

# JEE Advanced

## Sample Question Paper - 2026

Country: IN | Duration: 3 hours/paper | Max Marks: 180 | Language: Hindi

Negative Marking: Yes (-1 or -2) | Total Questions: 54 | QuizVerse AI Tutor

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### General Instructions:

1. This paper contains 54 questions across 3 section(s): Physics, Chemistry, Mathematics.
2. Duration: 3 hours/paper. Maximum marks: 180.
3. Negative marking: Yes (-1 or -2).
4. Read each question carefully before answering.

### Section 1: Physics (18 Questions)

**Q1. 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) 1.5
- (C) 2.3
- (D) 1.5

**Q2. A radioactive substance has half-life 20 days. The fraction remaining after 14 days is:**

- (A)  $1/4$
- (B)  $1/16$
- (C)  $1/32$
- (D)  $1/16$

**Q3. A car of mass 1565 kg moving at 25 m/s brakes to rest in 7 s. The braking force is:**

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

**Q4. A Carnot engine operates between 765 K and 254 K. Its efficiency is:**

- (A) 58%
- (B) 30%
- (C) 52%
- (D) 65%

**Q5. Two capacitors 9  $\mu\text{F}$  and 9  $\mu\text{F}$  are connected in series. The equivalent capacitance is:**

- (A) 1.37  $\mu\text{F}$
- (B) 4.96  $\mu\text{F}$
- (C) 3.34  $\mu\text{F}$
- (D) 4.38  $\mu\text{F}$

**Q6. The work function of a metal is 1.6 eV. The threshold frequency is:**

- (A)  $11.96 \times 10^{14}$  Hz
- (B)  $3.11 \times 10^{14}$  Hz
- (C)  $10.62 \times 10^{14}$  Hz
- (D)  $9.14 \times 10^{14}$  Hz

**Q7. Two masses 7 kg and 11 kg are connected by a string over a frictionless pulley. The acceleration of the system is:**

- (A)  $3.18 \text{ m/s}^2$
- (B)  $5.61 \text{ m/s}^2$
- (C)  $2.57 \text{ m/s}^2$
- (D)  $3.15 \text{ m/s}^2$

**Q8. An ideal gas at 292 K is heated at constant pressure to 489 K. The ratio of final to initial volume is:**

- (A) 2.3
- (B) 2.1
- (C) 2.1
- (D) 2.7

**Q9. In photoelectric effect, the stopping potential for light of wavelength 252 nm on a metal with work function 3.7 eV is:**

- (A) 2.45 V
- (B) 1.49 V
- (C) 3.59 V
- (D) 3.34 V

**Q10. A convex lens of focal length 16 cm forms a real image of an object placed 22 cm away. The image distance is:**

- (A) 45 cm
- (B) 51 cm
- (C) 15 cm
- (D) 25 cm

**Q11. An electron moves with velocity  $1 \times 10^6$  m/s perpendicular to a magnetic field of 0.2 T. The radius of its path is:**

- (A) 1.26 cm
- (B) 1.26 cm
- (C) 3.91 cm
- (D) 1.43 cm

**Q12. A projectile is launched at 45 degrees with initial velocity 36 m/s. The time of flight is approximately:**

- (A) 2.4 s
- (B) 4.3 s
- (C) 1.6 s
- (D) 2.5 s

**Q13. A spring with  $k = 494 \text{ N/m}$  is compressed by  $0.17 \text{ m}$ . The stored PE is:**

- (A) 22.76 J
- (B) 16.40 J
- (C) 20.63 J
- (D) 18.25 J

**Q14. The current through a  $26 \text{ ohm}$  resistor connected to a  $15 \text{ V}$  battery is:**

- (A) 1.89 A
- (B) 2.83 A
- (C) 2.36 A
- (D) 0.50 A

**Q15. The electric field at  $3 \text{ m}$  from a point charge of  $6 \text{ uC}$  is:**

- (A) 7047 N/C
- (B) 1784 N/C
- (C) 8811 N/C
- (D) 672 N/C

**Q16. A radioactive substance has half-life  $14 \text{ days}$ . The fraction remaining after  $54 \text{ days}$  is:**

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

**Q17. A car of mass  $1593 \text{ kg}$  moving at  $44 \text{ m/s}$  brakes to rest in  $9 \text{ s}$ . The braking force is:**

- (A) 3916 N
- (B) 15289 N
- (C) 4174 N
- (D) 16867 N

**Q18. The de Broglie wavelength of an electron accelerated through  $50 \text{ V}$  is approximately:**

- (A) 1.20 Angstrom
- (B) 2.64 Angstrom
- (C) 1.53 Angstrom
- (D) 2.14 Angstrom

## Section 2: Chemistry (18 Questions)

**Q19. The IUPAC name of neopentane is:**

- (A) Pentane
- (B) Cyclopentane
- (C) 2-Methylbutane
- (D) 2,2-Dimethylpropane

**Q20. According to Raoult's law, the vapour pressure of a solvent in solution is:**

- (A)  $p = RT/V$
- (B)  $p = p_0 * x_{\text{solute}}$
- (C)  $p = p_0 / x_{\text{solvent}}$
- (D)  $p = p_0 * x_{\text{solvent}}$

**Q21. The rate of reaction doubles when temperature increases by:**

- (A) 5 K
- (B) 50 K
- (C) 10 K
- (D) 20 K

**Q22. The molar conductivity at infinite dilution can be obtained by:**

- (A) Ohm's law
- (B) Faraday's law
- (C) Kohlrausch's law
- (D) Hess's law

**Q23. Which reagent is used for Baeyer-Villiger oxidation?**

- (A)  $\text{KMnO}_4$
- (B) mCPBA / peracid
- (C)  $\text{NaBH}_4$
- (D)  $\text{LiAlH}_4$

**Q24. The ore of aluminium is:**

- (A) Chalcopyrite
- (B) Galena
- (C) Bauxite
- (D) Haematite

**Q25. The pH of a 0.01 M HCl solution is:**

- (A) 3
- (B) 4
- (C) 2
- (D) 1

**Q26. The coordination number in BCC is:**

- (A) 8
- (B) 12
- (C) 4
- (D) 6

**Q27. Which element has the highest electronegativity?**

- (A) Fluorine
- (B) Nitrogen
- (C) Oxygen
- (D) Chlorine

**Q28. d-block elements show variable oxidation states because:**

- (A) Low ionization energy
- (B) Large atomic size
- (C) Filled d orbitals
- (D) Close energy of  $(n-1)d$  and  $ns$  orbitals

**Q29. The cell potential for  $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$  cell is:**

- (A) -0.76 V
- (B) 1.10 V
- (C) 0.76 V
- (D) 0.34 V

**Q30. Colligative properties depend on:**

- (A) Number of solute particles
- (B) Nature of solvent
- (C) Nature of solute
- (D) Molar mass of solute

**Q31. VSEPR theory predicts the shape of  $\text{SF}_6$  as:**

- (A) Tetrahedral
- (B) Square planar
- (C) Trigonal bipyramidal
- (D) Octahedral

**Q32. For an ideal gas,  $C_p - C_v$  equals:**

- (A) 0
- (B)  $2R$
- (C)  $R/2$
- (D)  $R$  (8.314 J/mol K)

**Q33. The magnetic moment of  $\text{Fe}^{2+}$  ( $d^6$ ) in weak field is:**

- (A) 4.9 BM (4 unpaired)
- (B) 0 BM
- (C) 2.83 BM
- (D) 5.9 BM

**Q34. Which metal is extracted by thermite process?**

- (A) Iron
- (B) Sodium
- (C) Chromium
- (D) Aluminium

**Q35. Which test distinguishes aldehydes from ketones?**

- (A) Tollens' test (silver mirror)
- (B) Beilstein test
- (C) Lucas test
- (D) Lassaigne test

**Q36. The order of ionic radius:  $\text{Na}^+$  vs  $\text{Mg}^{2+}$  vs  $\text{Al}^{3+}$  is:**

- (A)  $\text{Al}^{3+} > \text{Mg}^{2+} > \text{Na}^+$
- (B)  $\text{Na}^+ > \text{Mg}^{2+} > \text{Al}^{3+}$
- (C) All equal
- (D)  $\text{Mg}^{2+} > \text{Na}^+ > \text{Al}^{3+}$

### Section 3: Mathematics (18 Questions)

**Q37. The number of ways to arrange 3 distinct objects in a circle is:**

- (A) 621
- (B) 1188
- (C) 2236
- (D) 4624

**Q38. The derivative of  $x^6 \sin(x)$  at  $x = \pi$  is:**

- (A) -18.08
- (B) -1.45
- (C) 18.32
- (D) -17.63

**Q39. The rank of the matrix  $\begin{bmatrix} 1,2,3 \\ 4,5,6 \\ 8,10,11 \end{bmatrix}$  is:**

- (A) 2
- (B) 3
- (C) 1
- (D) 0

**Q40. The rank of the matrix  $\begin{bmatrix} 1,2,3 \\ 4,5,6 \\ 7,9,13 \end{bmatrix}$  is:**

- (A) 1
- (B) 0
- (C) 2
- (D) 3

**Q41. The area under  $y = x^3$  from  $x = 0$  to  $x = 2$  is:**

- (A) 170.4
- (B) 27.6
- (C) 73.8
- (D) 76.4

**Q42. The area under  $y = x^2$  from  $x = 0$  to  $x = 4$  is:**

- (A) 73.5
- (B) 164.8
- (C) 155.7
- (D) 46.0

**Q43. The mean of a binomial distribution with  $n = 19$  and  $p = 0.5$  is:**

- (A) 8.7
- (B) 10.8
- (C) 17.5
- (D) 24.6

**Q44. The derivative of  $x^5 \sin(x)$  at  $x = \pi$  is:**

- (A) -17.43
- (B) 17.80
- (C) 11.55
- (D) -0.65

**Q45. The mean of a binomial distribution with  $n = 41$  and  $p = 0.6$  is:**

- (A) 15.7
- (B) 25.0
- (C) 3.9
- (D) 25.1

**Q46. The probability of getting exactly 4 heads in 5 tosses of a fair coin is:**

- (A)  $20/256$
- (B)  $43/32$
- (C)  $14/32$
- (D)  $36/64$

**Q47. Integral of  $(x^1 + 6) dx$  from 0 to 5 equals:**

- (A) 63
- (B) 75
- (C) 65
- (D) 81

**Q48. The sum of first 40 terms of AP with  $a = 5$ ,  $d = 1$  is:**

- (A) 4410
- (B) 3946
- (C) 3093
- (D) 3958

**Q49. The sum of first 22 terms of AP with  $a = 1$ ,  $d = 1$  is:**

- (A) 1919
- (B) 218
- (C) 4913
- (D) 4744

**Q50. The number of ways to arrange 5 distinct objects in a circle is:**

- (A) 833
- (B) 2295
- (C) 297
- (D) 410

**Q51. The number of ways to arrange 7 distinct objects in a circle is:**

- (A) 570
- (B) 3909
- (C) 1166
- (D) 4480

**Q52. If  $\det(A) = 7$  and  $A$  is  $3 \times 3$ , then  $\det(2A) =$**

- (A) 92
- (B) 8
- (C) 34
- (D) 71

**Q53. The eccentricity of the ellipse  $x^2/4 + y^2/6 = 1$  is:**

- (A) 0.38
- (B) 0.69
- (C) 0.59
- (D) 0.55

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

- (A) 11.37
- (B) 5.37
- (C) -10.70
- (D) 16.30

## Answer Key

Q1: (B)	Q2: (C)	Q3: (C)	Q4: (C)	Q5: (D)
Q6: (A)	Q7: (A)	Q8: (D)	Q9: (B)	Q10: (C)
Q11: (A)	Q12: (A)	Q13: (B)	Q14: (C)	Q15: (D)
Q16: (C)	Q17: (C)	Q18: (C)	Q19: (D)	Q20: (D)
Q21: (C)	Q22: (C)	Q23: (B)	Q24: (C)	Q25: (A)
Q26: (A)	Q27: (A)	Q28: (D)	Q29: (B)	Q30: (A)
Q31: (D)	Q32: (D)	Q33: (A)	Q34: (C)	Q35: (A)
Q36: (B)	Q37: (A)	Q38: (C)	Q39: (A)	Q40: (C)
Q41: (B)	Q42: (B)	Q43: (A)	Q44: (D)	Q45: (D)
Q46: (A)	Q47: (C)	Q48: (B)	Q49: (C)	Q50: (B)
Q51: (C)	Q52: (B)	Q53: (D)	Q54: (A)	

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