JEE Main Practice Paper

Based on JEE Main Pattern

Generated: December 01, 2025 | Difficulty: Easy

Instructions:

- This paper contains 90 questions (30 per subject).
- Each subject has 20 MCQs and 10 Integer Type questions.
- MCQ: +4 for correct, -1 for incorrect.
- Integer: +4 for correct, 0 for incorrect.
- Time: 3 hours | Maximum Marks: 360

Physics

Section A: Multiple Choice Questions (MCQ)

Q1. In a nuclear fission reaction of an isotope of mass M , three similar daughter nuclei of same mass are formed. The speed of a daughter nuclei in terms of mass defect ΔM will be :

(A) $\sqrt{}$ 2$c\Delta$M M

(B) ΔMc 2/3

(C) $c\sqrt{}$ 2ΔM M

(D) $c\sqrt{}$ 3ΔM M

Q2. With rise in temperature, the Young's modulus of elasticity

(A) changes erratically

(B) decreases

(C) increases

(D) remains unchanged

Q3. A thin plano convex lens made of glass of refractive index 1.5 is immersed in a liquid of refractive index 1.2. When the plane side of the lens is silver coated for complete reflection, the lens immersed in the liquid 2025 (24 Jan Shift 1)

(A) 0.20 m

(B) 0.25 m

(C) 0.15 m

(D) 0.10 m

Q4. An electron in the ground state of the hydrogen atom has the orbital radius of while that for the electron in third excited state is . The ratio of the de Broglie wavelengths of electron in the excited state to that in the ground state is

(A) 3

(B) 16

(C) 9

(D) 4

Q5. An ideal gas goes from an initial state to final state. During the process, the pressure of gas increases linearly with temperature. A. The work done by gas during the process is zero. B. The heat added to gas is different from change in its internal energy. C. The volume of the gas is increased. D. The internal energy of the gas is increased. E. The process is isochoric (constant volume process) Choose the correct answer from the options given below:

(A) E Only

(B) A, B, C, D Only

(C) A, D, E Only

(D) A, C Only

Q6. The speed of sound in oxygen at S.T.P. will be approximately: (Given, R= 8.3 J K -1 , γ= 1.4)

(A) 310 m s^-1

(B) 333 m s^-1

(C) 341 m s^-1

(D) 325 m s^-1

Q7. The fundamental frequency of a closed organ pipe is equal to the first overtone frequency of an open organ pipe. If length of the open pipe is 60 cm , the length of the closed pipe will be :

(A) 60 cm

(B) 45 cm

(C) 30 cm

(D) 15 cm

Q8. When a polaroid sheet is rotated between two crossed polaroids then the transmitted light intensity will be maximum for a rotation of :

(A) 60°

(B) 30°

(C) 90°

(D) 45°

Q9. Light emerges out of a convex lens when a source of light kept at its focus. The shape of wavefront of the light is :

(A) both spherical and cylindrical

(B) plane

(C) spherical

(D) cylindrical

Q10. Given below are two statements : Statement I : In a vernier callipers, one vernier scale division is always smaller than one main scale division. Statement II : The vernier constant is given by one main scale division multiplied by the number of vernier scale divisions. In the light of the above statements, choose the correct answer from the options given below.

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

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

(C) Both Statement I and Statement II are false

(D) Both Statement I and Statement II are true 2025 (22 Jan Shift 1)

Q11. The energy released in the fusion of of hydrogen deep in the sun is and the energy released in the fission of of is . The ratio is approximately: (Consider the fusion reaction as , energy released in the fission reaction of is per fission nucleus and

(A) 7.62

(B) 25.6

(C) 15.04

(D) 9.13

Q12. The dimensional formula of angular impulse is :

(A) [M L - 2 T - 1]

(B) [M L 2 T - 2]

(C) [M L T - 1]

(D) [M L 2 T - 1]

Q13. The width of one of the two slits in Young's double slit experiment is d while that of the other slit is . If the ratio of the maximum to the minimum intensity in the interference pattern on the screen is then what is the value of ? (Assume that the field strength varies according to the slit width.)

(A) 4

(B) 5

(C) 3

(D) 2

Q14. A beam of unpolarised light of intensity I 0 is passed through a polaroid A and then through another polaroid B which is oriented so that its principal plane makes an angle of 45° relative to that of A . The intensity of emergent light is :

(A) I 0 4

(B) I 0

(C) I 0 2

(D) I 0 8

Q15. A thin prism with angle made of glass having refractive index 1.54 , is combined with another thin prism made of glass having refractive index 1.72 to get dispersion without deviation. The angle of the prism in degrees is

(A) 3

(B) 16/3

(C) 4

(D) 1.5

Q16. Two charges and are placed at and respectively. Given, , the electrostatic potential energy of the charge configuration is :

(A) -1.8 J

(B) -2.0 J

(C) -1.5 J

(D) -1.2 J

Q17. The minimum energy required by a hydrogen atom in ground state to emit radiation in Balmer series is nearly :

(A) 1.5 eV

(B) 13.6 eV

(C) 1.9 eV

(D) 12.1 eV

Q18. Three infinitely long wires with linear charge density are placed along the -axis and axis respectively. Which of the following denotes an equipotential surface?

(A) constant

(B) constant

(C) constant

(D) constant

Q19. 10 divisions on the main scale of a Vernier calliper coincide with 11 divisions on the Vernier scale. If each division on the main scale is of 5 units, the least count of the instrument is :

(A) 1/2

(B) 10/11

(C) 50/11

(D) 5/11

Q20. The radius r , length l and resistance R of a metal wire was measured in the laboratory as r= 0.35 $\pm$ 0.05 cm , R= 100 $\pm$ 10 ohm , l= 15 $\pm$ 0.2 cm The percentage error in resistivity of the material of the wire is :

(A) 25.6%

(B) 39.9%

(C) 37.3%

(D) 35.6%

Section B: Integer Type Questions

Q21. The driver sitting inside a parked car is watching vehicles approaching from behind with the help of his side view mirror, which is a convex mirror with radius of curvature . Another car approaches him from behind with a uniform speed of . When the car is at a distance of 24 m from him, the magnitude of the acceleration of the image of the car in the side view mirror is ' a '. The value of 100 a is _____ .

Q22. A current of 5 A exists in a square loop of side . Then the magnitude of the magnetic field at the centre of the square loop will be . where, value of p is _____ . Take .

Q23. Equivalent resistance of the following network is _____ .

Q24. A body falling under gravity covers two points A and B separated by 80 m in 2 s . The distance of upper point A from the starting point is _____ m . Use g = 10 m s^-2

Q25. A liquid column of height balances excess pressure of a soap bubble of certain radius. If density of liquid is and surface tension of soap solution is , then diameter of the soap bubble is _____ . (if)

Q26. A vernier callipers has 20 divisions on the vernier scale, which coincides with division on the main scale. The least count of the instrument is . One main scale division is equal to _____ .

Q27. An electric field, passes through the surface of area having unit vector . The electric flux for that surface is _____ .

Q28. The least count of a screw guage is 0.01 mm . If the pitch is increased by and number of divisions on the circular scale is reduced by , the new least count will be _____

Q29. The refractive index of prism is and the ratio of the angle of minimum deviation to the angle of prism is one. The value of angle of prism is _____.

Q30. A circular coil having 200 turns, area and carrying current is placed in a uniform magnetic field of 1 T. Initially the magnetic dipole moment was directed along . Amount of work, required to rotate the coil through from its initial orientation such that becomes perpendicular to , is _____ .

Chemistry

Section A: Multiple Choice Questions (MCQ)

Q31. Match List - I with List - II. Choose the correct answer from the options given below :

(A) (A)-(IV), (B)-(II), (C)-(I), (D)-(III)

(B) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(C) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(D) (A)-(II), (B)-(IV), (C)-(III), (D)-(I)

Q32. A species having carbon with sextet of electrons and can act as electrophile is called

(A) carbon free radical

(B) carbanion

(C) carbocation

(D) pentavalent carbon

Q33. In the above chemical reaction sequence " " and " " respectively are

(A) and

(B) and

(C) and

(D) and

Q34. Which of the following cannot function as an oxidising agent?

(A) N 3 -

(B) SO 4 2 -

(C) BrO 3 -

(D) MnO 4 -

Q35. The alkane from below having two secondary hydrogens is :

(A) 4-Ethyl-3,4-dimethyloctane

(B) 2,2,3,3-Tetramethylpentane

(C) 2,2,4,5-Tetramethylheptane

(D) 2,2,4,4-Tetramethylhexane

Q36. Two nucleotides are joined together by a linkage known as :

(A) Phosphodiester linkage

(B) Glycosidic linkage

(C) Disulphide linkage

(D) Peptide linkage

Q37. The emf of cell Tl is at . It could be increased by :

(A) decreasing concentration of both and ions

(B) increasing concentration of ions

(C) increasing concentration of ions

(D) increasing concentration of both and ions

Q38. The four quantum numbers for the electron in the outer most orbital of potassium (atomic no. 19) are

(A) n = 4, l = 2, m = -1, s = + 1/2

(B) n = 4, l = 0, m = 0, s = + 1/2

(C) n = 3, l = 0, m = -1, s = + 1/2

(D) n = 2, l = 0, m = 0, s = + 1/2

Q39. The metals that are employed in the battery industries are A. Fe, B. Mn, C. Ni, D. Cr, E. Cd Choose the correct answer from the options given below:

(A) B, C and E only

(B) A, B, C, D and E

(C) A, B, C and D only

(D) B, D and E only

Q40. IUPAC name of following hydrocarbon is :

(A) 2-Ethyl-3,6-dimethylheptane

(B) 2,5,6-Trimethyloctane

(C) 3,4,7-Trimethyloctane

(D) 2-Ethyl-2,6-diethylheptane

Q41. Integrated rate law equation for a first order gas phase reaction is given by (where $P\ i$ is initial pressure and P t is total pressure at time t)

(A) k= 2.303 t × log P i 2P i - P t

(B) k= 2.303 t × log 2P i 2P i - P t

(C) k= 2.303 t × log 2P i - P t P i

(D) k= 2.303 t × P i 2P i - P t

Q42. Which among the following is incorrect statement?

(A) Electromeric effect dominates over inductive effect

(B) The electromeric effect is, temporary effect

(C) Hydrogen ion shows negative electromeric effect

(D) The organic compound shows electromeric effect in the presence of the reagent only.

Q43. The atomic mass of 6 C 12 is 12.000000 u and that of 6 C 13 is 13.003354 u . The required energy to remove a neutron from 6 C 13 , if mass of neutron is 1.008665 u , will be:

(A) 62.5MeV

(B) 6.25MeV

(C) 4.95MeV

(D) 49.5MeV

Q44. Sugar which does not give reddish brown precipitate with Fehling's reagent is:

(A) Sucrose

(B) Lactose

(C) Glucose

(D) Maltose

Q45. Which of the following statement is not true for radioactive decay?

(A) Decay constant increases with increase in temperature.

(B) Amount of radioactive substance remained after three half lives is th of original amount.

(C) Decay constant does not depend upon temperature.

(D) Half life is times of .

Q46. Match the LIST-I with LIST-II Choose the correct answer from the options given below:

(A) A-II, B-III, C-I, D-IV

(B) A-III, B-IV, C-I, D-II

(C) A-IV, B-I, C-II, D-III

(D) A-II, B-III, C-IV, D-I

Q47. IUPAC name of following compound is

(A) 2 - Aminopentanenitrile

(B) 2 - Aminobutanenitrile

(C) 3 - Aminobutanenitrile

(D) 3 - Aminopropanenitrile

Q48. Given below are two statements: Statement I : Nitration of benzene involves the following step - Statement II : Use of Lewis base promotes the electrophilic substitution of benzene. In the light of the above statements, choose the most appropriate answer from the options given below :

(A) Statement I is correct but Statement II is incorrect

(B) Statement I is incorrect but Statement II is correct

(C) Both Statement I and Statement II are correct

(D) Both Statement I and Statement II are incorrect

Q49. Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R. Assertion A : H 2 Te is more acidic than H 2 S . Reason R: Bond dissociation enthalpy of H 2 Te is lower than H 2 S . In the light of the above statements. Choose the most appropriate from the options given below.

(A) Both A and R are true but R is NOT the correct explanation of A.

(B) Both A and R are true and R is the correct explanation of A.

(C) A is false but R is true.

(D) A is true but R is false.

Q50. Match List - I with List - II. Choose the correct answer from the options given below :

(A) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

(B) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

(C) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

(D) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

Section B: Integer Type Questions

Q51. A solution containing of an electrolyte in of water boils at . The degree of ionization of the electrolyte is _____ . (nearest integer) [Given : Molar mass of (molal boiling point elevation const. of water) , boiling point of water ionises as

Q52. Phthalimide is made to undergo following sequence of reactions. Total number of bonds present in product 'P' is/are _____

Q53. Cyclohexene is _____ type of an organic compound.

Q54. Number of moles of H + ions required by 1 mole of MnO 4 - to oxidise oxalate ion to CO 2 is _____.

Q55. Number of metal ions characterized by flame test among the following is _____. Sr 2 + , Ba 2 + , Ca 2 + , Cu 2 + , Zn 2 + , Co 2 + , Fe 2 +

Q56. The following data were obtained during the first order thermal decomposition of a gas A at constant volume: Ag $\rightarrow$2 Bg + Cg S. No Time/s Total pressure/(atm) 1.0 0.1 2.115 0.28 The rate constant of the reaction is $\times 10^{-2}$ s^{-}1(*nearestinteger*)

Q57. The maximum number of orbitals which can be identified with and is _____

Q58. In the given TLC, the distance of spot A & B are , from the bottom of TLC plate, respectively. value of is times more than . The value of is _____.

Q59. Molality of solution (density) is _____ . Round off your answer to the nearest integer.

Q60. thick coating of silver is deposited on a plate of area. The number of silver atoms deposited on plate are _____ . (At mass Ag Round off to the nearest integer.

Mathematics

Section A: Multiple Choice Questions (MCQ)

Q61. For α, β, $\gamma \neq 0$. If sin(-1) α+ sin(-1) β+ sin(-1) γ= π and α+ β+ $\gamma\alpha$-γ+ β= $3\alpha\beta$, then γ equal to

(A) $\sqrt{3}/2$

(B) 1 $\sqrt{}$ 2

(C) $\sqrt{3}$ - 1 2$\sqrt{2}$

(D) $\sqrt{3}$

Q62. Let a line pass through two distinct points and , and be parallel to the vector . If the distance of the point Q from the point is 5 , then the square of the area of is equal to :

(A) 148

(B) 136

(C) 144

(D) 140

Q63. If a= sin(-1) sin5 and b= $\cos^{-}1cos5, thena2+b2isequalto$

4π 2 + 25 8π 2 -40π+ 50 4π 2 -20π+ 50 25

Let . The number of points of local maxima of in interval is

(A) 3

(B) 4

(C) 1

(D) 2

For , the least value of , for which are three consecutive terms of an A.P., is equal to :

(A) 8

(B) 4

(C) 10

(D) 16

A variable line passes through the point and intersects the positive coordinate axes at the points and . The minimum area of the triangle , where is the origin, is :

(A) 30

(B) 25

(C) 40

(D) 35

If the line segment joining the points and subtends an angle at the origin, then the absolute value of the product of all possible values of is :

(A) 6

(B) 8

(C) 2

(D) -4

If , then equals

(A) 64

(B) 196

(C) 144

(D) 100

Let be the term of an A.P. If for some , and , then is equal to

(A) 98

(B) 126

(C) 142

(D) 112

Let , where is the constant of integration. Then is equal to :

(A) 7

(B) 4

(C) 1

(D) 3

Let and be a matrix such that . If and , then is equal to

(A) 16

(B) 2

(C) 8

(D) 10

If , then is equal to :

(A) 4

(B) 1

(C) 3

(D) 2

Let and . If is the unit vector in the direction of such that , then is equal to

(A) 11

(B) 3

(C) 9

(D) 6

If and , then is equal to:

(A) 3

(B) 0

(C) 1

(D) 2

Let e 1 be the eccentricity of the hyperbola x 2 16 - y 2 9 = 1 and e 2 be the eccentricity of the ellipse x 2 a 2 + y 2 b 2 = 1, a > b , which passes through the foci of the hyperbola. If e 1 e 2 = 1 , then the length of the chord of the ellipse parallel to the x -axis and passing through (0, 2) is :

(A) $4\sqrt{5}$

(B) $8\sqrt{5}/3$

(C) $10\sqrt{5}/3$

(D) $3\sqrt{5}$

Let α and β be the roots of the equation $px\ 2 + qx\text{-}r = 0$, where $p \neq 0$. If p, q and r be the consecutive terms of a non-constant G.P and $1\ \alpha + 1\ \beta = 3/4$, then the value of $\alpha\text{-}\beta\ 2$ is:

(A) 80/9

(B) 9

(C) 20/3

(D) 8

The least value of n for which the number of integral terms in the Binomial expansion of is 183, is :

(A) 2184

(B) 2196

(C) 2148

(D) 2172 2025 (29 Jan Shift 1)

If the set has elements and , where , then the value of is

(A) 12

(B) 4

(C) 8

(D) 5

Let for some function and . Then is equal to

(A) 1

(B) 3

(C) 6

(D) 2

Let be such that and . Then is equal to:

(A) 73

(B) 62

(C) 51

(D) 54

Section B: Integer Type Questions

Q81. Let the first term of a series be and its term , . If the sum of the first terms of this series is , then is equal to_ _ _ _ _ _

Q82. Let be an Arithmetic Progression such that . Then is equal to _ _ _ _ _ _ _

Q83. Let denote the largest integer less than or equal to . If , where , then is equal to_ _ _ _ _ _ _

Q84. If and are the roots of the quadratic equation , then is equal to_ _ _ _ _ _ _ _ _ _ _

Q85. Let be a differentiable function such that . Then is equal to _ _ _ _ _ _.

Q86. If the sum of squares of all real values of α , for which the lines 2 x - y + 3 = 0, 6 x + 3 y + 1 = 0 and αx + 2 y - 2 = 0 do not form a triangle is p , then the greatest integer less than or equal to p is

Q87. For , if , then is equal to_ _ _ _ _

Q88. If , and , where , then equal to _____

Q89. Consider the circle and the parabola . If the set of all values of , for which three chords of the circle on three distinct lines passing through the point are bisected by the parabola is the interval , then is equal to _____

Q90. If , where denotes the greatest integer function, then is equal to _____.

Answer Key

Physics

Section A (MCQ):

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(3)	(2)	(4)	(4)	(3)	(1)	(4)	(4)	(2)	(3)
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
(1)	(4)	(2)	(1)	(1)	(1)	(4)	(3)	(4)	(2)

Section B (Integer):

Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
8	8	1	45	7	2	12	35	60	5

Chemistry

Section A (MCQ):

Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40
(3)	(3)	(2)	(1)	(2)	(1)	(2)	(2)	(1)	(2)
Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50
(1)	(3)	(3)	(1)	(1)	(4)	(3)	(1)	(2)	(1)

Section B (Integer):

Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60
5	8	4	8	4	2	4	15	815	11

Mathematics

Section A (MCQ):

Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70
(1)	(2)	(2)	(4)	(3)	(1)	(4)	(4)	(2)	(2)
Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80
(4)	(4)	(1)	(2)	(3)	(1)	(1)	(1)	(1)	(3)

Section B (Integer):

Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90
6	11132	23	6	19	32	47	3660	80	12