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. The refractive index of a prism with apex angle A is $cot\ A\ 2$. The angle of minimum deviation is :

(A) $\delta\ m = 180°$ - A

(B) $\delta\ m = 180°$ - $3A$

(C) $\delta\ m = 180°$ - $4A$

(D) $\delta\ m = 180°$ - $2A$

Q2. The mass number of nucleus having radius equal to half of the radius of nucleus with mass number 192 is:

(A) 24

(B) 32

(C) 40

(D) 20

Q3. A particle of charge -q and mass m moves in a circle of radius r around an infinitely long line charge of linear density $+\lambda$. Then time period will be given as: (Consider k as Coulomb's constant)

(A) $T\ 2 = 4\pi\ 2\ m\ 2k\lambda q\ r\ 3$

(B) $T = 2\pi r \sqrt{}\ m\ 2k\lambda q$

(C) $T = 1\ 2\pi r\ \sqrt{}\ m\ 2k\lambda q$

(D) $T = 1\ 2\pi\ \sqrt{}\ 2k\lambda q\ m$

Q4. By what percentage will the illumination of the lamp decrease if the current drops by 20% ?

(A) 46%

(B) 26%

(C) 36%

(D) 56%

Q5. A heavy iron bar of weight 12 kg is having its one end on the ground and the other on the shoulder of a man. The rod makes an angle 60° with the horizontal, the normal force applied by the man on bar is:

(A) 6 kg - wt

(B) 12 kg - wt

(C) 3 kg - wt

(D) $6\sqrt{3}$ kg - wt

Q6. The total kinetic energy of 1 mole of oxygen at 27°C is : [Use universal gas constant (R) = 8.31 J mol -1 K -1]

(A) 6845.5 J

(B) 5942.0 J

(C) 6232.5 J

(D) 5670.5 J

Q7. An object is placed in a medium of refractive index 3 . An electromagnetic wave of intensity 6 x 10^8 W $m^{-}2 fallsnormallyontheobjectanditisabsorbedcompletely.Theradiationpressureontheobjec$ $3x10^8$ m $s^{-}1$) :

36 N m^-2 18 N m^-2 6 N m^-2 2 N m^-2

The work functions of cesium (Cs) and lithium (Li) metals are 1.9 eV and 2.5 eV , respectively. If we incident a light of wavelength 550 nm on these two metal surfaces, then photo-electric effect is possible for the case of

(A) Both Cs and Li

(B) Neither Cs nor Li

(C) Cs only

(D) Li only

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

(A) changes erratically

(B) decreases

(C) increases

(D) remains unchanged

Two point charges and , constituting an electric dipole, are placed at and in a uniform electric field of strength . The work done on the dipole in rotating it from the equilibrium through is :

(A) 18.4 mJ

(B) 14.4 mJ

(C) 12.4 mJ

(D) 16.4 mJ

A proton moving with a constant velocity passes through a region of space without any change in its velocity. If and represent the electric and magnetic fields respectively, then the region of space may have : (A) ; (B) ; (C) ; (D) Choose the most appropriate answer from the options given below :

(A) (A), (B) and (C) only

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

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

(D) (B), (C) and (D) only

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

The measured value of the length of a simple pendulum is 20 cm with 2 mm accuracy. The time for 50 oscillations was measured to be 40 seconds with 1 second resolution. From these measurements, the accuracy in the measurement of acceleration due to gravity is $N\%$. The value of N is:

(A) 4

(B) 8

(C) 6

(D) 5

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)

A galvanometer having a coil of resistance need 20 mA of current for full-scale deflection. If a maximum current of 3 A is to be measured using this galvanometer, the resistance of the shunt to be added to the galvanometer should be , where is Options

(A) 596

(B) 149

(C) 298

(D) 447

Two identical capacitors have same capacitance C . One of them is charged to the potential V and other to the potential $2V$. The negative ends of both are connected together. When the positive ends are also joined together, the decrease in energy of the combined system is :

(A) 1 4 CV 2

(B) 2CV 2

(C) 1 2 CV 2

(D) 3 4 CV 2

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

Given below are two statements: Statement I: Most of the mass of the atom and all its positive charge are concentrated in a tiny nucleus and the electrons revolve around it, is Rutherford's model. Statement II: An atom is a spherical cloud of positive charges with electrons embedded in it, is a special case of Rutherford's model. In the light of the above statements, choose the most appropriate from the options given below.

(A) Both statement I and statement II are false

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

(C) Statement I is true but statement II is false

(D) Both statement I and statement II are true

The number of spectral lines emitted by atomic hydrogen that is in the energy level, is

(A) 3

(B) 1

(C) 6

(D) 0

Correct Bernoulli's equation is (symbols have their usual meaning) :

(A) constant

(B) constant

(C) constant

(D) constant

Section B: Integer Type Questions

Q21. A simple pendulum is placed at a place where its distance from the earth's surface is equal to the radius of the earth. If the length of the string is 4 m , then the time period of small oscillations will be π 2 m s^{-}2] $_{s.[takeg=}$

Q22. Two planets, and are orbiting a common star in circular orbits of radii and , respectively, with . The planet is times more massive than planet . The ratio of angular momentum of planet to that of planet is closest to integer _____.

Q23. 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 _____ .

Q24. An electron with kinetic energy enters a region of uniform magnetic field of 3 perpendicular to its direction. An electric field is applied perpendicular to the direction of velocity and magnetic field. The value of , so that electron moves along the same path, is _____ . Given, mass of electron , electric charge

Q25. A nucleus has mass number A 1 and volume V 1 . Another nucleus has mass number A 2 and volume V 2 . If relation between mass number is A 2 = 4A 1 , then V 2 V 1 =

Q26. A solid circular disc of mass 50 kg rolls along a horizontal floor so that its center of mass has a speed of 0.4 m s^-1 . The absolute value of work done on the disc to stop it is _____ J .

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

Q28. A regular polygon of 6 sides is formed by bending a wire of length 4 π meter. If an electric current of 4$\pi\sqrt{}$3 A is flowing through the sides of the polygon, the magnetic field at the centre of the polygon would be $x\times$ 10^{-7} T . The value of x is

Q29. The moment of inertia of a solid disc rotating along its diameter is 2.5 times higher than the moment of inertia of a ring rotating in similar way. The moment of inertia of a solid sphere which has same radius as the disc and rotating in similar way, is times higher than the moment of inertia of the given ring. Here, n = $_{Consider all the bodies have equal masses.}$

Q30. A closed organ pipe 150 cm long gives 7 beats per second with an open organ pipe of length 350 cm , both vibrating in fundamental mode. The velocity of sound is _ _ _ _ _ _ m s^-1 .

Chemistry

Section A: Multiple Choice Questions (MCQ)

Q31. gas will be evolved as a product of electrolysis of : (A) an aqueous solution of using silver electrodes. (B) an aqueous solution of using platinum electrodes. (C) a dilute solution of using platinum electrodes. (D) a high concentration solution of using platinum electrodes. Choose the correct answer from the options given below :

(A) (A) and (C) only

(B) (B) and (C) only

(C) (A) and (D) only

(D) (B) and (D) only

Q32. The product (C) in the below mentioned reaction is: CH 3 - CH 2 - CH 2 - Br KOH alc $\rightarrow$ A HBr $\rightarrow$ B $\rightarrow$ KOH aq C

(A) Propan-1-ol

(B) Propene

(C) Propyne

(D) Propan-2-ol

Q33. Identify correct statements : (A) Primary amines do not give diazonium salts when treated with in acidic condition. (B) Aliphatic and aromatic primary amines on heating with and ethanolic KOH form 2025 (28 Jan Shift 2)

(A) (A) and (B) only

(B) (D) and (E) only

(C) (B) and (D) only

(D) (B) and (C) only

Q34. An amount of ice of mass and temperature is transformed to vapour of temperature by applying heat. The total amount of work required for this conversion is, (Take, specific heat of ice , specific heat of water , specific heat of steam , Latent heat of ice and Latent heat of steam)

(A) 3043 J

(B) 3024 J

(C) 3003 J

(D) 3022 J

Q35. The correct statements from the following are : (A) The decreasing order of atomic radii of group 13 elements is In . (B) Down the group 13 electronegativity decreases from top to bottom. (C) dissolves in dil. and liberates but conc. renders passive by forming a protective oxide layer

(A) (A), (C) and (E) only

(B) (A) and (C) only

(C) (C) and (E) only

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

Q36. Combustion of glucose produces and water. The amount of oxygen (in g) required for the complete combustion of of glucose is : [Molar mass of glucose in]

(A) 480

(B) 800

(C) 960

(D) 32

Q37. Number of and bonds present in ethylene molecule is respectively :

(A) 4 and 1

(B) 5 and 2

(C) 3 and 1

(D) 5 and 1

Q38. The number of moles of methane required to produce after complete combustion is : (Given molar mass of methane in)

(A) 0.35

(B) 0.5

(C) 0.75

(D) 0.25

Q39. Given below are two statements: Statement (I) : SiO 2 and GeO 2 are acidic while SnO and PbO are amphoteric in nature. Statement (II) : Allotropic forms of carbon are due to property of catenation and pπ - dπ bond formation. In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Both Statement I and Statement II are false

(B) Both Statement I and Statement II are true

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

(D) Statement I is true but Statement II is true

Q40. The incorrect statement about Glucose is :

(A) Glucose is soluble in water because of having aldehyde functional group

(B) Glucose remains in multiple isomeric form in its aqueous solution

(C) Glucose is one of the monomer unit in sucrose

(D) Glucose is an aldohexose

Q41. The functional group that shows negative resonance effect is:

(A) -NH 2

(B) -OH

(C) -COOH

(D) -OR

Q42. 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 $\times$ log $P\ i$ 2$P\ i$ - P t

(B) k= 2.303 t $\times$ log 2$P\ i$ 2$P\ i$ - P t

(C) k= 2.303 t $\times$ log 2$P\ i$ - P t $P\ i$

(D) k= 2.303 t $\times$ $P\ i$ 2$P\ i$ - P t

Q43. Methods used for purification of organic compounds are based on :

(A) nature of compound and presence of impurity.

(B) neither on nature of compound nor on the impurity present.

(C) nature of compound only.

(D) presence of impurity only.

Q44. Which of the following gives a positive test with ninhydrin?

(A) Starch

(B) Egg albumin

(C) Polyvinyl chloride

(D) Cellulose

Q45. Match List - I with List - II. Choose the correct answer from the options given below :

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

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

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

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

Q46. The maximum covalency of a non-metallic group 15 element ' E ' with weakest bond is :

(A) 4

(B) 6

(C) 3

(D) 5

Q47. 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

Q48. IUPAC name of following compound is

(A) 2 - Aminopentanenitrile

(B) 2 - Aminobutanenitrile

(C) 3 - Aminobutanenitrile

(D) 3 - Aminopropanenitrile

Q49. Ice and water are placed in a closed container at a pressure of 1 atm and temperature 273.15 K . If pressure of the system is increased 2 times, keeping temperature constant, then identify correct observation from following

(A) Volume of system increases .

(B) The solid phase (ice) disappears completely.

(C) Liquid phase disappears completely.

(D) The amount of ice decreases.

Q50. The number of element from the following that do not belong to lanthanoids is and

(A) 3

(B) 4

(C) 1

(D) 5

Section B: Integer Type Questions

Q51. 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.

Q52. The heat of combustion of solid benzoic acid at constant volume is at . The heat of combustion at constant pressure is , the value of is _____.

Q53. Vanillin compound obtained from vanilla beans, has total sum of oxygen atoms and electrons is _____

Q54. Time required for completion of 99.9% of first order reaction is _____ times of half life (t 1 / 2) of the reaction

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 total number of species from the following in which one unpaired electron is present, is _____

Q57. Number of isomeric products formed by monochlorination of 2 -methylbutane in presence of sunlight is _____.

Q58. In the reaction of potassium dichromate, potassium chloride and sulfuric acid (conc.), the oxidation state of the chromium in the product is + _____.

Q59. In the Claisen-Schmidt reaction to prepare, dibenzalacetone from 5.3 g of benzaldehyde, a total of 3.51 g of product was obtained. The percentage yield in this reaction was _____ %.

Q60. A star has helium composition. It starts to convert three into one via triple alpha process as . The mass of the star is and it generates energy at the rate of . The rate of converting these to is , where is _____ [Take, mass of , mass of]

Mathematics

Section A: Multiple Choice Questions (MCQ)

Q61. Let a be the sum of all coefficients in the expansion of (1 - $2x$+ $2x$ 2) 2023 (3 - $4x$ 2 + $2x$ 3) 2024 and b= lim x→0 $\int$ 0 x log1 + t t 2024 + 1 dt x 2 . If the equations cx 2 + dx+ e= 0 and 2bx 2 + ax+ 4 = 0 have a common root, where c, d, eR , then d : c : e equals

(A) 2 : 1 : 4

(B) 4 : 1 : 4

(C) 1 : 2 : 4

(D) 1 : 1 : 4

Q62. Consider 10 observation x 1 , x 2 , . .. x 10 , such that $\sum$ i= 1 10 x i -α= 2 and $\sum$ i= 1 10 x i -β 2 = 40 , where α, β are positive integers. Let the mean and the variance of the observations be 6 5 and 84 25 respectively. The β α is equal to:

(A) 2

(B) 3/2

(C) 5/2

(D) 1

Q63. Let L 1 : → r= i−j+2k+λ i−j+2k,λR , L 2 : → r= j−k+μ3 i+j+pk,μR and L 3 : → r= δ(l i+mj+nk),δR be three lines such that L 1 is perpendicular to L 2 and L 3 is perpendicular to both L 1 and L 2 . Then the point which lies on L 3 is

(A) (- 1, 7, 4)

(B) (- 1, - 7, 4)

(C) (1, 7, - 4)

(D) (1, - 7, 4)

Q64. If and , then is equal to:

(A) 3

(B) 0

(C) 1

(D) 2

Q65. If the variance of the frequency distribution is 160, then the value of is

(A) 7

(B) 8

(C) 5

(D) 6

Q66. If the set has elements and , where , then the value of is

(A) 12

(B) 4

(C) 8

(D) 5

Q67. Let be a real valued function. If and are respectively the minimum and the maximum values of , then is equal to

(A) 42

(B) 38

(C) 24

(D) 44

Q68. If the value of is , where are natural numbers and , then is equal to :

(A) 40

(B) 52

(C) 50

(D) 54

Q69. 60 words can be made using all the letters of the word BHBJO, with or without meaning. If these words are written as in a dictionary, then the word is :

(A) JBBOH

(B) OBBJH

(C) OBBHJ

(D) HBBJO

Q70. The area of the region enclosed by the parabola y= 4x-x 2 and 3y= x-4 2 is equal to

(A) 32/9

(B) 4

(C) 6

(D) 14/3

Q71. Let be the term of an A.P. If for some , and , then is equal to

(A) 98

(B) 126

(C) 142

(D) 112

Q72. Let , where is the constant of integration. Then is equal to :

(A) 7

(B) 4

(C) 1

(D) 3

Q73. Suppose that the number of terms in an A.P. is . If the sum of all odd terms of the A.P. is 40 , the sum of all even terms is 55 and the last term of the A.P. exceeds the first term by 27, then k is equal to :

(A) 6

(B) 5

(C) 8

(D) 4

Q74. Let and . Then is equal to :

(A) 1

(B) 6

(C) 4

(D) 2

Q75. Let be the image of the point in the line . Then is equal to :

(A) 16

(B) 20

(C) 14

(D) 18

Q76. lim $x \to 0$ e 2sin$x$ - 2sin$x$- 1 x 2

(A) is equal to -1

(B) does not exist

(C) is equal to 1

(D) is equal to 2

Q77. The function

(A) decreases in and increases in

(B) decreases in

(C) decreases in and increases in

(D) increases in

Q78. Let for some function and . Then is equal to

(A) 1

(B) 3

(C) 6

(D) 2

Q79. If , where , then is equal to

(A) 108

(B) 109

(C) 18

(D) 19

Q80. The values of α , for which 1 3 2 α+ 3 2 1 1 3 α+ 1 3 2α+ 3 3α+ 1 0 = 0 , lie in the interval

(A) (- 2, 1)

(B) (- 3, 0)

(C) - 3/2 , 3/2

(D) (0, 3)

Section B: Integer Type Questions

Q81. If the area of the region (x, y) : 0 ≤y ≤min2 x, 6 x - x 2 is A , then 12 A is equal to

Q82. Let f: → be a function defined by fx= 4 x 4 x + 2 and M= $f1$ -a $\int$ fa $x$sin 4 $x1$ -xdx , N= $f1$ -a $\int$ fa sin(4) $x1$ -xdx; $a\neq$ 1 2 . If αM= βN, α, β , then the least value of α 2 + β 2 is equal to

Q83. An arithmetic progression is written in the following way The sum of all the terms of the row is_____

Q84. Let the positive integers be written in the form : If the row contains exactly numbers for every natural number , then the row in which the number 5310 will be, is _____

Q85. Let 3, 7, 11, 15, . . , 403 and 2, 5, 8, 11, . . . , 404 be two arithmetic progressions. Then the sum, of the common terms in them, is equal to_____

Q86. If the function is differentiable on , then is equal to _____.

Q87. If and are the roots of the quadratic equation , then is equal to_____

Q88. Let denote the largest integer less than or equal to . If , where , then is equal to_____

Q89. If , then is equal to _____

Q90. Let , where . Then is equal to _____.

Answer Key

Physics

Section A (MCQ):

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

Section B (Integer):

Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
8	8	2	4	4	6	12	72	4	294

Chemistry

Section A (MCQ):

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

Section B (Integer):

Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60
11	150	11	10	4	4	6	6	60	15

Mathematics

Section A (MCQ):

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

Section B (Integer):

Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90
304	5	1505	103	6699	15	6	23	64	2