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ACADEMIC SESSION 2023-25

Sample Test Paper

ResoNET-2022-23

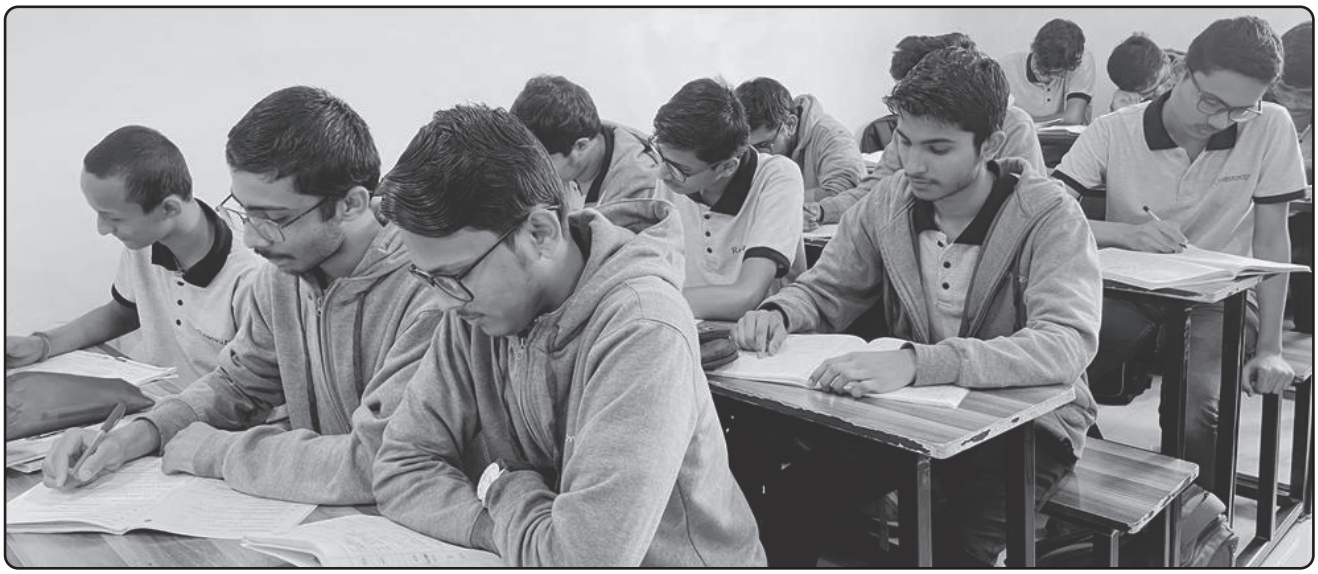
Resonance National Entrance Test (Admission Cum Scholarship)

Target : IIT-JEE 2025

Course Name	VIKAAS	Class : XI	Course Code	JA

Duration : 90 Min. **Max. Marks : 200**

Pattern : Single Option Correct (+4, -1), Total No. of Questions 50 (Physics : 15, Chemistry : 15 , Mathematics : 20)



Resonet Syllabus for 10th to 11th moving students

PHYSICS : **Ray optics :** reflection, plane and spherical mirror. Refraction , Lenses and prism. **Current electricity :** Ohms law, Resistivity, Combination of resistor, Ammeter, Voltmeter, heating effect of current. **Kinematics :** Motion on straight line, displacement and distance , average velocity. Acceleration. graphs for rectilinear motion. Motion under gravity. **Heat :** Temperature, its various units and their relationship. Specific heat capacity. Latent heat of fusion and vaporization, principle of calorimetry.

CHEMISTRY : Matter, Mole concept, Periodic classification, Acid base and salt, Metal and non metals, (Metallurgy) Carbon and it's compounds, Chemical reaction and equations, Atoms and molecules

MATHEMATICS : Real numbers and polynomials ,Quadratic Equations ,Trigonometry ,Arithmetic progression.Geometry.

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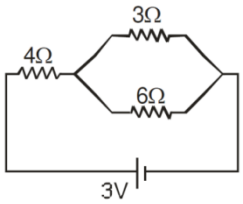
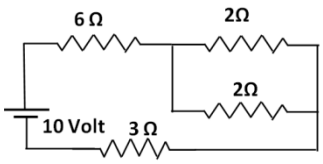
Section-I (Physics)

1. Find current supplied by the 3 Volt cell in the circuit



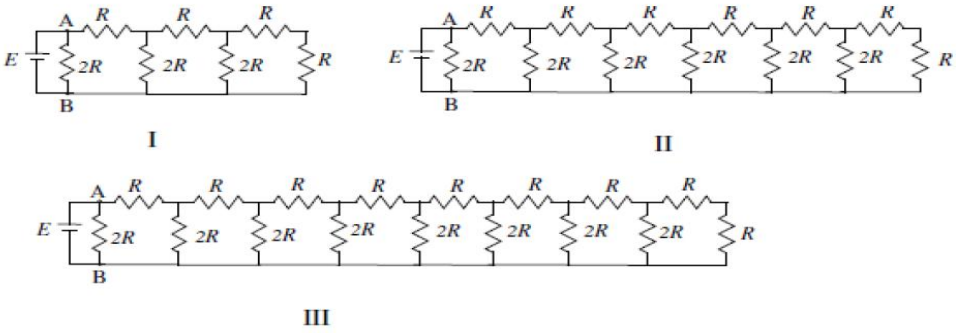
(A) 1 A (B) 3 A (C) 0.5 A (D) 4/3 A

2. For the circuit shown in fig find power developed in 3 Ω resistor



(A) 100/3 W (B) 30 W (C) 3W (D) 5W

3. Three different circuits (I, II and II) are constructed using identical batteries and resistors of R and 2R ohm. What can be said about current i in arm AB of each circuit?

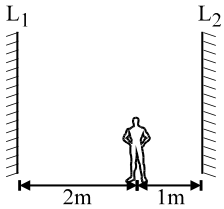


(A) I>II>III (B) III>II>I (C) I=II=III (D) I=II>III

4. An object of height 2cm is placed perpendicular to principle axis at distance 30 cm from pole of a convex lens(f=20 cm) then its image will be

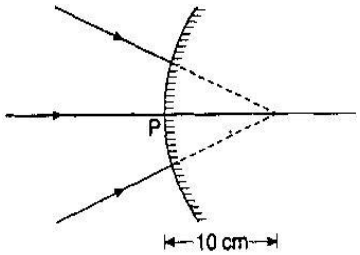
(A) real and of height 4 cm (B) real and of height 1 cm
(C) Virtual and of height 4 cm (D) Virtual and of height 1 cm

5. Two mirrors labeled L_1 for left mirror and L_2 for right mirror in the figure are parallel to each other and 3.0 m apart. A person standing 1.0 m from the right mirror (L_2) looks into this mirror and sees a series of images. The second nearest image seen in the right mirror is situated at a distance:



(A) 2.0 m from the person (B) 4.0 m from the person
(C) 6.0 m from the person (D) 8.0 m from the person

6. A convergent beam of light is incident on a convex mirror of radius of curvature 60 c.m as shown in fig. The image formed by the convex mirror is



(A) Virtual and 15 cm behind the mirror (B) Real and 15 cm in front of the mirror
(C) Virtual and 7.5 cm behind the mirror (D) Real and 7.5 cm in front of the mirror

7. A beaker contain 2kg water at 20 ^{o} C and another beaker contains 3 kg water at 80^{o}C . if the two are mixed together then what will be temperature of mixture.

(A) 50^{o} (B) 40^{o} (C)56^{o} (D)65^{o}

8. A car starts moving with acceleration 2 m/s^2 for 10 sec then move with constant velocity find displacement in 1st 20 sec

(A) 500 m (B) 400 m (C)300 m (D)350 m

9. When a ball is thrown up vertically with velocity V_0, it reaches a maximum height of ' h '. If one wishes to triple the maximum height then the ball should be thrown with velocity

(A)2V_0 (B) 3 V_0 (C) $\sqrt{3}\,V_0$ (D) V_0

10. A particle is moving on a straight line with constant acceleration, it moves 21 m in 5th sec while 33 m in 8th sec the how much distance it will cover in 10th sec.

(A) 41 m (B) 39m (C) 37 m (D) 35 m

11. Temperature of a body is 37 ^{o} C then its temperature in Kelvin will be

(A) 300 (B) 340 (C) 310 (D) 350

12. There is a regular bus service between Nashik and Pune (180 km apart) at every hour from both the cities. First bus leaves (both Pune and Nashik at 4 am while last bus at 11 pm. These buses run at average 45 km/ hr. Taxis also run on the same route at 60 km/hr with regular interval of 30 min. First taxi leaves (both Pune and Nashik) at 4 am while last Taxi at 10 pm. Following statements are based upon the number of taxies or buses crossed (not overtaken) only during travelling i.e excluding instances of arrival and departure. Consider following statements

I. Taxies left at 8 pm crosses 10 taxis

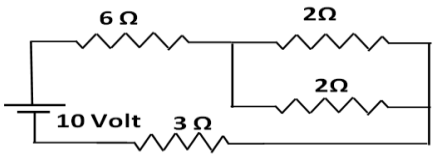
II. Last taxis crosses 5 buses

III. Last bus crosses 4 taxies

(A) Only I &II are correct (B) Only II &III are correct

(C) Only I &III are correct (D) All are correct

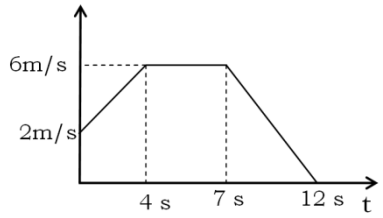
13. In the circuit shown below



Current supplied by cell of emf 10 Volt will be

(A) 2 A (B) 1 A (C) 10/13 A (D) 1.3 A

14. Velocity vs time graph is given below, In which time interval particle acceleration is zero



(A) t=0 to 4 sec (B) t=7 to 12 sec (C) t= 4 to 7 sec (D) none

15. A light ray incident from air to water plane interface then the ray will

(A) bends toward normal (B) bends away from normal

(C) go along normal (D) go in same direction as incident

Section-II (Chemistry)

1. In which of the following compound ketone functional group is present ?
(A) CH_3COOH (B) CH_3CHO (C) CH_3COCH_3 (D) CH_3CH_2OH

2. 19.7 kg of gold was recovered from a smuggler. The atoms of gold recovered are: (Au = 197)
(A) 10 (B) 6.02×10^{23} (C) 6.02×10^{24} (D) 6.02×10^{25}

3. Conversion of $PbSO_4$ to PbS is
(A) Reduction of S (B) Oxydation of S (C) Dissociation (D) none

4. Froth floatation process is based on
(A) specific gravity of the ore particle (B) magnetic properties of the ore particle
(C) wetting properties of the ore particle (D) electrical property o the ore particle

5. Which of the given elemets A, B, C, D and E with atomic number 2, 3, 7, 10 and 30 respectively belong to the same period.
(A) A, B, C (B) B, C, D (C) A, D, E (D) B, D, E

6. Which of the following is smallest in size
(A) O^{-2} (B) C^{-4} (C) F^{-1} (D) N^{-3}

7 . A polar covalent compound is:
(A)Methane (B) Ammonia (C)Nitrogen (D)Chlorine

8. An aqueous compound which turns colourless phenolphthale in to pink:
(A) Ammonium hydroxide (B)Nitric acid (C)Anhydrous calcium chloride (D)Sulphuric acid

9. The value of σ and π bonds in Benzene are
(A) 6,3 (B)3,3 (C) 12,3 (D) 6,6

10. An acid which has two replaceable hydrogen ions:
(A) Acetic acid (B)Hydrochloric acid (C)Phosphoric acid (D)Carbonic acid

11. The pair of atoms having the same number of neutrons is
(A) ${}^{12}_{6}C,{}^{24}_{12}$ mg (B) ${}^{23}_{11}Na,{}^{19}_{9}F$ (C) ${}^{23}_{11}Na,{}^{24}_{12}Mg$ (D) ${}^{23}_{11}Na,{}^{39}_{19}K$

12. At higher altitude :
(A) B.P. of a liquid increases (B) Melting point of a substance increases
(C) B.P. of a liquid decreases (D)None of these.

13. The phosphate of a metal has the formula M_3PO_4. The formula of its chloride would be-
(A)MCl (B) MCl_2 (C) MCl_3 (D) M_2Cl

14. The amount of $CaCO_3$ which will precipitate if 50 ml of 1.0M Na_2CO_3 and 50 ml of 0.2 M $CaCl_2$ are mixed is
(A) 5.0 g (B) 2.0g (C) 1.0 g (D) 0.5 g

15. When ethanol reacts with acidified $k_2cr_2o_7$ then what will be the major product ?
(A) methanoic acid (B) ethanol (C) Ethanoic acid (D) Propanoic acid

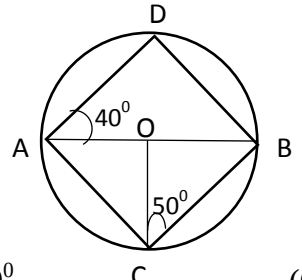
Section-III (Math)

1. $\frac{3}{5}+\frac{5}{4}=...?$
(A) $\frac{8}{9}$ (B) $\frac{37}{9}$ (C) $\frac{39}{20}$ (D) $\frac{37}{20}$

2. If $3x+2y=7 \,\&\, 4x-y=2$ then find value of $(x+2y)=?$
(A) 2 (B) 4 (C) 7 (D) 5

3. $\frac{a^3+b^3}{a+b}=?$
(A) a^2-b^2 (B) a^2+b^2 (C) a^2+ab+b^2 (D) a^2-ab+b^2

4. In the diagram AB is a diameter, 'O' is the center of the circle and $\angle OCB = 50°$, then find $\angle DBC$.



(A) 80^0 (B) 100^0 (C) 120^0 (D) 140^0

5. Match the following: Object has radius R

P	Volume of a cylinder of height 3R	I.	$2\pi R^2$
Q	Volume of a sphere	II.	$\frac{4\pi}{3}R^3$
		III	$3\pi R^3$
R	Outer surface area of a sphere	IV.	$2\pi R^3$
		V	$4\pi R^2$

(A) P-II,Q-I,R-III (B) P-III,Q-II,R-V (C) P-III,Q-II,R-IV (D) P-IV,Q-II,R-I

6. The greater between $\sqrt{19}-\sqrt{14}$ & $\sqrt{12}-\sqrt{7}$

(A) $\sqrt{19}-\sqrt{14}$ (B) $\sqrt{12}-\sqrt{7}$ (C) Both are equal (D) Can't say.

7. If $cosA + cos^2A = 1$ then the value of $sin^2A + sin^4 A$ is

(A) 1 (B) $\frac{1}{2}$ (C) 2 (D) 3

8. If $(2x+1)>5$ and $(x-1)<9$ then which of the following could not be value of x

(A) 1 (B) 4 (C) 7 (D) 8

9. The quadratic equation $ax^2 + bx + c = 0$ will have real and distinct roots if

(A) $b^2 - 4ac < 0$ (B) $b^2 - 4ac > 0$ (C) $b^2 - 4ac = 0$ (D) all of these.

10. The first term of an A.P is 5, the last term is 45 and the sum is 400. Then the fourth term of A.P is

(A) 13 (B) 11 (C) 15 (D) 14.

11. Find the unit digit in $132^{74} - (3498)^{49}$

(A) 6 (B) 0 (C) 4 (D) 2

12. The rationalizing factor of $\sqrt[n]{\frac{a}{b}}$ is

(A) $ab\sqrt[n]{\frac{a}{b}}$ (B) $\sqrt[n]{\frac{a}{b}}$ (C) $\sqrt[n]{\frac{a^{n-1}}{b^{n-1}}}$ (D) $\sqrt[n]{\frac{a^{n+1}}{b^{n+1}}}$

13. If $x^2 - x - 1 = 0$, then the value of $x^3 - 2x + 1$ is

(A) 0 (B) 2 (C) $\frac{1+\sqrt{5}}{2}$ (D) $\frac{1-\sqrt{5}}{2}$

14. If $tan2\theta = cot(\theta + 6°)$, where 2θ and $\theta + 6°$ are acute angles. Find the value of θ.

(A) 26^0 (B) 27^0 (C) 28^0 (D) None of these.

15. The maximum number of common tangents to any two circle in the same plane is

(A) Two (B) Three (C) Four (D) Five.

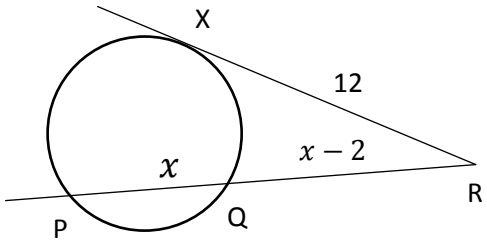
16. If $\propto, \beta$ are roots of the equation $x^2 - 5x + 6 = 0$ then the equation whose roots are $\propto +3$and $\beta + 3$ is

(A) $2x^2 - 11x + 30 = 0$ (B) $-x^2 + 11x = 0$ (C) $2x^2 - 22x + 60 = 0$ (D) $x^2 + 8x - 9 = 0$

17. The sum of three numbers in A.P is 21 and their product is 231. Find the numbers.

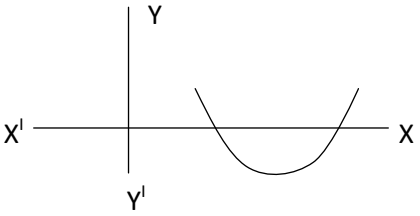
(A) 3, 7 and 11 (B) 4, 8 and 12 (C) 5, 11 and 13 (D) 2, 3 and 5.

18. PQ is a chord of a circle the tangent XR at X on the circle cuts PQ Produce at R. it XR = 12cm, PQ = $x$cm, QR = $x-2$cm then x in cm is



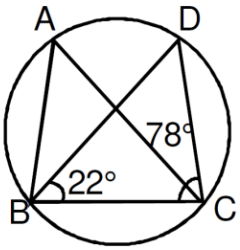
(A) 6 (B) 7 (C) 10 (D) 14

19. For the below figure of $ax^2 + bx + c = 0$



(A) $a < 0$ (B) $b > 0$ (C) $D > 0, a > 0$ (D) $D < 0,\ b < 0$

20. In the given fig, $\angle DBC = 22^o$ and $\angle DCB = 78^o$ then $\angle BAC$ is equal to



(A) 30^o (B) 44^o (C) 80^o (D) 54^o

Answer key: Physics

1.C 2.C 3.C 4.A 5.C 6.B 7.C 8.C 9.C 10.A 11.C 12.B 13.B 14.C 15.A

Answer key: Chemistry

1. C 2.D. 3.A 4.C 5.B 6.C 7.B 8.A 9.C 10.D

11.C 12.C 13.C 14.D 15.C

Answer key: Maths

1. D 2.D 3.D. 4. B 5.B 6.B 7.A 8.A 9.B 10.A

11. A 12.C 13.B 14.C 15.C 16.C 17.A 18.C 19.C 20.C