Type : **MCQ**
Question ID : **95001762**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.44 What is the ratio of rotational energy to translation energy when a spherical shell rolls on a plane surface without sliding?

Ans
✗ A. 1 : 2
✗ B. 5 : 2
✓ C. 2 : 3
✗ D. 3 : 2

Question Type : **MCQ**
Question ID : **95001718**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.45 How much torque should be applied to a rotating ring to stop it in two minutes, if it is rotating about a vertical axis with 120 rpm? (The moment of inertia of the ring about this axis is 5 kg-$m^2$.)

Ans
- ✔ A. $\frac{\pi}{6}$ Nm
- ✘ B. $\frac{2\pi}{15}$ Nm
- ✘ C. $\frac{2\pi}{3}$ Nm
- ✘ D. $\frac{\pi}{4}$ Nm

Question Type : **MCQ**
Question ID : **95001720**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.46 For constructing an astronomical telescope, four lenses with focal lengths of +13 cm, +26 cm, +175 cm and +350 cm are available. The focal length of the eyepiece in order to generate maximum magnification is:

Ans
- ✘ A. −350 cm
- ✔ B. +13 cm
- ✘ C. −13 cm
- ✘ D. +350 cm

Question Type : **MCQ**
Question ID : **95001760**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.47 $V = 5x^2 + 9$ volt gives the electric potential V at any point (x, y, or z) in space. The electric field at the position (1, 0, 2) is equal to:

Ans
- ✘ A. 10 v/m along positive x-axis
- ✔ B. 10 v/m along negative x-axis
- ✘ C. 12 v/m along negative x-axis
- ✘ D. 14 v/m along positive x-axis

Question Type : **MCQ**
Question ID : **95001744**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.48 A mass m is dropped from a certain height with zero velocity at time t = 0 sec. Another mass m was thrown at time t = 10 seconds with velocity v. If both the balls meet at t = 22s find out the value of v.

Ans
- ✘ A. 161.5 m/s
- ✔ B. 141.67 m/s
- ✘ C. 45.7 m/s
- ✘ D. 75 m/s

Question Type : **MCQ**
Question ID : **9500178**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.49** In a wave with a frequency of 160 Hz, the phase difference between two sites separated by 1.0 m is equal to π/2. The wave speed is:

**Ans**
- ✔ A. 640 m/s
- ✘ B. 480 m/s
- ✘ C. 520 m/s
- ✘ D. 380 m/s

Question Type : **MCQ**
Question ID : **95001740**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.50** Match the Column I with the Column II correctly.

| Column I | Column II |
|---|---|
| (A) Inductive circuit | (1) Current leads |
| (B) RL circuit | (2) Voltage leads |
| (C) Resistive circuit | (3) Voltage and current have no phase difference. |
| (D) RC circuit | (4) Phase difference between voltage and current 90° |

**Ans**
- ✘ A. (A)-(4) ; (B)-(2) ; (C)-(1) ; (D)-(3)
- ✘ B. (A)-(2) ; (B)-(4) ; (C)-(3) ; (D)-(1)
- ✔ C. (A)-(4) ; (B)-(2) ; (C)-(3) ; (D)-(1)
- ✘ D. (A)-(3) ; (B)-(2) ; (C)-(4) ; (D)-(1)

Question Type : **MCQ**
Question ID : **95001754**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

**Q.51** The triple points of water are 150 A and 450 B on the two absolute scales A and B. What connection exists between $T_A$ and $T_B$?

**Ans**
- ✘ A. $T_A = 2T_B$
- ✔ B. $T_A = T_B$
- ✘ C. $T_A = \frac{3T_B}{2}$
- ✘ D. $T_A = \frac{T_B}{3}$

Question Type : **MCQ**
Question ID : **95001734**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.52 In a simple harmonic motion, the acceleration amplitude is equal to:

Ans
- ✔ A. $\omega^2$ times the displacement
- ✘ B. $\omega$ times the displacement
- ✘ C. $\omega^2$ times the velocity
- ✘ D. $\omega$ times the square of displacement

Question Type : **MCQ**
Question ID : **95001737**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.53 An electromagnetic wave has a magnetic field equal to $4.2 \times 10^{-5}$. Find the value of the electric field corresponding to the magnetic field.

Ans
- ✔ A. $12.6 \times 10^3$ V/m
- ✘ B. $2.6 \times 10^3$ V/m
- ✘ C. $3.4 \times 10^3$ V/m
- ✘ D. $14.3 \times 10^3$ V/m

Question Type : **MCQ**
Question ID : **95001756**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.54 In an AC circuit to control current the device that is used in place of rheostat is called:

Ans
- ✔ A. chock coil
- ✘ B. capacitor
- ✘ C. battery
- ✘ D. resistance

Question Type : **MCQ**
Question ID : **95001752**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.55 The potential energy required to lift a stone of mass 25 kg from 10 meter height to 20 meter height on the moon is approximately equal to:

Ans
- ✔ A. 417 Joules
- ✘ B. 2500 Joules
- ✘ C. 512 Joules
- ✘ D. 3000 Joules

Question Type : **MCQ**
Question ID : **95001723**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.56** A car has a linear motion with constant momentum. In such a case the parameter that must be constant is:

**Ans**
- ✔ A. velocity
- ✘ B. acceleration
- ✘ C. power
- ✘ D. torque

Question Type : **MCQ**
Question ID : **9500179**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.57** The point of elastic limit on the stress strain curve is also known as:

**Ans**
- ✘ A. fracture point
- ✘ B. plastic deformation point
- ✔ C. yield point
- ✘ D. proportional limit

Question Type : **MCQ**
Question ID : **95001725**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

**Q.58** Match the Column I with the Column II correctly.

| Column I | Column II |
|---|---|
| (A) At the dipole centre | (1) Potential energy is zero |
| (B) A dipole placed at 90° to a electric field | (2) Electric field is zero |
| (C) Inside a charge conductor that is placed in a uniform electric field | (3) Electric potential is zero |
| (D) for a dipole placed in stable equilibrium | (4) Torque produced is zero |

**Ans**
- ✘ A. (A)-(3) ; (B)-(2) ; (C)-(4) ; (D)-(1)
- ✘ B. (A)-(2) ; (B)-(3) ; (C)-(4) ; (D)-(1)
- ✘ C. (A)-(2) ; (B)-(1) ; (C)-(4) ; (D)-(3)
- ✔ D. (A)-(3) ; (B)-(1) ; (C)-(2) ; (D)-(4)

Question Type : **MCQ**
Question ID : **95001761**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

**Q.59** An object is moving with a certain velocity. If a force is applied in the direction of the velocity than the work done by the force will be:

**Ans**
- ✗ A. zero
- ✗ B. infinite
- ✗ C. negative
- ✓ D. positive

Question Type : **MCQ**
Question ID : **95001715**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

**Q.60** Which of the following units is NOT an SI base unit?

**Ans**
- ✗ A. Candela
- ✓ B. Bar
- ✗ C. Kelvin
- ✗ D. Mole

Question Type : **MCQ**
Question ID : **9500172**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

**Q.61** Match the Column I (Physical quantity) with the Column II (SI unit) correctly.

| Column I | Column II |
|---|---|
| (A) Voltage | (1) Ampere |
| (B) Current | (2) Volt |
| (C) Capacitance | (3) Ohm |
| (D) Resistance | (4) Farad |

**Ans**
- ✓ A. (A)-(2) ; (B)-(1) ; (C)-(4) ; (D)-(3)
- ✗ B. (A)-(3) ; (B)-(2) ; (C)-(1) ; (D)-(4)
- ✗ C. (A)-(1) ; (B)-(3) ; (C)-(2) ; (D)-(4)
- ✗ D. (A)-(1) ; (B)-(2) ; (C)-(3) ; (D)-(4)

Question Type : **MCQ**
Question ID : **95001742**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.62** Select the correct statement regarding the centre of mass of a body.

**Ans**
- ✗ A. The position of the centre of mass depends on the co-ordinate system chosen.
- ✓ B. The centre of mass can coincide with the geometrical centre of a body.
- ✗ C. The centre of mass should always lie on the body.
- ✗ D. The centre of mass of a system of two particles does not always lie on the line joining the particles.

Question Type : **MCQ**
Question ID : **95001719**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.63 Regarding the 'Distributive Law' select the wrong statement:

Ans
✗ A. The union of sets is distributive over intersection.
✗ B. The distributive law is valid for matrix multiplication.
✓ C. Addition is distributive over multiplication.
✗ D. Multiplication is distributive over addition.

Question Type : **MCQ**
Question ID : **95001714**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.64 Two parallel, long wires, spaced 7 cm apart, each carry a 12 A current. The force generated to each wire's unit length equals:

Ans
✗ A. $4.114 \times 10^{-5}\text{N}$
✗ B. $41.14\ \text{N}$
✗ C. $41.14 \times 10^{-3}\text{N}$
✓ D. $41.14 \times 10^{-5}\text{N}$

Question Type : **MCQ**
Question ID : **95001751**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.65 If the displacement of a harmonically oscillating point becomes half of the amplitude after 3 seconds, then calculate the time period of motion. Take initial phase as zero.

Ans
✓ A. 36 seconds
✗ B. 12 seconds
✗ C. 24 seconds
✗ D. 48 seconds

Question Type : **MCQ**
Question ID : **95001739**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.66 We can determine the direction of force on the conductor by using Fleming's left hand rule by:

Ans
✓ A. thumb
✗ B. forefinger
✗ C. middle finger
✗ D. index finger

Question Type : **MCQ**
Question ID : **95001749**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Section : **Chemistry (Compulsory)**

Q.1 Identify the option that arranged the following in correct order of decreasing stability of different carbocations.

Ans
✗ A. $RC^+=CH_2 > CH_3^+ > (C_6H_5)_3C^+ > (CH_3)_3C^+$
✗ B. $(C_6H_5)_3C^+ > CH_3^+ > (CH_3)_3C^+ > RC^+=CH_2$
✗ C. $(CH_3)_3C^+ > RC^+=CH_2 > (C_6H_5)_3C^+ > CH_3^+$
✓ D. $(C_6H_5)_3C^+ > (CH_3)_3C^+ > RC^+=CH_2 > CH_3^+$

Question Type : **MCQ**
Question ID : **95001790**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.2 Which of the following pairs show the puckered ring structure?

Ans
✗ A. $H_2S_3$ and $S_8$
✓ B. $S_8$ and $Se_8$
✗ C. $O_2$ and $O_3$
✗ D. $H_2S_3$ and $H_2S_4$

Question Type : **MCQ**
Question ID : **950017109**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.3 How many ions are present in coordination compounds of platinum in $[PtCl_4(NH_3)_2]$?

Ans
✗ A. 4
✓ B. 0
✗ C. 3
✗ D. 5

Question Type : **MCQ**
Question ID : **950017115**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.4** At equilibrium, the concentrations of $N_2$ , $H_2$ and $NH_3$ in a sealed vessel at 800K are:

$N_2 = 3.0 * 10^{-3}$ M, $H_2 = 4.2 * 10^{-3}$M and $NH_3 = 2.8 * 10^{-3}$M

Calculate the equilibrium constant $K_c$ for the reaction:

$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$

**Ans**

✗ A. $4.527 * 10^4$ $Lmol^{-1}$

✓ B. $3.527 * 10^4$ $L^2mol^{-2}$

✗ C. $3.527 * 10^{-4}$ $Lmol^{-1}$

✗ D. $4.527 * 10^{-4}$ $L^2mol^{-2}$

Question Type : **MCQ**
Question ID : **95001781**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.5** In the given balanced equation, find the coefficient of x, y, z and w.

$xMnO_4^- + y\ C_2O_4^{2-} + z\ H^+ \rightarrow w\ Mn^{2+} + 10CO_2 + 8H_2O$

**Ans**

✓ A. 2, 5, 16, 2

✗ B. 16, 2, 10, 2

✗ C. 2, 16, 5, 2

✗ D. 3, 5, 10, 2

Question Type : **MCQ**
Question ID : **95001783**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.6** **Which salt is used in Dimetapp?**

**Ans**

✗ A. Terfenadine

✓ B. Brompheniramine

✗ C. Ranitidine

✗ D. Cimetidine

Question Type : **MCQ**
Question ID : **950017130**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.7 Match the following.

| Chemical reaction | Catalyst |
|---|---|
| A) Oxidation of a primary alcohol to carboxylic acid | i) Conc. $H_2SO_4$ at 443K |
| B) Benzyl alcohol to benzoic acid | ii) $NaBH_4$ or $Ni/H_2$ |
| C) Butane-2-one to butan-2-ol | iii) Acidfied or alkaline $KMnO_4$ |
| D) Dehydration of propane-2-ol to propene | iv) Acidfied $K_2Cr_2O_7$ or $KMnO_4$ |

Ans
✔ A. A-iv, B-iii, C- ii, D- i
✘ B. A–i, B–iv, C–iii, D–ii
✘ C. A–ii, B–i, C–iii, D–iv
✘ D. A–i, B–ii, C–iii, D–iv

Question Type : **MCQ**
Question ID : **950017122**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.8 **Which of the following statements regarding abnormal molar masses are FALSE?**

**a) The solution should be dilute.**
**b) The solute must not dissociate or associate in solution.**
**c) The solution should not be dilute.**
**d) The solute must dissociate or associate in solution.**

Ans
✘ A. b and c
✘ B. a and d
✘ C. c and d
✔ D. a and b

Question Type : **MCQ**
Question ID : **95001799**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.9 **In the presence of dil.HCl or NaOH, cyanobenzene gives:**

Ans
✘ A. benzamide
✘ B. benzonitrile
✘ C. benzylamine
✔ D. benzoic acid

Question Type : **MCQ**
Question ID : **950017118**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.10 **Synthetic detergents are mainly classified into _____ categories?**

Ans
✘ A. 4
✘ B. 2
✔ C. 3
✘ D. 6

Question Type : **MCQ**
Question ID : **950017132**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.11 Which of the following statements is INCORRECT about Benzenediazonium chloride?

Ans
✗ A. It decomposes easily in the dry state.
✗ B. It is a colourless crystalline solid.
✗ C. It is soluble in water and is stable in cold.
✓ D. It is insoluble in water and is stable in hot water.

Question Type : **MCQ**
Question ID : **950017127**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.12 Identify the element that is used for the ignition of thermite charge in aluminothermy.

Ans
✗ A. Al
✗ B. K
✗ C. Be
✓ D. Mg

Question Type : **MCQ**
Question ID : **95001786**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.13 How many structure of Benzene show resonance hybrid?

Ans
✓ A. 2
✗ B. 3
✗ C. 6
✗ D. 1

Question Type : **MCQ**
Question ID : **95001794**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.14 Which of the following statements is INCORRECT about the collision theory?

Ans
✓ A. When colliding, the molecules must possess the maximum amount of energy.
✗ B. When reaction occurs, there must be collisions between the reacting species.
✗ C. For effective collisions, the molecules should possess sufficient energy as well as orientation.
✗ D. Only a certain fraction of the total number of collisions are effective in forming the products.

Question Type : **MCQ**
Question ID : **950017104**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.15 which of the following solutions does NOT contain a solid solvent?

Ans
✗ A. $H_2$ in palladium
✗ B. Amalgum of mercury with sodium
✗ C. Alloys
✓ D. $I_2$ vapour in air

Question Type : **MCQ**
Question ID : **95001798**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.16 A piece of copper metal weighing 5 g requires 3.85 J of heat to raise the temperature from 298 K to 300 K. What are the value of heat capacity and specific heat capacity of copper?

Ans
✗ A. 0.1924 J/K and 2.934 J/gK
✓ B. 1.925 J/K and 0.385 J/gK
✗ C. 2.934 J/K and 0.1924 J/gK
✗ D. 0.385 J/K and 1.925 J/gK

Question Type : **MCQ**
Question ID : **95001780**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.17 Match the following.

| Chemical formula | Chemical name |
|---|---|
| a. $HOOC - CH_2 - COOH$ | i) Adipic acid |
| b. $HOOC - (CH_2)_2 - COOH$ | ii) Glutaric acid |
| c. $HOOC - (CH_2)_3 - COOH$ | iii) Succinic acid |
| d. $HOOC - (CH_2)_4 - COOH$ | iv) Malonic acid |

Ans
✗ A. a–i, b–ii, c–iii, d–iv
✗ B. a–iv, b–i, c–ii, d–iii
✓ C. a–iv, b–iii, c–ii, d–i
✗ D. a–iii, b–ii, c–i, d–iv

Question Type : **MCQ**
Question ID : **950017125**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.18 Complete the reaction:

Ethyne $\xrightarrow{Pd/C,H_2}$

Ans
✗ A. Methane
✗ B. Propane
✓ C. Ethene
✗ D. Ethane

Question Type : **MCQ**
Question ID : **95001793**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.19 **Which of the following elements show the –1 to +7 oxidation state?**

Ans
✗ A. Zr
✗ B. Pt
✗ C. W
✓ D. Re

Question Type : **MCQ**
Question ID : **950017111**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.20 **Calculate the pressure of ammonia at 30°C and 3.37 g $dm^{-3}$ density.**

Ans
✗ A. 7 bar
✗ B. 3 bar
✗ C. 12 bar
✓ D. 5 bar

Question Type : **MCQ**
Question ID : **95001775**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.21 **Which of the following statements is correct?**

Ans
✓ A. Argon is used for production of titanium.
✗ B. Neon is used for filling electric bulbs because of its inert nature.
✗ C. Kr-Xe has been used in the treatment of cancer.
✗ D. Helium is used for filling sodium vapour lamps.

Question Type : **MCQ**
Question ID : **950017110**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.22 Identify the option that arrange the following elements in decreasing order of their metallic radius (pm).

Ans
✗ A. Li > Be > Mg > Al
✗ B. Be > Li > Al > Mg
✓ C. Mg > Li > Al > Be
✗ D. Al > Mg > Be > Li

Question Type : **MCQ**
Question ID : **95001770**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.23 Which of the following is a correct IUPAC name?

Ans
✓ A. 4-Bromopent-2-en-1-oic acid
✗ B. 2-Bromopent-5-en-3-oic acid
✗ C. 2-Bromopent-3-en-5-oic acid
✗ D. 4-Bromopent-1-en-2-oic acid

Question Type : **MCQ**
Question ID : **95001789**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.24 How many –OH groups are present in terpineol?

Ans
✗ A. 3
✗ B. 0
✓ C. 1
✗ D. 2

Question Type : **MCQ**
Question ID : **950017131**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.25 Match the columns.

| Elements | Electronic configuration |
|---|---|
| a) Cr<br>b) Mn<br>c) Fe<br>d) Co | i) $3d^7 4s^2$<br>ii) $3d^6 4s^2$<br>iii) $3d^5 4s^2$<br>iv) $3d^5 4s^1$ |

Ans
✗ A. a–iii, b–iv, c–ii, d–i
✓ B. a–iv, b–iii, c–ii, d–i
✗ C. a–iv, b–iii, c–i, d–ii
✗ D. a–iv, b–ii, c–iii, d–i

Question Type : **MCQ**
Question ID : **950017113**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.26 **Which of the following statements is/are correct?**

**A) Aldehydes are easily oxidised to carboxylic acids on treatment with oxidising agents like nitric acid and potassium permanganate.**
**B) Ketones are generally oxidised under vigorous conditions, i.e., strong oxidising agents and at elevated temperatures.**
**C) Aldehydes are reduced to primary and secondary alcohol by $NaBH_4$.**

Ans
✗ A. Only B
✗ B. Only C
✗ C. Only A
✓ D. A, B and C

Question Type : **MCQ**
Question ID : **950017124**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.27 Complete this reaction:

$$^{9}Be_{4} + {}^{4}He_{2} \rightarrow$$

Ans
✗ A. $^{11}C_6 + {}^{1}n_0$
✗ B. $^{1}H_1 + {}^{1}n_0$
✓ C. $^{12}C_6 + {}^{1}n_0$
✗ D. $^{1}H_0 + {}^{1}n_0$

Question Type : **MCQ**
Question ID : **95001767**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

**Q.28** How many unit cells are shared with the corner unit of a cubic unit cell?

**Ans**
- ✔ A. 8
- ✘ B. 6
- ✘ C. 3
- ✘ D. 2

Question Type : **MCQ**
Question ID : **95001795**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.29** Complete this reaction:

$$\text{Benzene} \xrightarrow[\text{anhyd.AlCl3/CuCl}]{\text{CO,HCl}} \text{'X'}$$

**Ans**
- ✘ A. Benzal chloride
- ✘ B. Toluene
- ✔ C. Benzaldehyde
- ✘ D. Benzoyl chloride

Question Type : **MCQ**
Question ID : **950017123**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

**Q.30** The conductivity of 0.10 M KCl solution at 298 K is 0.0124 $Scm^{-1}$. Calculate its molar conductivity.

**Ans**
- ✘ A. 2.48 $Scm^2mol^{-1}$
- ✘ B. 248.0 $Scm^2mol^{-1}$
- ✔ C. 124.0 $Scm^2mol^{-1}$
- ✘ D. 1.245 $Scm^2mol^{-1}$

Question Type : **MCQ**
Question ID : **950017100**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.31** Which of the following statements about conductivity is INCORRECT?

**Ans**
- ✘ A. In an electrochemical cell, cathode is positive and anode is negative while in an electrolytic cell, anode is positive and cathode is negative.
- ✘ B. In an electrochemical cell, electrons move from anode to cathode in external circuit while in an electrolytic cell, electrons are supplied by the external battery.
- ✔ C. In an electrochemical cell, electrons move from anode to cathode in internal circuit while in an electrolytic cell, electrons are supplied by the external battery.
- ✘ D. In an electrochemical cell, the redox reaction is spontaneous while in an electrolytic cell, redox reaction is non-spontaneous.

Question Type : **MCQ**
Question ID : **950017101**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.32 When energy has been supplied to the system, what sign has conventions for q and w?

Ans
✗ A. q is negative
✗ B. Both are negative
✓ C. Both are positive
✗ D. w is positive

Question Type : **MCQ**
Question ID : **95001779**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.33 Which of the following catalysts is used, when dioxygen react with ammonia to get nitric acid?

Ans
✗ A. $CCl_4$
✗ B. $CuCl_2$
✗ C. $V_2O_5$
✓ D. $Pt$

Question Type : **MCQ**
Question ID : **950017108**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.34 Which of the following compounds on heating with Novolac undergoes cross linking to form an infusible solid mass called Bakelite?

Ans
✗ A. Benzaldehyde
✓ B. Formaldehyde
✗ C. Phenol
✗ D. Benzoic acid

Question Type : **MCQ**
Question ID : **950017129**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.35 Which of the following oxides is most amphoteric in nature?

Ans
✗ A. $SiO_2$
✗ B. $MgO$
✓ C. $Al_2O_3$
✗ D. $P_2O_5$

Question Type : **MCQ**
Question ID : **95001771**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.36 What is the composition of Mn in the monel metal?

Ans
✗ A. 30
✗ B. 40
✗ C. 67
✓ D. 3

Question Type : **MCQ**
Question ID : **950017105**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.37 Which of the following pairs has the lowest viscosity?

Ans
✗ A. Honey and water
✓ B. Water and kerosene oil
✗ C. Honey and kerosene oil
✗ D. Water and coconut oil

Question Type : **MCQ**
Question ID : **95001777**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.38 How many atomic orbitals are present in square planar geometry?

Ans
✗ A. 7
✗ B. 3
✓ C. 4
✗ D. 2

Question Type : **MCQ**
Question ID : **95001772**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.39 Which of the following statements related to ethers is INCORRECT?

Ans
✓ A. Ethers don't have any industrial uses.
✗ B. It is used as a refrigerant.
✗ C. When ethers are mixed with alcohol it acts as a denaturant and the mixture is used as a petrol substitute under the trade name 'natalite'.
✗ D. It is used in perfumery and in the manufacture of smokeless powder.

Question Type : **MCQ**
Question ID : **950017120**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.40 **Which of the following statements is correct about Werner's Coordination Theory?**

Ans ✔ A. Every metal atom has a fixed number of secondary valencies i.e. it has a fixed coordination number.

✘ B. Primary valencies are satisfied by positive ions.

✘ C. In coordination compounds, metal atoms exhibit three types of valencies.

✘ D. The primary valencies are always directed towards the fixed positions in space and leads to geometry of the coordination compound.

Question Type : **MCQ**
Question ID : **950017116**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.41 **Chloromethane gives methane with the treatment of:**

Ans ✘ A. Cao

✔ B. Zn/HCl

✘ C. Dry ether

✘ D. Cu

Question Type : **MCQ**
Question ID : **95001791**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.42 **Calculate the half-life period of a first order reaction where the specific rate constant is 40 $min^{-1}$.**

Ans ✘ A. 27.72 $min^{-1}$

✘ B. 27.72 min

✔ C. 0.017325 min

✘ D. 0.01732 $min^{-1}$

Question Type : **MCQ**
Question ID : **950017103**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.43 **In the ionic solid, if $A^+$ ions adopt ccp structure and $B^-$ ions occupy all the tetrahedral voids, what will be the formula of the compound?**

Ans ✔ A. $AB_2$

✘ B. AB

✘ C. $AB_3$

✘ D. $A_2B$

Question Type : **MCQ**
Question ID : **95001797**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.44 Which of the following statement is INCORRECT?**

**Ans**
✔ A. The formation of terylene or dacron by the interaction of ethylene and terephthalic acid.

✘ B. The addition polymerisation of acrylonitrile in presence of a peroxide catalyst leads to the formation of polyacrylonitrile.

✘ C. Teflon is manufactured by heating tetrafluoroethene with a free radical or persulphate catalyst at high pressures.

✘ D. The formation of terylene or dacron by the interaction of ethylene glycol and terephthalic acid.

Question Type : **MCQ**
Question ID : **950017128**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.45 Which of the following statements is INCORRECT?**

**Ans**
✘ A. Group 18 has very high ionisation enthalpies.

✔ B. Elements having higher negative electron gain enthalpies are good reducing agents.

✘ C. F is the most electronegative element.

✘ D. In the periodic table, Fr is the largest element.

Question Type : **MCQ**
Question ID : **95001769**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.46 Identify the correct statement from among the following options.**

**Ans**
✔ A. If the temperature of the system is lower than that of the surrounding, then energy is gained by the system.

✘ B. If the temperature of the system is lower than that of the surrounding, then energy is lost by the system.

✘ C. If the temperature of the system is higher than that of the surrounding, then there is no effect on system.

✘ D. If the temperature of the system is higher than that of the surrounding, then energy is gained by the system.

Question Type : **MCQ**
Question ID : **95001778**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.47 Which of the following coordination compound does NOT behave like an electrolyte?**

**Ans**
✘ A. $CoCl_3.\ 5NH_3.H_2O$

✔ B. $CoCl_3.\ 3NH_3$

✘ C. $CoCl_3.\ 6NH_3$

✘ D. $CoCl_3.\ 4NH_3$

Question Type : **MCQ**
Question ID : **950017114**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.48 Which of the following reactants used with nascent hydrogen evolves from sodium and alcohol to form primary amine?

Ans
✗ A. Bromoethane
✓ B. Ethyl cyanide
✗ C. Ethyl bromide
✗ D. Ethyliodide

Question Type : **MCQ**
Question ID : **950017117**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.49 Identify the pair that has the same number of unpaired electrons.

Ans
✗ A. $Sm^{+3}$ and $Eu^{+3}$
✗ B. $La^{+3}$ and $Eu^{+2}$
✗ C. $Lu^{+3}$ and $Pr^{+3}$
✓ D. $Sm^{+2}$ and $Eu^{+3}$

Question Type : **MCQ**
Question ID : **950017112**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.50 Brownian movement is dependent on the:
A) nature of the solvent
B) size of the particles
C) viscosity of solution

Ans
✗ A. C and A
✗ B. A and B
✓ C. B and C
✗ D. A, B and C

Question Type : **MCQ**
Question ID : **950017106**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.51 Identify the element which does NOT have +1 oxidation state.

Ans
✗ A. Tl
✗ B. In
✓ C. B
✗ D. Al

Question Type : **MCQ**
Question ID : **95001787**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

**Q.52** **Clothes are washed more efficiently in hot water than in cold water due to:**

**Ans**
- ✔ A. decreased surface tension in hot water.
- ✘ B. Not effect of surface tension on cold and hot water.
- ✘ C. increased surface tension in cold water.
- ✘ D. increased surface tension in hot water.

Question Type : **MCQ**
Question ID : **95001776**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

**Q.53** Match the columns.

| Chemical Name | Chemical formula |
|---|---|
| a) Corundum | i) $KAl_2(Si_3AlO_{10})(OH)_2$ |
| b) Cryolite | ii) $KAlSi_3O_8$ |
| c) Orthoclase | iii) $Na_3AlF_6$ |
| d) Mica | iv) $Al_2O_3$ |

**Ans**
- ✘ A. a–iv, b–ii, c–iii, d–i
- ✘ B. a–iv, b–ii, c–i, d–iii
- ✔ C. a–iv, b–iii, c–ii, d–i
- ✘ D. a–i, b–iii, c–iv, d–ii

Question Type : **MCQ**
Question ID : **95001788**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.54** **Which product is formed when heated benzene reacts with fuming sulphuric acid?**

**Ans**
- ✔ A. Benzenesulphonic acid and water
- ✘ B. Toluene and hydrochloric acid
- ✘ C. Benzenesulphonic acid and hydrochloric acid
- ✘ D. Toluene and water

Question Type : **MCQ**
Question ID : **95001792**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.55 Identify the option that arrange the following in increasing order of dipole moment of halogen atom.

Ans
✔ A. H-F > H-Cl > H-Br > H-I
✘ B. H-F > H-Br > H-Cl > H-I
✘ C. H-I > H-Cl > H-Br > H-I
✘ D. H-I > H-Br > H-Cl > H-F

Question Type : **MCQ**
Question ID : **95001773**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.56 Which metal forms acetylide when directly heated with carbon?

Ans
✘ A. Na
✘ B. K
✔ C. Li
✘ D. Fr

Question Type : **MCQ**
Question ID : **95001785**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.57 Which of the following bonds show(s) the dipole-dipole attractions?

a) Ionic bond
b) Covalent bond
c) Hydrogen bond

Ans
✘ A. Only a
✘ B. Only b
✔ C. Only c
✘ D. a, b and c

Question Type : **MCQ**
Question ID : **95001774**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.58 When phenol reacts with conc. sulphuric acid at 288-293 k , then what product will be formed?

Ans
✔ A. 2-Hydroxy benzene sulphonic acid
✘ B. 4-Hydroxy benzene sulphonic acid
✘ C. 3-Hydroxy benzene sulphonic acid
✘ D. Benzene

Question Type : **MCQ**
Question ID : **950017121**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.59** Which of the following compounds is NOT formed by aniline during sulphonation?

Ans
- ✔ A. m-Sulphanilic acid
- ✘ B. Zwitter ion
- ✘ C. Anilinium hydrogensulphate
- ✘ D. p-Sulphanilic acid

Question Type : **MCQ**
Question ID : **950017126**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.60** Identify the rate expression according to law of mass action in the following.

$$2NO_{2(g)} + F_{2(g)} \rightarrow 2NO_2F$$

Ans
- ✘ A. $R = \frac{k[NO_2][F_2]}{2}$
- ✘ B. $R = k[NO_2][F_2]^2$
- ✘ C. $R = k[NO_2][F_2]$
- ✔ D. $R = k[NO_2]^2[F_2]$

Question Type : **MCQ**
Question ID : **950017102**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

**Q.61** Which of the following statement is correct about an electrolytic cell?

A) Flow of electrons is from cathode to anode in solution.
B) Flow of electrons is from cathode to anode through internal supply.
C) Flow of electrons is from anode to cathode in solution.
D) Flow of electrons is from anode to cathode external supply.

Ans
- ✘ A. Only A
- ✔ B. Only B
- ✘ C. Only D
- ✘ D. Only C

Question Type : **MCQ**
Question ID : **95001784**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.62** Which of the following does NOT represent a conjugate acid-base pair?

Ans
- ✘ A. $NH_3 - NH_4^+$
- ✔ B. $HCOOH - HCO_3^-$
- ✘ C. $H_2O - OH^-$
- ✘ D. $NH_3 - NH_2^-$

Question Type : **MCQ**
Question ID : **95001782**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.63 Match the columns:

| Spectral series of hydrogen | Release light in different series |
|---|---|
| A. Lyman | i) Infrared series |
| B. Balmer | ii) Visible series |
| C. Paschen | iii) Ultraviolet series |

Ans
✗ A. A-i, B-iii, D-ii
✗ B. B-ii, C-i, D-iii
✓ C. A-iii, B-ii, C-i
✗ D. A-iii, C-i, D-ii

Question Type : **MCQ**
Question ID : **95001768**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.64 **Thortveitite is an example of:**

Ans
✗ A. sheet silicates
✗ B. cyclic silicates
✗ C. ortho silicates
✓ D. pyrosilicates

Question Type : **MCQ**
Question ID : **950017107**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.65 **How many methyl groups are present in the benzene ring 'Cresol'?**

Ans
✗ A. 0
✗ B. 3
✗ C. 2
✓ D. 1

Question Type : **MCQ**
Question ID : **950017119**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.66 **Which of the following statements is INCORRECT?**

Ans
✓ A. In hexagonal, three axes are of unequal length and two angles are of 90°.
✗ B. In cubic, all the three axes are of equal length and all angles are 90°.
✗ C. In monoclinic, three axes are of unequal length and two angles are of 90°.
✗ D. In tetragonal, all the three axes are at right angles to each other but only two axes are equal.

Question Type : **MCQ**
Question ID : **95001796**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Section : **Mathematics (Optional)**

Q.1 If in a class of 80 students, 30 students are interested in dance or music, 25 students are interested in dance and 12 students are interested in music, then the number of students interested in only dance is:

Ans
✔ A. 18
✘ B. 16
✘ C. 17
✘ D. 15

Question Type : **MCQ**
Question ID : **950017161**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.2 The value of $\sqrt{-9}+\sqrt{-64}+\sqrt{-625}$ is:

Ans
✘ A. $35$
✘ B. $-36i$
✔ C. $36i$
✘ D. $36$

Question Type : **MCQ**
Question ID : **950017170**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.3 The derivative of $y = x\,2^x$ is:

Ans
✘ A. $5^x\,(\mathrm{x}\,\mathrm{lnx}+1)$
✘ B. $3^x\,(\mathrm{x}+1)$
✔ C. $2^x\,(\mathrm{x}\,\mathrm{ln}2+1)$
✘ D. $2^x\,(\mathrm{x}\,\mathrm{lnx}-1)$

Question Type : **MCQ**
Question ID : **950017141**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.4 If $\binom{n}{5} = 5\,\mathrm{P}(\mathrm{n},4)$ then the value of n is:

Ans
✔ A. 604
✘ B. 600
✘ C. 602
✘ D. 601

Question Type : **MCQ**
Question ID : **950017180**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.5 A function $f: B \to A$ is defined as f(x)=2x+3 where A={5,7,9}, B={1,2,3} is:

Ans
- ✔ A. bijective
- ✘ B. injective
- ✘ C. constant function
- ✘ D. surjective

Question Type : **MCQ**
Question ID : **950017134**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.6 The general solution of $\frac{dy}{dx} - \frac{1}{x}y = 100xe^{2x}$ is:

Ans
- ✘ A. $y = 50e^{2x} + C$
- ✔ B. $y = 50xe^{2x} + Cx$
- ✘ C. $y = e^{2x} + Cx$
- ✘ D. $y = 5xe^{2x} + C$

Question Type : **MCQ**
Question ID : **950017153**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.7 If $\sin(x) = \frac{1}{5}$ and $\cos(y) = -\frac{3}{5}$, $x, y$ lies in second quadrant then the value of $sin(x+y)$ is:

Ans
- ✘ A. $\frac{3+4\sqrt{24}}{25}$
- ✘ B. $\frac{3}{25}$
- ✔ C. $\frac{-3-4\sqrt{24}}{25}$
- ✘ D. $\frac{24}{25}$

Question Type : **MCQ**
Question ID : **950017169**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.8 If $\int_0^5 f(x)dx = -9$, $\int_3^5 f(x)dx = -100$, then the value of $\int_0^3 f(x)dx$ is:

Ans
✗ A. 81
✗ B. 71
✗ C. 61
✓ D. 91

Question Type : **MCQ**
Question ID : **950017148**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.9 The common region for inequations $2x - 5y \leq 7$ and $3x + 2y \geq 8$, $x \geq 0, y \geq 0$ contains which point?

Ans
✗ A. (−1, 2)
✓ B. (3, 1)
✗ C. (0, 0)
✗ D. (−5, −6)

Question Type : **MCQ**
Question ID : **950017177**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.10 If $A = \{1,3,4,5,6\}$, $B = \{2,4,6,8\}$, $C = \{5,6,7,8\}$, then $(A \cup B) - C$ is:

Ans
✗ A. {1,4,6}
✗ B. {1,3,5}
✗ C. {11,12,13,14}
✓ D. {1,2,3,4}

Question Type : **MCQ**
Question ID : **950017160**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.11 **If the distance between the points (1, 2, 3) and (2, k, 6) is 10, then the value of k is:**

Ans
A. 2, −8
B. 9, −8
C. 72, −78
D. 92, −88

**Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.**

Question Type : **MCQ**
Question ID : **950017191**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.12 How many ways can 15 people be divided into 5 groups where 3 persons must be there in each group?

Ans
✗ A. $15!$
✗ B. $3!$
✓ C. $\frac{(15)!}{5! \times (3!)^5}$
✗ D. $\frac{(15)!}{(3!)^5}$

Question Type : **MCQ**
Question ID : **950017181**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.13 The period of $f(x) = \frac{1}{\sqrt{2}}(\sin(2x) + \cos(2x))$ is

Ans
✗ A. $1$
✗ B. $2$
✗ C. $3\pi$
✓ D. $\pi$

Question Type : **MCQ**
Question ID : **950017166**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.14 The domain of $\arcsin\ (3x-1) + \sqrt{x^2 - 3x + 2}$ is:

Ans
✗ A. [0,1]
✗ B. (2,3)
✗ C. [1,2]
✓ D. (0,1)

Question Type : **MCQ**
Question ID : **950017165**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.15 The determinant of a matrix $\begin{bmatrix} 1 & -2 & 3 \\ -3 & 2 & 1 \\ -2 & 3 & 1 \end{bmatrix}$ is:

Ans
✔ A. -18
✘ B. 17
✘ C. 18
✘ D. 16

Question Type : **MCQ**
Question ID : **950017138**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.16 If A and B are two independent random variables such that $P(A^c) = 0.6, P(B^c) = 0.8$ then $P(A \cap B)$ is:

Ans
✘ A. 0.8
✔ B. 0.08
✘ C. 0.6
✘ D. 0.7

Question Type : **MCQ**
Question ID : **950017197**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.17 The mean deviation from the median for the data 4, 8, 2, 1, 10, 12 is:

Ans
✔ A. 0.16
✘ B. 0.5
✘ C. 0.6
✘ D. 0.7

Question Type : **MCQ**
Question ID : **950017195**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.18 The centre of the ellipse $\frac{(2x-y+1)^2}{16} + \frac{(x+y)^2}{64} = 1$ is:

Ans
✘ A. $(5,6)$
✔ B. $\left(-\frac{1}{3}, \frac{1}{3}\right)$
✘ C. $(1,2)$
✘ D. $\left(-\frac{1}{2}, \frac{1}{2}\right)$

Question Type : **MCQ**
Question ID : **950017189**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.19 Two dice are thrown. What is the probability that maximum number will appear on one of the dice is 3?

Ans

✗ A. $\frac{2}{36}$

✓ B. $\frac{5}{36}$

✗ C. $\frac{4}{36}$

✗ D. $\frac{1}{36}$

Question Type : **MCQ**
Question ID : **950017198**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.20 Let $z = x + iy$ be a complex number such that $|z - i| = \sqrt{5}$. Then $z$ lies on:

Ans

✗ A. Circle with centre $(-1, 1)$ and radius $\sqrt{3}$

✗ B. Parabola

✗ C. Ellipse

✓ D. Circle with centre $(0, 1)$ and radius $\sqrt{5}$

Question Type : **MCQ**
Question ID : **950017173**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.21 The sum of the series $8 - 1 + \frac{1}{8} - \frac{1}{16} + \cdots$ is:

Ans

A. $\frac{68}{9}$

B. $67$

C. $\frac{72}{5}$

D. $\frac{64}{9}$

**Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.**

Question Type : **MCQ**
Question ID : **950017184**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.22** Let A and B be two mutually exclusive events such that $P(A^c) = 0.8, P(A \cup B) = 0.9$. Then $P(B)$ is:

**Ans**
- ✗ A. 1.0
- ✗ B. 0.9
- ✓ C. 0.7
- ✗ D. 0.5

Question Type : **MCQ**
Question ID : **950017199**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.23** If $f(x) = \tan(2x)$ and $g(x) = |2x|$ then $gof\left(\frac{\pi}{8}\right)$ is:

**Ans**
- ✗ A. 4
- ✗ B. 5
- ✗ C. 7
- ✓ D. 2

Question Type : **MCQ**
Question ID : **950017164**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.24** The slope of a line $0.1x + 2y + 1 = 0$ is:

**Ans**
- ✗ A. 5
- ✓ B. −0.05
- ✗ C. 0.05
- ✗ D. 0.5

Question Type : **MCQ**
Question ID : **950017186**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.25** Maximise $z = 2x + 5y$ subject to $x - y \leq 1$ and $2x + 3y \leq 5, x \geq 0, y \geq 0$. One of the corner points of feasible region is:

**Ans**
- ✗ A. (1, 0)
- ✗ B. (2, 3)
- ✓ C. (0, 19)
- ✗ D. (−1, 4)

Question Type : **MCQ**
Question ID : **950017136**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.26** What is the value of p such that the vectors are perpendicular to $3i - 2j + 2pk$ and $6i + 10j - k$?

**Ans**
✗ A. 2
✗ B. −2
✓ C. −1
✗ D. 1

Question Type : **MCQ**
Question ID : **950017155**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.27** The order and degree of the differential equation $\frac{dy}{dx} = \sqrt{(20 + \frac{d^3y}{dx^3} + \frac{d^2y}{dx^2})}$ is:

**Ans**
✗ A. Order – 4, degree – 2
✗ B. Order – 2, degree – 2
✗ C. Order – 1, degree – 3
✓ D. Order – 3, degree – 1

Question Type : **MCQ**
Question ID : **950017152**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.28** **If 7x – 2, 8x + 1, x are in A.P., then the value of its sum is:**

**Ans**
✗ A. 7
✗ B. −8
✓ C. −9
✗ D. 8

Question Type : **MCQ**
Question ID : **950017183**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.29** **What is the value of k such that the area of the triangle with vertices (2, 3), (-2, 5) and (0, k) is 2?**

**Ans**
✗ A. 2
✗ B. 1
✗ C. 4
✓ D. 3

Question Type : **MCQ**
Question ID : **950017140**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.30 The value of sum $287 + 574 + 861 + \cdots + 2583$ is

Ans
✔ A. 12915
✘ B. 1602
✘ C. 15072
✘ D. 14072

Question Type : **MCQ**
Question ID : **950017185**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.31 The roots of the quadratic equation $x^2 - 8x + b = 0$ are complex then the value of $b$ is:

Ans
✔ A. $b < 16$
✘ B. $b > 16$
✘ C. $b = 16$
✘ D. $b = 15$

Question Type : **MCQ**
Question ID : **950017172**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.32 The angle between the planes $2x - y + z = 9$ and $x - 2y + 3z = 2$ is:

Ans
✔ A. $cos^{-1}\left(\frac{\sqrt{7}}{2\sqrt{3}}\right)$
✘ B. $sin^{-1}\left(\frac{2\sqrt{7}}{\sqrt{3}}\right)$
✘ C. $cos^{-1}\left(\frac{\sqrt{7}}{\sqrt{3}}\right)$
✘ D. $cos^{-1}(9)$

Question Type : **MCQ**
Question ID : **950017192**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.33 The mean of the following frequency distribution $x_i$ : 2, 10, 14, 18, 24, 28, 30; $f_i$ :3, 4, 7, 12, 8, 4, 3. is

Ans
✘ A. 17.39
✘ B. 8.39
✘ C. 1.39
✔ D. 18.39

Question Type : **MCQ**
Question ID : **950017196**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.34 The value of the integral $\int_0^6 \frac{\sqrt{6-x}}{\sqrt{x}+\sqrt{6-x}} dx$ is:

Ans
✗ A. −3
✓ B. 3
✗ C. 2
✗ D. −1

Question Type : **MCQ**
Question ID : **950017147**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.35 The C.F. of $y'' - 3y' + 2 = 0$ is:

Ans
✓ A. $y = Ae^x + Be^{2x}$
✗ B. $y = Ae^x$
✗ C. $y = Ae^{-x} + Be^{-2x}$
✗ D. $y = e^{2x}$

Question Type : **MCQ**
Question ID : **950017150**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.36 If $sinx = -\frac{5}{13}$, $x$ lies in third quadrant then $tanx$ is:

Ans
✗ A. $\frac{7}{12}$
✗ B. $\frac{1}{12}$
✓ C. $\frac{5}{12}$
✗ D. $\frac{1}{3}$

Question Type : **MCQ**
Question ID : **950017168**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.37 The mean of −14, 13, 5, 6, 8 is:

Ans
✔ A. 3.6
✘ B. 5.6
✘ C. 1.6
✘ D. 4.6

Question Type : **MCQ**
Question ID : **950017194**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.38 If 2x + 3, 6, 9 are in G.P., then the value of x is:

Ans
✘ A. $2$
✔ B. $\frac{1}{2}$
✘ C. $\frac{-1}{2}$
✘ D. $-2$

Question Type : **MCQ**
Question ID : **950017182**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.39 The value of $\int \frac{1}{x^2+x} dx$ is:

Ans
✘ A. $ln\left(\frac{x}{2}\right)+C$
✘ B. $\left(\frac{x}{x+1}\right)+C$
✘ C. $ln(x)+C$
✔ D. $ln\left(\frac{x}{x+1}\right)+C$

Question Type : **MCQ**
Question ID : **950017146**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.40 The domain of $f(x) = \frac{35x}{\sqrt{(x^3+x^2)}}$ is:

Ans
✗ A. $(-5,\infty)$
✗ B. $(-2,\infty)$
✗ C. $(1,\infty)$
✓ D. $(-1,\infty)$

Question Type : **MCQ**
Question ID : **950017163**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.41 Match the following:

| Column I | Column II |
|---|---|
| E) Solution of the Differential Equation dx + xdy = 0 | i) x y' + y = 0 |
| F) Solution of $\frac{dy}{dx} = e^{x+2y}$ | ii) x' - mx = 0 |
| G) The Differential equation of xy = c | iii) y + logx = c |
| H) The Differential equation of $x = e^{my}$ | iv) $e^x + \frac{1}{2}e^{-2y} = c$ |

Ans
✗ A. E–ii, F–i, G–iv, H–iii
✓ B. E–iii, F–iv, G–i, H–ii
✗ C. E–ii, F–iv, G–i, H–iii
✗ D. E–ii, F–iv, G–iii, H–i

Question Type : **MCQ**
Question ID : **950017144**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.42 The value of the expression $-i + (-i)^{16} + (-i)^{32} + (-i)^{64}$ is:

Ans
✗ A. $3$
✗ B. $3+i$
✗ C. $-3$
✓ D. $3-i$

Question Type : **MCQ**
Question ID : **950017171**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.43 **Match the following:**

A missile fixed ground level rises X meters vertically upwards in t seconds and $X = 50t - \left(\frac{13}{2}\right) t^2$

| Column I | Column II |
|---|---|
| A) The initial velocity of the missile | i) Maximum height is equal to the time when the height of the missile is maximum |
| B) The time when the height of the missile is maximum | ii) 180.895 |
| C) The maximum height is | iii) 3.9 |
| D) Distance covered by the missile | iv) 50m/sec |

Ans
✗ A. I–iii, J–iv, K–i, L–ii
✗ B. I–ii, J–iv, K–iii, L–i
✗ C. I–ii, J–i, K–iv, L–iii
✓ D. I–iv, J–iii, K–i, L–ii

Question Type : **MCQ**
Question ID : **950017145**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.44 The distance between the planes $x - y + z + 8 = 0$ and $2x - 2y + 2z + 28 = 0$ is:

Ans
✗ A. $\sqrt{3}$
✓ B. $2\sqrt{3}$
✗ C. $\sqrt{5}$
✗ D. $2\sqrt{5}$

Question Type : **MCQ**
Question ID : **950017193**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.45 **The derivative of y with respect to x for parametric curves x = 4sin(2t), y = 4cos(2t) is:**

Ans
✗ A. tan(t)
✓ B. −tan(2t)
✗ C. sin(2t)
✗ D. tan(2t)

Question Type : **MCQ**
Question ID : **950017142**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.46 The diameter of the circle $2x^2 + 2y^2 - 16x + 8y - 9 = 0$ is:

Ans
✗ A. $\sqrt{2}$
✗ B. $5\sqrt{2}$
✓ C. $7\sqrt{2}$
✗ D. $7\sqrt{3}$

Question Type : **MCQ**
Question ID : **950017190**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.47 The minimum value of a natural number x that satisfies $9x - \frac{2}{3}x - 1 \geq 0$ is:

Ans
✗ A. 0
✓ B. 1
✗ C. −1
✗ D. 2

Question Type : **MCQ**
Question ID : **950017175**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.48 If A is $3 \times 3$ matrix and $|A| = 3$ then $|adj(A)|$ is:

Ans
✗ A. 6
✗ B. 7
✗ C. 8
✓ D. 9

Question Type : **MCQ**
Question ID : **950017137**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.49 The value of 9 radians in degrees is:

Ans
✗ A. 513.6
✓ B. 515.66
✗ C. 510.2
✗ D. 515.12

Question Type : **MCQ**
Question ID : **950017167**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.50** The P.I. of $y'' + 100y = \sin(10x)$ is:

**Ans**

✗ A. $\frac{x}{20}\cos(10x)$

✗ B. $\cos(10x)$

✗ C. $\frac{x}{20}\sin(10x)$

✓ D. $-\frac{x}{20}\cos(10x)$

Question Type : **MCQ**
Question ID : **950017151**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.51** Match the following:

| **Column I** | **Column II** |
|---|---|
| A) If the two dimensional vectors are $X = \begin{bmatrix}4\\3\end{bmatrix}$ And $Y = \begin{bmatrix}-3\\4\end{bmatrix}$ are orthogonal. | i) $r_1 = 2, r_2 = 3$ |
| B) Express vector $V = \begin{bmatrix}4\\12\\24\end{bmatrix}$ as a linear combination of the vectors $X = \begin{bmatrix}2\\6\\0\end{bmatrix}$, $Y = \begin{bmatrix}0\\0\\8\end{bmatrix}$ | ii) Inner product is given by $X \cdot Y = 0$ |
| C) If the two dimensional vectors are Orthogonal | iii) X is a set of Linearly independent vectors |
| D) A Set of vectors $X = \{x_1, x_2, \ldots\ldots x_n\}$, if the equation $r_1x_1 + r_2x_2 + \ldots\ldots + r_nx_n$ has only one trivial solution $r_1 = 0, r_2 = 0, \ldots\ldots r_n = 0$ | iv) Angle is 90° |

**Ans**

✓ A. A–ii, B–i, C–iv, D–iii

✗ B. A–i, B–ii, C–iii, D–iv

✗ C. A–ii, B–iv, C–iii, D–i

✗ D. A–iii, B–iv, C–i, D–ii

Question Type : **MCQ**
Question ID : **950017139**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.52** If $A = \{5,7,8,9,10\}$, $B = \{3,4,5,6\}$, $U = \{1,2,3,4,5,6,7,8,9,10\}$, then the number of elements in $(A \cap B)'$ is:

**Ans**

✗ A. 8

✗ B. 6

✗ C. 7

✓ D. 9

Question Type : **MCQ**
Question ID : **950017159**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.53 The value of x such that $2i-9j+3k$ is perpendicular to both, $3i+xk$ and $j+3k$ is:

Ans
✗ A. 3
✗ B. 4
✗ C. −3
✓ D. −2

Question Type : **MCQ**
Question ID : **950017154**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.54 **If a given line through the points(1, −3, −1) and (3, 1, k) is parallel to the line through the points (1, -1, 2) and (2, 1, 3) then the value of k is:**

Ans
✓ A. 1
✗ B. 2
✗ C. 4
✗ D. 5

Question Type : **MCQ**
Question ID : **950017157**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.55 The area of the region bounded by the curves $y=16x^3$, the lines $y=0, x=3, x=6$ is:

Ans
✗ A. 4850
✗ B. 4840
✓ C. 4860
✗ D. 4830

Question Type : **MCQ**
Question ID : **950017149**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.56 If the intersection of the lines $x-y+28=0$ and $2x+3y-8=0$ passes through the line $x-y+c=0$ then the value of $c$ is:

Ans
✗ A. 25
✗ B. 30
✓ C. 28
✗ D. 26

Question Type : **MCQ**
Question ID : **950017188**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.57 Two balls are drawn from a box containing 5 good and 10 not good balls. The probability that the second ball is good if the first one is not good:

Ans
✗ A. $\frac{2}{3}$
✗ B. $\frac{1}{20}$
✓ C. $\frac{5}{21}$
✗ D. $\frac{5}{3}$

Question Type : **MCQ**
Question ID : **950017200**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.58 Let $o$ be a binary operation defined on R-{0} as $aob = \frac{ab}{3}$ for all a, b in R-{0}. Then the identity element is:

Ans
✓ A. 3
✗ B. 1
✗ C. 2
✗ D. 4

Question Type : **MCQ**
Question ID : **950017135**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.59 If $A = \{x : x \in N, 1 \leq x < 9\}$ and $B = \{2,3,4,5\}$ then the number of elements in $A \times B$ is:

Ans
✗ A. 30
✗ B. 29
✓ C. 32
✗ D. 31

Question Type : **MCQ**
Question ID : **950017162**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.60 The value of $P(5,1) + P(5,2) + P(5,3) + P(5,4) + P(5,5)$ is:

Ans
✗ A. 323
✗ B. 324
✗ C. 322
✓ D. 325

Question Type : **MCQ**
Question ID : **950017179**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.61** **The relation defined by R = {(2,3),(2,4),(3,2),(3,4)} on a set A = {1,2,3,4} is:**

**Ans** A. transitive

B. reflexive

C. anti-symmetric

D. symmetric

**Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.**

Question Type : **MCQ**
Question ID : **950017133**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.62** If $P(n): (-2)^n > 2, n \in N$ then $P(n)$ is true for:

**Ans**
✗ A. every n

✓ B. even multiple of n

✗ C. odd multiples of n

✗ D. no value of n

Question Type : **MCQ**
Question ID : **950017174**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.63** **The direction ratios of a line are 1, −3, 5. Then the directions cosines of a line making obtuse angle with y axis are:**

**Ans**
✓ A. $-\frac{1}{\sqrt{35}}, \frac{3}{\sqrt{35}}, -\frac{5}{\sqrt{35}}$

✗ B. $\frac{5}{\sqrt{35}}, \frac{7}{\sqrt{35}}, \frac{5}{\sqrt{35}}$

✗ C. $-\frac{5}{\sqrt{35}}, \frac{1}{\sqrt{35}}, -\frac{5}{\sqrt{35}}$

✗ D. $\frac{2}{\sqrt{35}}, \frac{3}{\sqrt{35}}, \frac{3}{\sqrt{35}}$

Question Type : **MCQ**
Question ID : **950017156**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.64** Let the universal set U be the set of all natural numbers less than or equal to 13 and set A be the set of even multiples of 2 less than 13. Then the complement of A is:

**Ans**
- ✗ A. {11,13}
- ✗ B. {1,3}
- ✓ C. {1,3,5,7,9,11,13}
- ✗ D. {2,3,5,7,9,11,13}

Question Type : **MCQ**
Question ID : **950017158**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.65** The angle between the lines $x - 2y + 7 = 0$ and $2x + y + 6 = 0$ is:

**Ans**
- ✗ A. $\pi$
- ✗ B. $2\pi$
- ✗ C. $0$
- ✓ D. $\frac{\pi}{2}$

Question Type : **MCQ**
Question ID : **950017187**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.66** If $y = \sqrt{x + 14}$ then $y'(50)$ is:

**Ans**
- ✗ A. $\frac{1}{14}$
- ✗ B. $\frac{1}{13}$
- ✓ C. $\frac{1}{16}$
- ✗ D. $\frac{1}{15}$

Question Type : **MCQ**
Question ID : **950017143**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

**Q.67** The region of solution for inequality $7x + 9y \geq 8$ where $x, y \in R$ does not lies in

**Ans**
- ✗ A. Quadrant IV
- ✓ B. Quadrant III
- ✗ C. Quadrant I
- ✗ D. Quadrant II

Question Type : **MCQ**
Question ID : **950017176**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Q.68 The value of $n$ satisfying $(n+1)! = 5 \times n!$. is

Ans
✔ A. 4
✘ B. 1
✘ C. 5
✘ D. 6

Question Type : **MCQ**
Question ID : **950017178**
Status : **Not Answered**
Chosen Option : **--**
Marks : **0**

Section : **Biology (Optional)**

Q.1 _____ requires the enzyme pyruvic acid decarboxylase.

Ans
✘ A. Glycolysis
✘ B. TCA cycle
✘ C. Fatty acid synthesis
✔ D. Fermentation

Question Type : **MCQ**
Question ID : **950017223**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.2 Which subfield of biotechnology is associated with vaccine manufacturing?

Ans
✘ A. Genetic engineering
✘ B. Industrial biotechnology
✘ C. Chemical engineering
✔ D. Bioprocess engineering

Question Type : **MCQ**
Question ID : **950017259**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.3 Which of the following statements about the 'Law of Dominance' is FALSE?

Ans
✘ A. Factors can be found in pairs.
✘ B. Characters are managed by discrete units known as factors.
✘ C. In a pair of distinct factors, one factor dominates and the other is recessive.
✔ D. A homozygous parent generates identical gametes.

Question Type : **MCQ**
Question ID : **950017250**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.4 Which of the following does NOT qualify as a fermented food?

Ans
✗ A. Soya sauce
✗ B. Idli
✗ C. Roquefort cheese
✓ D. Ice-cream

Question Type : **MCQ**
Question ID : **950017256**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.5 Which of the following statement about pancreas is INCORRECT?

Ans
✗ A. Pancreas is a mixed gland.
✗ B. Glycogenesis is boosted by insulin.
✗ C. Glucagon promotes glycogenolysis.
✓ D. Insulin is secreted by the alpha cells, while glucagon is secreted by the beta cells of pancreas.

Question Type : **MCQ**
Question ID : **950017237**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.6 Which continent has the largest biodiversity region?

Ans
✓ A. South America
✗ B. North America
✗ C. Asia
✗ D. Africa

Question Type : **MCQ**
Question ID : **950017264**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.7 Which of the following species is NOT included in the recent IUCN Red extinction list?

Ans
✗ A. Thylacine
✗ B. Quagga
✓ C. Sea horse
✗ D. Steller's Sea Cow

Question Type : **MCQ**
Question ID : **950017267**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.8 Which of the following statements about fungi is FALSE?

Ans ✗ A. Fragmentation is one method through which fungus reproduces vegetatively.

✗ B. Fungi are widespread and can be found on plants, animals, and even in the air, water and soil.

✓ C. Yeasts have a filamentous structure.

✗ D. The majority of fungi are saprophytes.

Question Type : **MCQ**
Question ID : **950017208**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.9 Birds expel nitrogenous waste in the form of _____

Ans ✗ A. creatin

✗ B. urea

✓ C. uric acid

✗ D. ammonia

Question Type : **MCQ**
Question ID : **950017229**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.10 Where can perimetrium be found?

Ans ✗ A. Ovary

✗ B. Fallopian tube

✓ C. Uterus

✗ D. Vagina

Question Type : **MCQ**
Question ID : **950017239**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.11 Identify the correct statement.

Ans ✗ A. The circulatory system of annelids is open.

✗ B. The human heart is found in the abdominal cavity.

✓ C. Crocodiles have four-chambered hearts.

✗ D. Fishes have double circulation.

Question Type : **MCQ**
Question ID : **950017234**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.12 When malted cereals are fermented with brewer's yeast, _____ is produced.

Ans
✗ A. ethanol
✓ B. bread
✗ C. curd
✗ D. cheese

Question Type : **MCQ**
Question ID : **950017257**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.13 How many protein molecules are there in the body represented by the sphere in the given diagram?

Ans
✗ A. 12
✗ B. 4
✓ C. 8
✗ D. 16

Question Type : **MCQ**
Question ID : **950017247**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.14 Identify the INCORRECT statement.

Ans
✗ A. An excellent sedative and painkiller is morphine.
✓ B. Cannabinoids are recognised for their impact on the digestive system.
✗ C. Cocaine disrupts the transport of the neurotransmitter dopamine.
✗ D. Heroin is a depressant that slows bodily functions.

Question Type : **MCQ**
Question ID : **950017258**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.15 Semen contains _____.

Ans
✗ A. sperms, spermatids and seminal plasma
✗ B. seminal plasma and spermatids
✓ C. sperms and seminal plasma
✗ D. seminal plasma, sperms and androgens

Question Type : **MCQ**
Question ID : **950017241**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.16 Calvin cycle is a part of _____.

Ans
✗ A. respiration
✗ B. urea synthesis
✗ C. fermentation
✓ D. photosynthesis

Question Type : **MCQ**
Question ID : **950017218**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.17 What provides bacteria characteristics such as antibiotic resistance?

Ans
✗ A. The ability of rapid multiplication
✗ B. Mesosome
✓ C. Plasmid DNA
✗ D. Non-membrane bound genetic material

Question Type : **MCQ**
Question ID : **950017214**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.18 The animals _____ are capable of transforming healthy cells into malignant ones.

Ans
✗ A. Agrobacterium tumifaciens
✓ B. retroviruses
✗ C. bacteriophage
✗ D. E.coli

Question Type : **MCQ**
Question ID : **950017262**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.19 Which of the following statements related to immunity is correct?

Ans
✓ A. $H_2L_3$ represents an antibody.
✗ B. Antibodies are produced by B-lymphocytes.
✗ C. Antibodies are present in blood.
✗ D. Saliva is a physiological barrier.

Question Type : **MCQ**
Question ID : **950017255**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.20 Which of the following species does NOT exhibit XO sex determination?

Ans
✗ A. Cockroaches
✓ B. Drosophila
✗ C. Cricket
✗ D. Grasshopper

Question Type : **MCQ**
Question ID : **950017249**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.21 Match the infections in column A with their mode of transmission in column B.

| Infections | Mode of transmission |
|---|---|
| a. Ringworms | i. droplets from an infected individual. |
| b. Amoebiasis | ii. bite of a female mosquito vector |
| c. Common cold | iii. using the clothes of an infected individual |
| d. Malaria | iv. food contaminated by faecal matter |

Ans
✓ A. a-iii, b-iv, c-i, d-ii
✗ B. a- ii, b-iv, c-i, d-iii
✗ C. a-iii, b-ii, c-iv, d-i
✗ D. a-iv, b-iii, c-ii, d-i

Question Type : **MCQ**
Question ID : **950017243**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.22 The spleen is the graveyard of _____

Ans
✗ A. platelets
✓ B. RBCs
✗ C. WBCs
✗ D. plasma protein

Question Type : **MCQ**
Question ID : **950017226**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.23 Identify the amino acid Alanine based on the given structure.

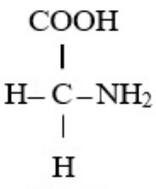

Fig. 1

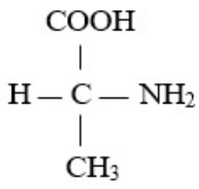

Fig. 2

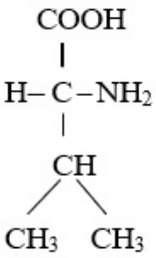

Fig. 3

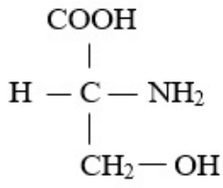

Fig. 4

Ans
✗ A. Fig. 1
✗ B. Fig 4
✗ C. Fig. 3
✓ D. Fig. 2

Question Type : **MCQ**
Question ID : **950017215**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.24 **Which of the following statements about photorespiration is INCORRECT?**

Ans
✗ A. One molecule each of phosphoglycerate and phosphoglycolate are formed.
✓ B. There is synthesis of sugars and NADPH.
✗ C. The process of photorespiration does not take place in C4 plants.
✗ D. $CO_2$ is released and ATP is used up in the process.

Question Type : **MCQ**
Question ID : **950017224**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.25 **At the time of childbirth, _____ promotes a strong contraction of the uterus in females.**

Ans
✗ A. LH
✓ B. oxytocin
✗ C. prolactin
✗ D. FSH

Question Type : **MCQ**
Question ID : **950017228**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.26 The _____is a tiny opening in the DNA helix that allows two long strands of DNA molecules to replicate.

Ans
✔ A. replication fork
✘ B. origin of replication
✘ C. Transcription promoter
✘ D. semiconservative DNA replication template strand

Question Type : **MCQ**
Question ID : **950017245**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.27 Which of the following statements about chloroplast is correct?

Ans
✔ A. The chloroplasts are aligned along the mesophyll cell walls.
✘ B. The chloroplast does not have a well-defined division of labour.
✘ C. Enzymatic reactions in the stroma produce phospholipids.
✘ D. The chloroplast has a membranous system made up of only grana and stroma lamellae.

Question Type : **MCQ**
Question ID : **950017219**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.28 Identify the correct statement about Bryophytes.

Ans
✘ A. Dryopteris is an example of bryophyte.
✘ B. There are four main categories for bryophytes.
✔ C. Bryophytes reduce soil erosion.
✘ D. Bryophytes are the first terrestrial species that have vascular tissues.

Question Type : **MCQ**
Question ID : **950017203**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.29 Which of the following is NOT a symptom of pneumonia?

Ans
✘ A. Cough
✔ B. Loss of appetite
✘ C. Headache
✘ D. Fever

Question Type : **MCQ**
Question ID : **950017254**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

Q.30 Match the columns.

| Diseases | Hormones |
|---|---|
| a. Addison's disease | i. Excess growth hormone |
| b. Acromegaly | ii. Hyperthyroidism |
| c. Grave's disease | iii. Lack of ADH |
| d. Diabetes Insipidus | iv. Lack of adrenal hormone |

Ans
✗ A. a-i, b-ii, c-iii, d-iv
✗ B. a-iv, b-iii, c-ii, d-i
✗ C. a-ii, b-iii, c-i, d-iv
✓ D. a-iv, b-i, c-ii, d-iii

Question Type : **MCQ**
Question ID : **950017233**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.31 **Which of the following is NOT a peptide hormone?**

Ans
✗ A. Erythropoietin
✗ B. Gastrin
✓ C. Oestrogen
✗ D. Insulin

Question Type : **MCQ**
Question ID : **950017236**
Status : **Answered**
Chosen Option : **C**
Marks : **1**

Q.32 Match the columns.

| **Column A** | **Column B** |
|---|---|
| a. Fibrinogen | i. Acute chest pain |
| b. Basophil | ii. Membranous sac |
| c. Pericardium | iii. Blood coagulation |
| d. Angina | iv. Secrete serotonin |

Ans
✗ A. a-iii, b-ii, c-iv, d-i
✓ B. a-iii, b-iv, c-ii, d-i
✗ C. a-iv, b-iii, c-ii, d-i
✗ D. a-iv, b-i, c-ii, d-iii

Question Type : **MCQ**
Question ID : **950017238**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.33** **Which compound initiates glycolysis in the plant cell?**

**Ans**
✗ A. Fructose
✓ B. Glucose
✗ C. ribose
✗ D. Glucose-1-phosphate

Question Type : **MCQ**
Question ID : **950017220**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

**Q.34** Match the column of population interactions of two different species.

| Column A | Column B |
|---|---|
| i. Species of both kinds benefit. | a. Amensalism |
| ii. One species is afflicted while the other is unharmed. | b. Competition |
| iii. Both species are at a loss. | c. Parasitism |
| iv. Only one species benefits from the relationship, while the other species suffers. | d. Mutualism |

**Ans**
✗ A. i-c, ii-a, iii- b, iv-d
✓ B. i-d, ii-a, iii-b, iv-c
✗ C. i-c, ii-b, iii-a, iv-d
✗ D. i-d, ii-c, iii-a, iv-b

Question Type : **MCQ**
Question ID : **950017268**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.35** **The body plans of _____ are radically symmetrical.**

**Ans**
✗ A. annelids
✗ B. sponge
✗ C. arthropods
✓ D. echinoderms

Question Type : **MCQ**
Question ID : **950017204**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.36** Identify the option that arranges the sequence of zygote development in plants.

**Ans**
✗ A. Heart-shaped, globular, proembryo and mature embryo
✓ B. Proembryo, globular, heart-shapedand mature embryo
✗ C. Heart-shaped, proembryo, globular and mature embryo
✗ D. Proembryo, heart-shaped, globular and mature embryo

Question Type : **MCQ**
Question ID : **950017242**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.37** Identify the scientist who was NOT involved in any experiments relating to plant photosynthesis.

**Ans**
✗ A. Jan Ingenhousz
✗ B. Julius von Sachs
✗ C. TW Engelmann
✓ D. Georg Ohm

Question Type : **MCQ**
Question ID : **950017217**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

**Q.38** Which of the following organelles lacks a membrane?

**Ans**
✓ A. Centrosome
✗ B. Golgi complex
✗ C. mitochondria
✓ D. Nucleolus

**Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of these options are chosen - 1,4**

Question Type : **MCQ**
Question ID : **950017209**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.39** The process of introducing a fragment of DNA into a bacterial host is known as _____.

**Ans**
✗ A. transportation
✓ B. transformation
✗ C. transcription
✗ D. translation

Question Type : **MCQ**
Question ID : **950017261**
Status : **Answered**
Chosen Option : **A**
Marks : **0**

Q.40 Some plants have a quantitative or qualitative relationship between exposure to low temperatures and flowering. It is called _____.

Ans
✔ A. vernalisation
✘ B. seed dormancy
✘ C. day-neutral plants
✘ D. long day plants

Question Type : **MCQ**
Question ID : **950017222**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.41 Identify the option that arrange the given steps of respiration in correct order.

i. $O_2$ and $CO_2$ diffusion over the alveolar membrane
ii. $O_2$ and $CO_2$ diffusion between blood and tissues
iii. Transportation of gases through blood
iv. Pulmonary ventilation draws in atmospheric air and expels $CO_2$-rich alveolar air

Ans
✘ A. i, iii, iv, ii
✘ B. iv, iii, ii, i
✘ C. iii, i, ii, iv
✔ D. iv, i, iii, ii

Question Type : **MCQ**
Question ID : **950017232**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.42 What is snow-blindness?

Ans
✘ A. Cataract
✘ B. Blindness from snow's reflection
✔ C. Inflammation of cornea
✘ D. Freezing of eyeballs due to cold

Question Type : **MCQ**
Question ID : **950017266**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.43 The hormone melatonin aids in the maintenance of _____.

Ans
✔ A. a regular sleep-wake cycle
✘ B. blood pH
✘ C. water and electrolyte balance
✘ D. calcium balance

Question Type : **MCQ**
Question ID : **950017230**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.44 Which of the following statements about gibberellins is INCORRECT?**

**Ans**
✗ A. GA3 is used in the brewing industry to accelerate the malting process.
✗ B. They are capable of increasing the length of the axis.
✗ C. Fungi and plants produce more than 100 gibberellins.
✓ D. They hasten the ageing process.

Question Type : **MCQ**
Question ID : **950017221**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

**Q.45 Which of the following statements about India's Medical Termination of Pregnancy (Amendment) Act, 2017 is INCORRECT?**

**Ans**
✓ A. After 12 weeks but before 30 weeks, the pregnancy can be terminated if it poses a danger to the life of the pregnant mother.
✗ B. The primary goal was to lower the number of illegal abortions.
✗ C. This Act allows abortions within the first 12 weeks of pregnancy for specific reasons.
✗ D. Voluntary termination of pregnancy refers to the termination of a pregnancy prior to full term.

Question Type : **MCQ**
Question ID : **950017244**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.46 Identify the INCORRECT statement about enzymes.**

**Ans**
✓ A. Thermal instability is an important characteristic of enzymes derived from thermophilic organisms.
✗ B. Catalysed reactions proceed at significantly faster rates than uncatalysed ones.
✗ C. The substrate fits into an enzyme's active site.
✗ D. Some nucleic acids have enzyme-like properties.

Question Type : **MCQ**
Question ID : **950017216**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.47 Which organism has a pellicle-based flexible body?**

**Ans**
✓ A. Euglenoids
✗ B. Slime Moulds
✗ C. Protozoans
✗ D. Dinoflagellates

Question Type : **MCQ**
Question ID : **950017202**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.48 'Dura mater' can be found in the _____.

Ans
✗ A. kidney
✓ B. brain
✗ C. liver
✗ D. thyroid gland

Question Type : **MCQ**
Question ID : **950017227**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.49 Which of the following statements about neuron is INCORRECT?

Ans
✓ A. The retina of the eye contains multipolar neurons.
✗ B. Schwann cells surround the myelinated nerve fibres.
✗ C. Neurotransmitters are chemicals found in synaptic vesicles.
✗ D. Cell body, dendrites and axon make up a neuron.

Question Type : **MCQ**
Question ID : **950017231**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.50 Which of the following statements about the isolation of genetic material is correct?

Ans
✗ A. Protease can be used to remove the RNA.
✗ B. DNA is free within cell membranes and easy to extract from other macromolecules.
✗ C. Cellulase is an enzyme produced by fungi.
✓ D. Genes are found on long DNA molecules that are intertwined with proteins like histones.

Question Type : **MCQ**
Question ID : **950017263**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.51 Which animal listed below is NOT a coelomate?

Ans
✓ A. Aschelminthes
✗ B. Molluscs
✗ C. Echinoderms
✗ D. Arthropods

Question Type : **MCQ**
Question ID : **950017206**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

**Q.52** Cohen and Boyer isolated the gene for antibiotic resistance in _____.

**Ans**
- ✔ A. 1972
- ✘ B. 1969
- ✘ C. 1966
- ✘ D. 1936

Question Type : **MCQ**
Question ID : **950017260**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

**Q.53** Identify the INCORRECT statement regarding pollen grains.

**Ans**
- ✘ A. The tough outer layer known as the exine.
- ✘ B. Pollen allergy is caused by carrot grass.
- ✔ C. Pollen grains are effectively fossilised due to the presence of pectin.
- ✘ D. The mature pollen grain's vegetative cell has a large food reserve.

Question Type : **MCQ**
Question ID : **950017240**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

**Q.54** Identify the INCORRECT statement about transcription.

**Ans**
- ✘ A. 3'→ 5' serves as the template strand.
- ✔ B. Transcription is the process of converting genetic information from one strand of RNA into DNA.
- ✘ C. Only one of the DNA strands is copied into RNA during transcription.
- ✘ D. DNA's transcription unit includes the structural gene.

Question Type : **MCQ**
Question ID : **950017246**
Status : **Answered**
Chosen Option : **B**
Marks : **1**

**Q.55** Which of the following pairs of nitrogenous bases listed in the options is found in both, DNA and RNA?

**Ans**
- ✘ A. Thymine and Adenine
- ✘ B. Thymine and Guanine
- ✘ C. Uracil and Guanine
- ✔ D. Adenine and Guanine

Question Type : **MCQ**
Question ID : **950017252**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.56 From the organisms given below, identify the top predator.

Ans
- ✔ A. Eagle
- ✘ B. Frog
- ✘ C. Mouse
- ✘ D. Python

Question Type : **MCQ**
Question ID : **950017265**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.57 The pleura are the membrane covering the _____.

Ans
- ✔ A. lungs
- ✘ B. kidneys
- ✘ C. brain
- ✘ D. heart

Question Type : **MCQ**
Question ID : **950017225**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.58 A nucleotide is:

Ans
- ✘ A. a nitrogen base + a sugar
- ✘ B. a nitrogen base + a glucose + a phosphate group
- ✘ C. cytosine + a sugar
- ✔ D. a nitrogen base + a sugar + a phosphate group

Question Type : **MCQ**
Question ID : **950017213**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.59 Identify the INCORRECT statement about diatoms.

Ans
- ✘ A. Diatoms are the most important 'producers' in the oceans.
- ✔ B. Diatoms are members of the Dinoflagellates group.
- ✘ C. Diatom cell walls are indestructible.
- ✘ D. They can be found in both, freshwater and marine habitats.

Question Type : **MCQ**
Question ID : **950017205**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.60 Which syndrome is brought on by having an additional copy of the chromosome 21 (trisomy of 21)?

Ans
✔ A. Down's syndrome
✘ B. Turner's syndrome
✘ C. Klinefelter's syndrome
✘ D. Triple X syndrome

Question Type : **MCQ**
Question ID : **950017248**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.61 Which of the following Mendelian diseases is NOT associated with autosomes?

Ans
✔ A. Haemophilia
✘ B. Thalassemia
✘ C. Phenylketonuria
✘ D. Sickle-cell anaemia

Question Type : **MCQ**
Question ID : **950017251**
Status : **Answered**
Chosen Option : **A**
Marks : **1**

Q.62 The loop of Henle goes deep into the medulla in some nephrons. They are called _____.

Ans
✘ A. vasa recta
✘ B. cortical nephrons
✘ C. glomerular nephrons
✔ D. juxta medullary nephrons

Question Type : **MCQ**
Question ID : **950017235**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.63 In which of the following parts can we find filament, hook and basal body?

Ans
✘ A. Cilia
✘ B. Pseudopodia
✘ C. Fimbriae
✔ D. Flagella

Question Type : **MCQ**
Question ID : **950017210**
Status : **Answered**
Chosen Option : **B**
Marks : **0**

Q.64 Which of the following is NOT a symptom of typhoid?

Ans
✗ A. Loss of appetite
✗ B. Constipation
✓ C. Chest pain
✗ D. Stomach pain

Question Type : **MCQ**
Question ID : **950017253**
Status : **Answered**
Chosen Option : **D**
Marks : **0**

Q.65 What is trihydroxy propane?

Ans
✗ A. Propionic acid
✗ B. Alcohol
✗ C. Cholesterol
✓ D. Glycerol

Question Type : **MCQ**
Question ID : **950017212**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.66 Which of the following statements about cell theory is FALSE?

Ans
✗ A. Schwann discovered that cells have a thin outer layer called the 'plasma membrane.'
✗ B. Pre-existing cells give rise to all cells.
✗ C. All living organisms consist of cells and cell products.
✓ D. The cell theory was given a final shape by Schleiden and Schwann.

Question Type : **MCQ**
Question ID : **950017211**
Status : **Answered**
Chosen Option : **D**
Marks : **1**

Q.67 _____ is NOT an example of an alga having a filamentous shape.

Ans
✓ A. Volvox
✗ B. Spirogyra
✗ C. Ulothrix
✗ D. Oscillatoria

Question Type : **MCQ**
Question ID : **950017201**
Status : **Answered**
Chosen Option : **C**
Marks : **0**

Q.68 _____ is/are home to a variety of halophiles.

Ans
- ✗ A. Hot springs
- ✗ B. The Arctic region
- ✗ C. The sewage
- ✓ D. The Dead Sea

Question Type : **MCQ**
Question ID : **950017207**
Status : **Answered**
Chosen Option : **A**
Marks : **0**