JEE Main

Sample Question Paper - 2026

Country: IN | Duration: 3 hours | Max Marks: 300 | Language: Hindi

Negative Marking: Yes (-1) | Total Questions: 75 | QuizVerse AI Tutor

General Instructions:

1. This paper contains 75 questions across 3 section(s): Physics, Chemistry, Mathematics.
2. Duration: 3 hours. Maximum marks: 300.
3. Negative marking: Yes (-1).
4. Read each question carefully before answering.

Section 1: Physics (25 Questions)

Q1. A radioactive substance has half-life 14 days. The fraction remaining after 54 days is:

(A) 1/4
(B) 1/16
(C) 1/8
(D) 1/4

Q2. A car of mass 1565 kg moving at 25 m/s brakes to rest in 7 s. The braking force is:

(A) 15156 N
(B) 6477 N
(C) 6209 N
(D) 17916 N

Q3. A wire of resistance 19 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 8 ohm
(B) 2 ohm
(C) 8 ohm
(D) 6 ohm

Q4. A solenoid of 145 turns and length 0.1 m carries current 4 A. The magnetic field inside is:

(A) 17.15 mT
(B) 16.56 mT
(C) 1.19 mT
(D) 9.69 mT

Q5. The escape velocity from a planet of mass 4 x 10^24 kg and radius 7718 km is:

(A) 9.0 km/s
(B) 8.9 km/s
(C) 13.2 km/s
(D) 14.0 km/s

Q6. A ball is dropped from height 90 m. Its velocity just before hitting the ground is:

(A) 28.3 m/s

(B) 35.0 m/s

(C) 35.8 m/s

(D) 32.6 m/s

Q7. A solenoid of 268 turns and length 0.2 m carries current 10 A. The magnetic field inside is:

(A) 17.10 mT

(B) 13.54 mT

(C) 2.75 mT

(D) 15.17 mT

Q8. A wire of resistance 11 ohm is bent into a circle. Effective resistance between diametrically opposite points is:

(A) 2 ohm

(B) 4 ohm

(C) 7 ohm

(D) 3 ohm

Q9. A Carnot engine operates between 765 K and 254 K. Its efficiency is:

(A) 30%

(B) 52%

(C) 58%

(D) 65%

Q10. A body of mass 4 kg is moving in a circle of radius 8 m at 19 m/s. The centripetal force is:

(A) 124 N

(B) 65 N

(C) 176 N

(D) 146 N

Q11. A Carnot engine operates between 781 K and 324 K. Its efficiency is:

(A) 51%

(B) 54%

(C) 60%

(D) 28%

Q12. The focal length of a concave mirror is 17 cm. An object at 30 cm forms image at:

(A) 43 cm, real inverted

(B) 32 cm, real inverted

(C) 17 cm, real inverted

(D) 23 cm, real inverted

Q13. The focal length of a concave mirror is 21 cm. An object at 25 cm forms image at:

(A) 47 cm, real inverted

(B) 34 cm, real inverted

(C) 15 cm, real inverted

(D) 53 cm, real inverted

Q14. Two masses 7 kg and 11 kg are connected by a string over a frictionless pulley. The acceleration of the system is:

(A) 5.61 m/s^2

(B) 2.57 m/s^2

(C) 3.18 m/s^2

(D) 3.15 m/s^2

Q15. An ideal gas at 295 K is heated at constant pressure to 678 K. The ratio of final to initial volume is:

(A) 2.4

(B) 2.3

(C) 1.5

(D) 1.5

Q16. The binding energy per nucleon of Fe-56 is approximately:

(A) 8.8 MeV

(B) 9.2 MeV

(C) 7.6 MeV

(D) 6.5 MeV

Q17. A force of 64 N acts on a 17 kg body initially at rest. The velocity after 4 s is:

(A) 49 m/s

(B) 7 m/s

(C) 37 m/s

(D) 26 m/s

Q18. A convex lens of focal length 18 cm forms a real image of an object placed 46 cm away. The image distance is:

(A) 34 cm

(B) 19 cm

(C) 35 cm

(D) 25 cm

Q19. A spring with k = 494 N/m is compressed by 0.17 m. The stored PE is:

(A) 16.40 J

(B) 20.63 J

(C) 18.25 J

(D) 22.76 J

Q20. The de Broglie wavelength of an electron accelerated through 50 V is approximately:

(A) 2.95 Angstrom

(B) 2.48 Angstrom

(C) 2.67 Angstrom

(D) 1.06 Angstrom

Q21. An electron moves with velocity 1x10^6 m/s perpendicular to a magnetic field of 0.3 T. The radius of its path is:

(A) 1.71 cm

(B) 0.95 cm

(C) 2.09 cm

(D) 0.80 cm

Q22. The de Broglie wavelength of an electron accelerated through 50 V is approximately:

(A) 1.17 Angstrom

(B) 1.32 Angstrom

(C) 1.07 Angstrom

(D) 2.55 Angstrom

Q23. A block of mass 6 kg slides down a frictionless incline of angle 37 degrees. The acceleration is:

(A) 4.1 m/s^2

(B) 6.6 m/s^2

(C) 6.8 m/s^2

(D) 5.2 m/s^2

Q24. A Carnot engine operates between 765 K and 266 K. Its efficiency is:

(A) 52%

(B) 35%

(C) 56%

(D) 25%

Q25. The work function of a metal is 1.6 eV. The threshold frequency is:

(A) 10.62 x 10^14 Hz

(B) 3.11 x 10^14 Hz

(C) 9.14 x 10^14 Hz

(D) 11.96 x 10^14 Hz

Section 2: Chemistry (25 Questions)

Q26. According to Raoult's law, the vapour pressure of a solvent in solution is:

(A) p = RT/V

(B) p = p0 / x_solvent

(C) p = p0 * x_solvent

(D) p = p0 * x_solute

Q27. The equilibrium constant Kp and Kc are related by:

(A) Kp = Kc(RT)^delta_n

(B) Kp = Kc

(C) Kp = Kc/RT

(D) Kp = RT*Kc

Q28. The coordination number in BCC is:

(A) 8

(B) 6

(C) 4

(D) 12

Q29. Grignard reagents react with dry CO2 to give:

(A) Esters

(B) Carboxylic acids

(C) Ketones

(D) Alcohols

Q30. Which of the following has the highest lattice energy?

(A) NaF

(B) NaI

(C) NaCl

(D) NaBr

Q31. The reagent for converting aldehyde to carboxylic acid is:

(A) Zn-Hg / HCl

(B) KMnO4 / K2Cr2O7

(C) LiAlH4

(D) NaBH4

Q32. Which metal is extracted by thermite process?

(A) Chromium

(B) Aluminium

(C) Iron

(D) Sodium

Q33. The van't Hoff factor for NaCl is approximately:

(A) 2

(B) 3

(C) 0.5

(D) 1

Q34. According to Raoult's law, the vapour pressure of a solvent in solution is:

(A) p = p0 * x_solvent

(B) p = RT/V

(C) p = p0 / x_solvent

(D) p = p0 * x_solute

Q35. Kolbe's electrolysis of sodium acetate gives:

(A) Methane

(B) Butane

(C) Ethane

(D) Propane

Q36. The IUPAC name of CH3CH(OH)CH3 is:

(A) Propan-1-ol

(B) Isopropyl ether

(C) Propan-2-ol

(D) 2-Methylethanol

Q37. The hybridization of C in acetylene is:

(A) sp

(B) sp3

(C) sp3d

(D) sp2

Q38. Lanthanide contraction is caused by:

(A) High ionization energy

(B) Electron capture

(C) Nuclear fusion

(D) Poor shielding by 4f electrons

Q39. The cell potential for Zn|Zn2+||Cu2+|Cu cell is:

(A) -0.76 V

(B) 1.10 V

(C) 0.34 V

(D) 0.76 V

Q40. For an endothermic reaction, increasing temperature:

(A) Decreases equilibrium constant

(B) Increases equilibrium constant

(C) Decreases rate

(D) No effect

Q41. The ore of aluminium is:

(A) Bauxite

(B) Chalcopyrite

(C) Galena

(D) Haematite

Q42. Hess's law states that:

(A) Enthalpy change is path independent

(B) Volume is constant

(C) Entropy always increases

(D) Rate depends on concentration

Q43. For an ideal gas, Cp - Cv equals:

(A) 0

(B) 2R

(C) R (8.314 J/mol K)

(D) R/2

Q44. The IUPAC name of neopentane is:

(A) 2,2-Dimethylpropane

(B) Cyclopentane

(C) 2-Methylbutane

(D) Pentane

Q45. The entropy change for an irreversible process is:

(A) Greater than q_rev/T

(B) Negative always

(C) Equal to q/T

(D) Zero

Q46. Markovnikov's rule applies to the addition of HBr to:

(A) Benzene

(B) Propene

(C) Ethene

(D) Methane

Q47. The order of ionic radius: Na+ vs Mg2+ vs Al3+ is:

(A) Na+ > Mg2+ > Al3+

(B) Mg2+ > Na+ > Al3+

(C) All equal

(D) Al3+ > Mg2+ > Na+

Q48. Wurtz reaction involves coupling of:

(A) Aldehydes with NaOH

(B) Alkyl halides with Na

(C) Aryl halides with Cu

(D) Acids with SOCl2

Q49. For a first-order reaction with k = 0.074 s^-1, the half-life is:

(A) 20.0 s

(B) 15.0 s

(C) 13.9 s

(D) 10.0 s

Q50. The rate of reaction doubles when temperature increases by:

(A) 5 K

(B) 50 K

(C) 10 K

(D) 20 K

Section 3: Mathematics (25 Questions)

Q51. The derivative of x^3 sin(x) at x = pi is:

(A) -18.89

(B) -6.35

(C) 15.80

(D) -10.50

Q52. The number of ways to arrange 7 distinct objects in a circle is:

(A) 4480

(B) 1166

(C) 3909

(D) 570

Q53. The rank of the matrix [[1,2,3],[4,5,6],[8,10,11]] is:

(A) 0

(B) 2

(C) 3

(D) 1

Q54. The derivative of x^2 sin(x) at x = pi is:

(A) -10.70

(B) 5.37

(C) 16.30

(D) 11.37

Q55. The area under y = x^4 from x = 0 to x = 5 is:

(A) 24.4

(B) 135.5

(C) 132.3

(D) 15.9

Q56. The probability of getting exactly 4 heads in 5 tosses of a fair coin is:

(A) 36/64

(B) 43/32

(C) 14/32

(D) 20/256

Q57. The eccentricity of the ellipse x^2/4 + y^2/6 = 1 is:

(A) 0.69

(B) 0.55

(C) 0.59

(D) 0.38

Q58. lim(x->0) sin(2x)/x =

(A) 6

(B) 1

(C) 5

(D) 5

Q59. Integral of (x^1 + 6) dx from 0 to 5 equals:

(A) 75

(B) 65

(C) 81

(D) 63

Q60. The derivative of x^6 sin(x) at x = pi is:

(A) -18.08

(B) 18.32

(C) -17.63

(D) -1.45

Q61. The area under y = x^2 from x = 0 to x = 4 is:

(A) 164.8

(B) 155.7

(C) 46.0

(D) 73.5

Q62. The eccentricity of the ellipse x^2/19 + y^2/2 = 1 is:

(A) 0.34

(B) 0.84

(C) 0.70

(D) 0.58

Q63. The distance between parallel lines 4x + 3y = 2 and 3x + 2y = 16 is:

(A) 3.17

(B) 2.95

(C) 4.36

(D) 4.33

Q64. The eccentricity of the ellipse x^2/8 + y^2/7 = 1 is:

(A) 0.84

(B) 0.50

(C) 0.63

(D) 0.85

Q65. lim(x->0) sin(5x)/x =

(A) 6

(B) 3

(C) 1

(D) 3

Q66. Integral of (x^4 + 8) dx from 0 to 2 equals:

(A) 97

(B) 48

(C) 59

(D) 18

Q67. The mean of a binomial distribution with n = 41 and p = 0.6 is:

(A) 25.0

(B) 15.7

(C) 25.1

(D) 3.9

Q68. The probability of getting exactly 2 heads in 7 tosses of a fair coin is:

(A) 29/128

(B) 37/128

(C) 7/64

(D) 23/64

Q69. lim(x->0) sin(6x)/x =

(A) 2

(B) 2

(C) 7

(D) 5

Q70. The derivative of x^5 sin(x) at x = pi is:

(A) -17.43

(B) -0.65

(C) 17.80

(D) 11.55

Q71. Integral of (x^3 + 1) dx from 0 to 1 equals:

(A) 33

(B) 8

(C) 99

(D) 23

Q72. The sum of first 40 terms of AP with a = 5, d = 1 is:

(A) 3093

(B) 3946

(C) 3958

(D) 4410

Q73. The sum of first 22 terms of AP with a = 1, d = 1 is:

(A) 218

(B) 1919

(C) 4913

(D) 4744

Q74. The equation of tangent to y = x^2 at x = 1 is:

(A) y = 8x - 2

(B) y = 3x - 7

(C) y = 8x - 17

(D) y = 8x - 3

Q75. The equation of tangent to y = x^3 at x = 2 is:

(A) y = 11x - 16

(B) y = 9x - 12

(C) y = 3x - 9

(D) y = 2x - 2

Answer Key

Q1: (C)	Q2: (D)	Q3: (A)	Q4: (A)	Q5: (C)
Q6: (B)	Q7: (C)	Q8: (A)	Q9: (B)	Q10: (D)
Q11: (D)	Q12: (A)	Q13: (A)	Q14: (C)	Q15: (C)
Q16: (A)	Q17: (D)	Q18: (D)	Q19: (A)	Q20: (D)
Q21: (D)	Q22: (C)	Q23: (D)	Q24: (D)	Q25: (D)
Q26: (C)	Q27: (A)	Q28: (A)	Q29: (B)	Q30: (A)
Q31: (B)	Q32: (A)	Q33: (A)	Q34: (A)	Q35: (C)
Q36: (C)	Q37: (A)	Q38: (D)	Q39: (B)	Q40: (B)
Q41: (A)	Q42: (A)	Q43: (C)	Q44: (A)	Q45: (A)
Q46: (B)	Q47: (A)	Q48: (B)	Q49: (C)	Q50: (C)
Q51: (D)	Q52: (B)	Q53: (B)	Q54: (D)	Q55: (D)
Q56: (D)	Q57: (B)	Q58: (A)	Q59: (B)	Q60: (B)
Q61: (A)	Q62: (C)	Q63: (C)	Q64: (B)	Q65: (C)
Q66: (A)	Q67: (C)	Q68: (D)	Q69: (A)	Q70: (B)
Q71: (C)	Q72: (B)	Q73: (C)	Q74: (A)	Q75: (B)