# Jharkhand PECE 2023 Question Paper

Physics

1. A thin spherical mirror and a thin spherical lens have a focal length of -15cm. The mirror and the lens are likely to be
● Both concave
● Both convex
● The mirror is concave and the lens is convex
● The mirror is convex and the lens is concave

2. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. The magnification is
● 1.667
● 0.6
● 10
● 1.5

3. An electron enters a magnetic field at right angles to it, as shown in the figure. The direction of force acting on the electron will be
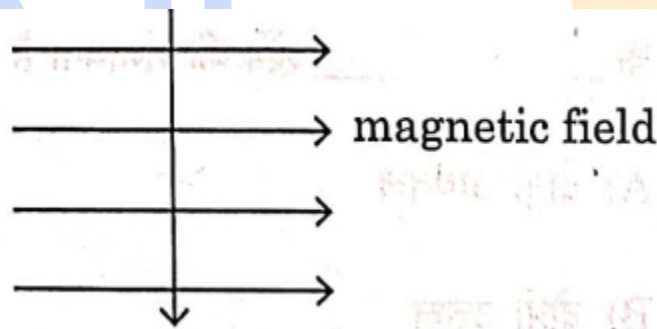
● To the right
● To the left
● Out of the plane of the paper
● Into the plane of the paper

4. The phenomenon of electromagnetic induction is
● The process of charging a body
● The process of generating magnetic field due to a current passing through a coil
● Producing induced current in a coil due to relative motion between the magnet and the coil
● The process of rotating a coil of an electric motor

5. The swimming pool appears to be less deep than it actually is. Which of the following phenomena is responsible for this?
- Reflection of light
- Refraction of light
- Dispersion of light
- Total internal reflection

6. Which colour is refracted the most when white light is dispersed from a prism?
- Violet
- Red
- Yellow
- Orange

7. Work of 14J is done to move 2 C charge between two points on a conducting wire. What is the potential difference between the two points?
- 28 V
- 14 V
- 7 V
- 3.5 V

8. According to Fleming's left hand rule, the fore finger is pointed towards the direction of
- Electric current
- Magnetic field
- Force exerted
- Motion of the conductor

9. The least distance of distinct vision for a young adult with normal vision is about
- 25 m
- 2.5 cm
- 25 cm
- 2.5 m

10. Electrical resistivity of a given metallic wire depends upon
- Its length
- Its thickness
- Its shape
- Nature of the material

11. A soft iron bar is introduced inside a current carrying solenoid. The magnetic field inside a solenoid
- Decrease
- Will increase
- Will become zero
- Will remain unaffected

12. A 2cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 10 cm. The distance of the object from the lens is 15 cm. The image distance is
- 20 cm
- 15 cm
- 30 cm
- 45 cm

13. A person needs a lens of power -5.5 D for correcting his distant vision. What is the focal length of the lens required for correcting distant vision?
- 0.181 m
- - 0.181 m
- 5.5 m
- -5.5 m

14. The AC supply to the house is of 220 V, 50 Hz one of the wires in this supply is with red insulation called as
- Live wire
- Neutral wire
- Earth wire
- None of the above

15. The safety device used for protecting the circuits due to short circuiting is
- Resistor
- Fuse
- Motor
- Generator

Chemistry

1. In Clark's method calculated amount of —------------- is added to hard water
- Lime
- Washing Soda

- Soda Lime
- Slaked Lime

2. Acetylation of salicylic acid produces
- Picric acid
- Aspirin
- Cumene
- Salicylaldehyde

3. Aldehydes which do not have an a-hydrogen atom, undergo self oxidation and reduction reaction on heating with
- Concentrated acid
- Concentrated alkali
- Dilute acid
- aqNaOH

4. Gabriel synthesis is used for the preparation of
- Primary amines
- Primary alcohols
- Secondary amines
- Secondary alcohols

5. The sodium fusion extract is acidified with acetic acid and lead acetate is added to it. A black precipitate of lead sulphide indicates the presence of
- Phosphorous
- Nitrogen
- Sulphur
- Halogen

6. For any solution the partial vapour pressure of each volatile component in the solution is directly proportional to its
- Mole fraction
- Molarity
- Volume
- Normality

7. Two solutions having same osmotic pressure at a given temperature are called
- Hypotonic
- Hypertonic
- Hypsotonic

- Isotonic Solutions

8. The nitrogen-containing organic compound, when heated with copper oxide in an atmosphere of carbon dioxide, yields free nitrogen in addition to carbon dioxide and water. This method is
- Dumas method
- Charle's method
- Stephen's method
- Sandmeyer's method

9. Hydrogenation of vegetable oils using —----- as catalyst gives edible fats
- Lead
- Palladium
- Tin
- Nickel

10. Neoprene is formed by the free radical polymerisation is
- Isoprene
- Chloroprene
- 1,3 butadiene
- Acrylonitrile

11. —-------------- is used in the manufacture of paints and lacquers
- Bakelite
- Glyptal
- PHBV
- Polystyrene

12. Excess —------------in drinking water can cause disease such as blue baby syndrome
- Lead
- Fluoride
- Sulphate
- Nitrate

13. The temperature at which a real gas obeys ideal gas law over an appreciable range of pressure is called —------------ temperature.
- Charle
- Boyle
- Dalton

- Critical

14. ––––––––––– is the molarity of NaOH in the solution prepared by dissolving its 4g in enough water to form 250ml of the solution
- 0.4m
- 4 m
- 40 m
- 2 m

15. Ejection of electrons from metal surface when radiation strikes it, is called
- Black body radiation
- Photoelectric effect
- Radiation effect
- Black body absorption

Mathematics

1. The 7th term of AP is 40. Then the sum of its first 13 terms is
- 520
- 53
- 2080
- 1040

2. The number of words that can be formed from the letters of the word ARTICLE so that vowels occupy even places is
- 574
- 36
- 754
- 144

3. Equation of the straight line making equal intercepts on the axes and passing through (2,4) is
- 4x - y - 4 = 0
- 2x + y - 8 = 0
- X + y - 6 = 0
- X + 2y - 10 = 0

4. A stone is thrown up vertically and the height x fee reached by it in time t seconds is given by $x = 80t - 16t^2$. The stone reaches the max height in time –––––– second?

- 2
- 2.5
- 3
- 3.5

5. In a railway compartment there are 6 seats. The number of ways 6 passengers can occupy those seats is
- 30
- 36
- 120
- 720

6. The distance between foci is 16, eccentricity is ½ then length of major axis of the ellipse is
- 64
- 8
- 32
- 16

7. In a class of 60 students, 25 play cricket, 20 play tennis, and 10 play both the games. Then the number of students who play neither of the games is
- 45
- 0
- 25
- 35

8. Equation of the line bisecting perpendicularly the segment joining the points (-4,6) and (8,8) is
- Y = 7
- 6x + y - 19 = 0
- X + 2y - 7 = 0
- 6x + 2y - 19 = 0

9. The maximum of the function f (x) = 3 cos x - 4 sin x is
- 2
- 3
- 4
- 5

10. The 7th and 13th term of an AP is 34 and 64 respectively, then 18th term is
- 87
- 88
- 89
- 90

11. The point at which the tangent to the curve $y = 2x^2 - x + 1$ is parallel to $y = 3x + 9$ is
- (1,2)
- (2,1)
- (-2,1)
- (3,9)

12. The function of $f(x) = 2x^3 - 15x^2 + 36x + 4$ is maximum at x =
- 4
- 3
- 2
- 0

13. A = (1,2), B = (0,1) then A x B =
- {(1,0) (1,1) (2,0) (2,1)]
- {(1,1) (1,2) (0,1) (0,2)}
- {(1,0)(2,1)}
- None of these