JEE Main January 2026

Question Paper With Text Solution

28 January | Shift-1

PHYSICS

JEE MAIN JANUARY 2026 | 28 JANUARY SHIFT-1

SECTION – A

Question ID : 444792713

26. The electric current in the circuit is given as $i = i_0(t/T)$. The r.m.s current for the period $t = 0$ to $t = T$ is_____.
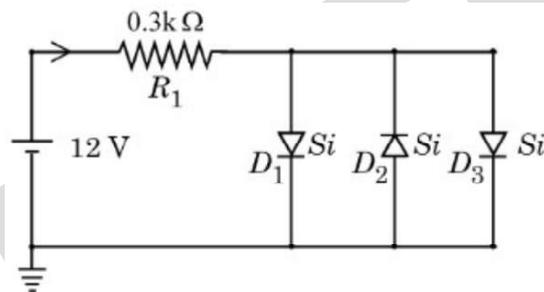
(1) $\dfrac{i_0}{\sqrt{2}}$　　　　(2) i_0　　　　(3) $\dfrac{i_0}{\sqrt{3}}$　　　　(4) $\dfrac{i_0}{\sqrt{6}}$

Ans. Official answer NTA (3)

Sol.

Question ID : 444792720

27. Assuming in forward bias condition there is a voltage drop of 0.7 V across a silicon diode, the current through diode D_1 in the circuit is _____ mA. (Assume all diodes in the given circuit are identical)

(1) 18.8　　　　(2) 20.15　　　　(3) 17.6　　　　(4) 11.7

Ans. Official answer NTA (1)

Sol.

Question ID : 444792712

28. For the two cells having same EMF E and internal resistance r, the current passing through the external resistor 6 Ω is same when both the cells are connected either in parallel or in series. The value of internal resistance r is _____ Ω.

(1) 9　　　　(2) 6　　　　(3) 3　　　　(4) 4

Ans. Official answer NTA (2)

Sol.

Question ID : 444792705

29.   Water drops fall from a tap on the floor, 5 m below, at regular intervals of time, the first drop strikes the floor when the sixth drop begins to fall. The height at which the fourth drop will be from ground, at the instant when the first drop strikes the ground is _____ m.
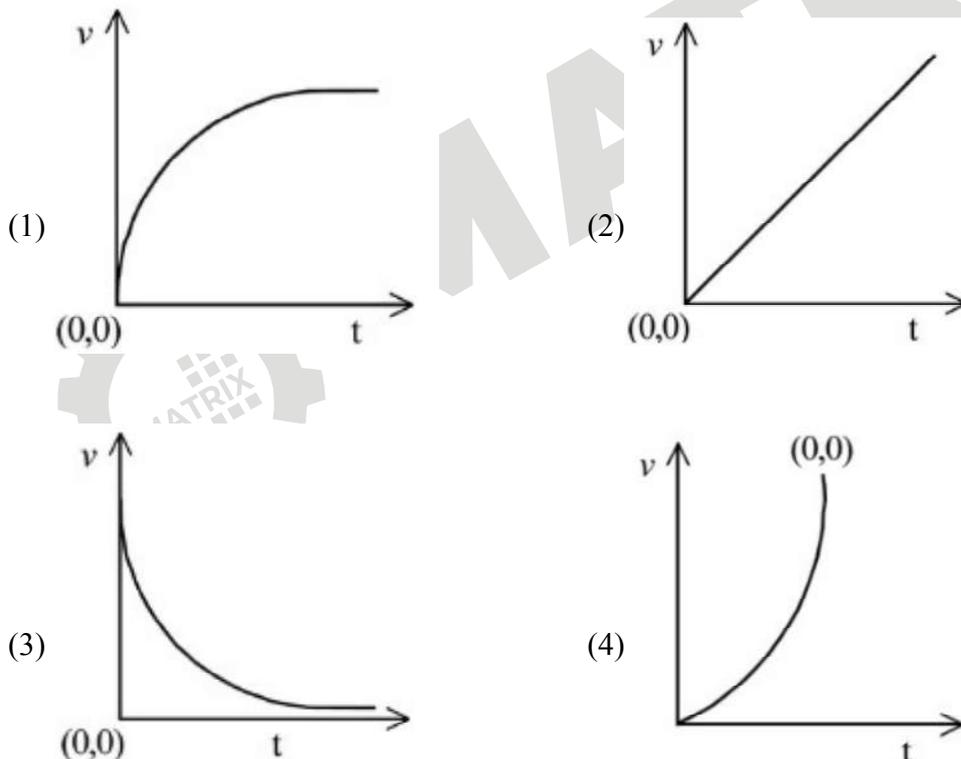
($g = 10$ m/s^2)

(1) 4.2   (2) 4.0   (3) 3.8   (4) 2.5

Ans.   Official answer NTA (1)

Sol.

Question ID : 444792703

30.   A particle of mass m falls from rest through a resistive medium having resistive force, $F = -kv$, where v is the velocity of the particle and k is a constant. Which of the following graphs represents velocity (v) versus time (t) ?

(1)

(2)

(3)

(4)

Ans.   Official answer NTA (1)

Sol.

Question ID : 444792701

31. When both jaws of vernier callipers touch each other, zero mark of the vernier scale is right to zero mark of main scale, 4ᵗʰ mark on vernier scale coincides with certain mark on the main scale. While measuring the length of a cylinder, observer observes 15 divisions on main scale and 5th division of vernier scale coincides with a main scale division. Meausred length of cylinder is _____ mm.

(Least count of Vernier calliper = 0.1 mm)

(1) 15.9   (2) 15.1   (3) 15.4   (4) 15.5

Ans.   Official answer NTA (2)

Sol.

Question ID : 444792707

32. Two wires A and B made of different matierals of lengths 6.0 cm and 5.4 cm, respectively and area of cross sections 3.0×10^{-5} m² and 4.5×10^{-5} m², respectively are stretched by the same magnitude under a given load. The ratio of the Young's modulus of A to that of B is x : 3. The value of x is _____.

(1) 5   (2) 2   (3) 4   (4) 1

Ans.   Official answer NTA (1)

Sol.

Question ID : 444792704

33. A block of mass 5 kg is moving on an inclined plane which makes an angle of 30º with the horizontal. Friction coefficient between the block and inclined plane surface is $\dfrac{\sqrt{3}}{2}$. The force to be applied on the block so that the block will move down without acceleration is _____N. (g = 10 m/s²)

(1) 7.5   (2) 15   (3) 12.5   (4) 25

Ans.   Official answer NTA (3)

Sol.

Question ID : 444792719

34. An atom $_{3}^{8}X$ is bombarded by shower of fundamental particles and in 10 s this atom absorbed 10 electrons, 10 protons and 9 neutrons. The percentage growth in the surface area of the nucleons is recorded by :

(1) 250%   (2) 225%   (3) 150%   (4) 900%

Ans.   Official answer NTA (2)

Sol.

Question ID : 444792718

35. The magnitudes of power of a biconvex lens (refractive index 1.5) and that of a plano-concave lens (refractive index = 1.7) are same. If the curvature of planoconcave lens exactly matches with the curvature of back surface of the biconvex lens, then ratio of radius of curvature of front and back surface of the biconvex lens is _____ .
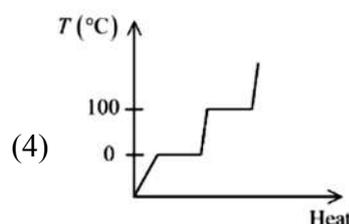
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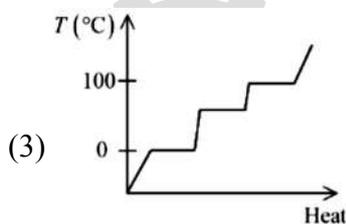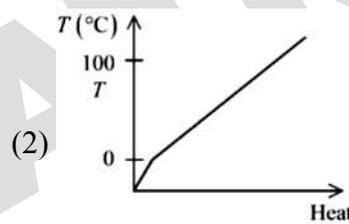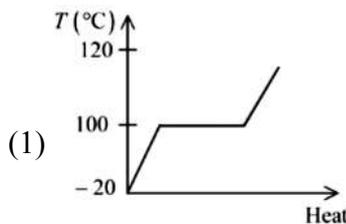(1) 2 : 5   (2) 5 : 12   (3) 5 : 2   (4) 12 : 5

Ans. Official answer NTA (3)

Sol.

Question ID : 444792710

36. Which of the following best represents the temperature versus heat supplied graph for water, in the range of –20 °C to 120 °C ?

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Ans. Official answer NTA (4)

Sol.

Question ID : 444792717

37. Given below are two statements :

Statement I : A plane wave after passing through prism remains as plane wave but passing through small pin hole may become spherical wave.

Statement II : The curvature of a spherical wave emerging from a slit will increase for increasing slit width.

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In the light of the above statements, choose the **correct** answer from the options given below :

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(1) Both Statement I and Statement II are false

(2) Both Statement I and Statement II are true

(3) Statement I is true but Statement II is false

(4) Statement I is false but Statement II is true

Ans. Official answer NTA (3)

Sol.

Question ID : 444792709

38. In the following p-V diagram the equation of state along the curved path is given by $(V - 2)^2 = 4ap$ where a is a constant. The total work done in the closed path is :
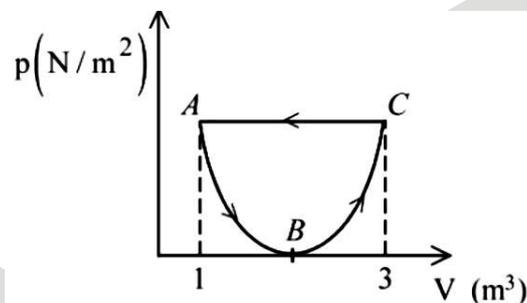
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(1) $-\dfrac{1}{a}$ (2) $\dfrac{1}{2a}$ (3) $+\dfrac{1}{3a}$ (4) $-\dfrac{1}{3a}$

Ans. Official answer NTA (4)

Sol.

Question ID : 444792715

39. Two point charges of 1 nC and 2 nC are placed at the two corners of equilateral triangle of side 3 cm. The work done in bringing a charge of 3 nC from infinity to the third corner of the triangle is _____ μJ.

$$\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \, \text{N.m}^2 / \text{C}^2$$
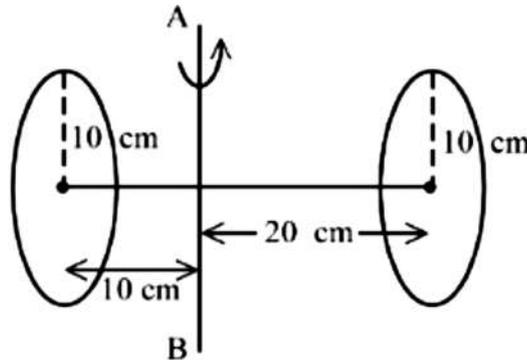
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(1) 3.3   (2) 5.4   (3) 2.7   (4) 27

Ans. Official answer NTA (3)

Sol.

Question ID : 444792706

40. Two circular discs of radius each 10 cm are joined at their centres by a rod of length 30 cm and mass 600 gm as shown in figure. If the mass of each disc is 600 gm and applied torque between two discs is 43×10^5 dyne.cm, the angular acceleration of the discs about the given axis AB is _____ rad/s^2.

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(1) 22   (2) 100   (3) 11   (4) 27

Ans. Official answer NTA (3)

Sol.

Question ID : 444792711

41. The magnetic field at the centre of a current carrying circular loop of radius R is 16 μT. The magnetic field at a distance $x = \sqrt{3}R$ on its axis from the centre is _____ μT.

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(1) 4   (2) $2\sqrt{2}$ (3) 8   (4) 2

Ans. Official answer NTA (4)

Sol.

Question ID : 444792716

42. The electric field of an electromagnetic wave travelling through a medium is given by $\vec{E}(x,t) = 25\sin(2.0 \times 10^{15}t - 10^7 x)\hat{n}$ then the refractive index of the medium is _____.

(All given measurement are in SI units)
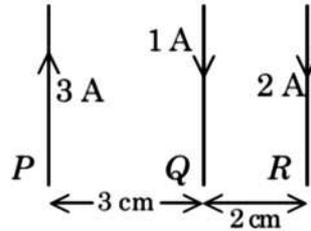
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(1) 1.5   (2) 1.2   (3) 2   (4) 1.7

Ans. Official answer NTA (1)

Sol.

Question ID : 444792714

43. Three long straight wires carrying current are arranged mutually parallel as shown in the figure. The force experienced by 15 cm length of wire Q is _____.

क

(1) 6×10^{-7} N towards P

(2) 6×10^{-7} N towards R

(3) 6×10^{-6} N towards R

(4) 6×10^{-6} N towards P

Ans. Official answer NTA (3)

Sol.

Question ID : 444792708

44. 10 kg of ice at $-10\,°C$ is added to 100 kg of water to lower its temperature from 25 °C. Consider no heat exchange to surroundings. The decrement to the temperature of water is _____ °C.

(specific heat of ice = 2100 J/kg.°C, specific heat of water = 4200 J/kg.°C, latent heat of fusion of ice = 3.36×10^5 J/kg)

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(1) 11.6   (2) 6.67   (3) 15   (4) 10

Ans. Official answer NTA (4)

Sol.

Question ID : 444792702

45. In the potentiometer, when the cell in the secondary circuit is shunted with 4 Ω resistance, the balance is obtained at the length 120 cm of wire. Now when the same cell is shunted with 12 Ω resistance, the balance is shifted to a length of 180 cm . The internal resistance of cell is _____Ω.

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(1) 6   (2) 12   (3) 3   (4) 4

Ans. Official answer NTA (4)

Sol.

SECTION – B

Question ID : 444792721

46. A convex lens of refractive index 1.5 and focal length f = 18 cm is immersed in water. The difference in focal lengths of the given lens when it is in water and in air is a × f. The value of a is _____.

(refractive index of water = 4/3)

क

Ans. Official answer NTA (3)

Sol.

Question ID : 444792725

47. The displacement of a particle, executing simple harmonic motion with time period T, is expressed as x (t) = A sin ωt, where A is the amplitude. The maximum value of potential energy of this oscillator is found at t = T/2β. The value of β is _____.

क

Ans. Official answer NTA (2)

Sol.

Question ID : 444792723

48. The ratio of de Broglie wavelength of a deutron with kinetic energy E to that of an alpha particle with kinetic energy 2E, is n : 1. The value of n is _____.

(Assume mass of proton = mass of neutron) :

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Ans. Official answer NTA (2)

Sol.

Question ID : 444792724

49. A solid sphere of radius 10 cm is rotating about an axis which is at a distance 15 cm from its centre. The radius of gyration about this axis is $\sqrt{n}$ cm . The value of n is :
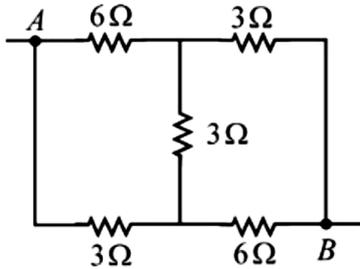
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Ans. Official answer NTA (265)

Sol.

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Question ID : 444792722

50. The equivalent resistance between the points A and B in the following circuit is $\frac{x}{5}\Omega$. The value of x is

_____.

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Ans. Official answer NTA (21)

Sol.

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