JEE Main 2027
10 FULL-LENGTH MOCK TESTS

Based on Official Exam Pattern

Computer-Based Test | 3 Hours | 75 Questions | 300 Marks

Exam Pattern Followed
• Mode: Computer-Based Test (CBT)
• Duration: 3 hours
• Total Questions: 75 (25 Physics + 25 Chemistry + 25 Mathematics)
• Question Types: MCQs + Numerical Value Questions
• Marking: +4 correct | −1 incorrect | 0 unattempted
• Subject-wise Marks: 100 each

In this PDF: Each mock contains 20 MCQs + 5 Numerical questions per subject (total 75 questions). Answer key provided after every mock.

Practice under timed conditions • Analyse mistakes after each test

MOCK TEST 4 | 75 Questions | 300 Marks | Time: 3 Hours

Marking Scheme: +4 for correct, −1 for incorrect, 0 for unattempted

PHYSICS – Section A (MCQs) [Q1–Q20]

Q1. A car starts from rest and accelerates at 2 m/s² for 10 s. Distance covered:
(A) 100 m
(B) 50 m
(C) 200 m
(D) 20 m

Q2. SI unit of power is:
(A) Joule
(B) Watt
(C) Newton
(D) Pascal

Q3. Potential energy of spring (k, compression x) is:
(A) kx
(B) ½kx
(C) ½kx²
(D) kx²

Q4. g at height R above surface becomes:
(A) g/2
(B) g/4
(C) g
(D) g/8

Q5. Time period of simple pendulum length L:
(A) 2π√(L/g)
(B) 2π√(g/L)
(C) π√(L/g)
(D) √(L/g)

Q6. In series capacitors, equivalent C:
(A) Increases
(B) Decreases
(C) Same
(D) Zero

Q7. A plane mirror forms:
(A) Real inverted
(B) Virtual erect
(C) Real erect
(D) Virtual inverted

Q8. Speed of light in vacuum:
(A) 3×10^{8} m/s
(B) 3×10^{6} m/s
(C) 3×10^{10} m/s
(D) 3×10^{5} m/s

Q9. de Broglie λ of electron ∝
(A) √V
(B) 1/√V
(C) V
(D) 1/V

Q10. In adiabatic process for ideal gas:
(A) PV=const
(B) PV^{γ}=const
(C) TV=const
(D) P/T=const

Q11. Electric field inside charged spherical shell:
(A) Zero
(B) σ/ε_0
(C) $\sigma/2\varepsilon_0$
(D) kQ/r^2

Q12. Magnetic field due to long wire at distance r:
(A) $\mu_0 I/(2\pi r)$
(B) $\mu_0 I/(2r)$
(C) $\mu_0 I/(4\pi r)$
(D) $\mu_0 I/r$

Q13. Power of lens f=25 cm is:
(A) +4 D
(B) +0.25 D
(C) −4 D
(D) +2.5 D

Q14. Stopping potential in photoelectric effect depends on:
(A) Intensity
(B) Frequency
(C) Work function only

(D) Both intensity & frequency

Q15. Half-life 5 days. Fraction left after 15 days:
(A) 1/2
(B) 1/4
(C) 1/8
(D) 1/16

Q16. Moment of inertia of solid sphere about diameter:
(A) $(2/5)MR^2$
(B) $(2/3)MR^2$
(C) $(5/2)MR^2$
(D) $(3/5)MR^2$

Q17. Projectile at 45°. Ratio H : R =
(A) 1:1
(B) 1:2
(C) 1:4
(D) 1:8

Q18. Coefficient of static friction is always:
(A) = kinetic
(B) < kinetic
(C) ≥ kinetic
(D) Zero

Q19. In pure inductive circuit, phase difference V & I:
(A) 0°
(B) 90°
(C) 180°
(D) 45°

Q20. Binding energy per nucleon max for:
(A) Uranium
(B) Iron
(C) Helium
(D) Hydrogen

PHYSICS – Section B (Numerical Value) [Q21–Q25]

(Enter the correct numerical value. Integer or decimal as required.)

Q21. A body projected vertically up with 20 m/s (g=10). Time of flight (s):

Q22. KE of 4 kg mass moving at 3 m/s (in J):

Q23. Capacitance of parallel plate (A=0.01 m^2, d=1 mm, $\varepsilon_0=8.85\times10^{-12}$) in pF approximately:

Q24. Wavelength of photon of energy 3.1 eV (hc=12400 eV·Å) in Å:

Q25. Angular frequency of SHM with T=0.2 s (in rad/s):

CHEMISTRY – Section A (MCQs) [Q26–Q45]

Q26. Molarity of pure water ≈
(A) 55.5 M
(B) 18 M
(C) 1 M
(D) 100 M

Q27. Most electronegative element:
(A) F
(B) Cl
(C) Br
(D) I

Q28. Lone pairs on central atom in ClF_3:
(A) 0
(B) 1
(C) 2
(D) 3

Q29. Spontaneous process at const T,P has:
(A) $\Delta G>0$
(B) $\Delta G<0$
(C) $\Delta G=0$
(D) $\Delta H<0$

Q30. In Nernst eq. n stands for:
(A) Number of electrons
(B) Moles
(C) Valency
(D) Atomic number

Q31. Half-life of first-order is independent of:
(A) k
(B) Initial concentration
(C) Temperature
(D) Ea

Q32. $[Ni(CN)_4]^{2-}$ is:
(A) Tetrahedral paramagnetic
(B) Square planar diamagnetic

(C) Tetrahedral diamagnetic
(D) Square planar paramagnetic

Q33. Common name of ethanal:
(A) Formaldehyde
(B) Acetaldehyde
(C) Acetone
(D) Acetic acid

Q34. Markovnikov rule applies to:
(A) Symmetrical alkenes
(B) Unsymmetrical alkenes
(C) Alkynes only
(D) Aromatics

Q35. Glucose belongs to:
(A) Aldohexose
(B) Ketohexose
(C) Aldopentose
(D) Ketopentose

Q36. Empirical formula C=40%, H=6.7%, O=53.3%:
(A) CH_2O
(B) C_2H_4O
(C) CH_4O
(D) C_2H_2O

Q37. Max unpaired electrons among Fe^{2+}, Fe^{3+}, Mn^{2+}, Cr^{3+}:
(A) Fe^{2+}
(B) Fe^{3+}
(C) Mn^{2+}
(D) Cr^{3+}

Q38. Bond angle in water ≈
(A) 109.5°
(B) 104.5°
(C) 120°
(D) 90°

Q39. $\Delta G^\circ = -nFE^\circ$ relates free energy to:
(A) Enthalpy
(B) Entropy
(C) Cell potential
(D) Temperature only

Q40. Unit of second-order rate constant:
(A) s^{-1}
(B) mol L^{-1} s^{-1}
(C) L mol^{-1} s^{-1}
(D) L^2 mol^{-2} s^{-1}

Q41. Kohlrausch law gives:
(A) Λ_m°
(B) Cell constant
(C) Resistance
(D) EMF

Q42. IUPAC of $(CH_3)_2CHCH_2Br$:
(A) 1-Bromo-2-methylpropane
(B) 2-Bromobutane
(C) 1-Bromobutane
(D) 2-Bromo-2-methylpropane

Q43. Phenol more acidic than ethanol due to:
(A) Inductive
(B) Resonance of phenoxide
(C) Hyperconjugation
(D) Steric

Q44. Primary amine + $CHCl_3$ + KOH is:
(A) Hoffmann
(B) Carbylamine
(C) Gabriel
(D) Hinsberg

Q45. Condensation polymer example:
(A) Polythene
(B) PVC
(C) Nylon-6,6
(D) Teflon

CHEMISTRY – Section B (Numerical Value) [Q46–Q50]

(Enter the correct numerical value. Integer or decimal as required.)

Q46. Moles of electrons to deposit 54 g Al (from Al^{3+}):

Q47. pH of 10^{-3} M HCl:

Q48. k for first-order $t_{1/2}$=10 min is (min^{-1}, take ln2=0.693):

Q49. Normality of 0.5 M H_2SO_4:

Q50. Number of sigma bonds in ethene:

MATHEMATICS – Section A (MCQs) [Q51–Q70]

Q51. Sum of roots of $2x^2-5x+3=0$:
(A) 5/2
(B) 3/2
(C) −5/2
(D) 2/5

Q52. $^{10}P_2$ =
(A) 90
(B) 45
(C) 100
(D) 20

Q53. |3A| if |A|=2 (3×3):
(A) 6
(B) 18
(C) 54
(D) 2

Q54. cos 75° =
(A) (√6−√2)/4
(B) (√6+√2)/4
(C) √3/2
(D) 1/2

Q55. $\lim_{x\to 0} (1-\cos x)/x^2$ =
(A) 0
(B) 1
(C) 1/2
(D) ∞

Q56. $\int e^x\,dx$ =
(A) e^x+C
(B) $x\,e^x+C$
(C) $e^x/x+C$
(D) $\ln|x|+C$

Q57. Line with slope 2, y-intercept 3:
(A) y=2x+3
(B) y=3x+2
(C) x=2y+3
(D) y=2x−3

Q58. Centre of $x^2+y^2-6x+4y-12=0$:
(A) (3,−2)
(B) (−3,2)
(C) (3,2)
(D) (−3,−2)

Q59. a·b=0 means a and b are:
(A) Parallel
(B) Perpendicular
(C) Equal
(D) Opposite

Q60. Mean of binomial n=10, p=0.3:
(A) 3
(B) 7
(C) 0.3
(D) 30

Q61. If α,β roots of $x^2-3x+2=0$, $\alpha^2+\beta^2$=
(A) 5
(B) 13
(C) 9
(D) 4

Q62. Arrangements of RAM:
(A) 3
(B) 6
(C) 9
(D) 1

Q63. |A| for [[1,2],[3,4]] =
(A) −2
(B) 2
(C) 10
(D) −10

Q64. tan(A+B) =
(A) (tanA+tanB)/(1−tanA tanB)
(B) (tanA−tanB)/(1+tanA tanB)
(C) (tanA+tanB)/(1+tanA tanB)
(D) tanA+tanB

Q65. $\int 1/x\,dx$ =
(A) $\ln|x|+C$

(B) $x+C$
(C) $1/x+C$
(D) e^x+C

Q66. $f(x)=x^3$ is:
(A) Odd
(B) Even
(C) Neither
(D) Periodic

Q67. Slope of tangent to $y=x^2$ at $x=2$:
(A) 2
(B) 4
(C) 8
(D) 1

Q68. Circle centre (0,0) radius 5:
(A) $x^2+y^2=25$
(B) $x^2+y^2=5$
(C) $x^2+y^2=10$
(D) $(x-5)^2+y^2=0$

Q69. $a=2i+3j$, $b=i-j \rightarrow a\cdot b =$
(A) -1
(B) 1
(C) 5
(D) 0

Q70. $P(A\cup B)=P(A)+P(B)-$?
(A) $P(A\cap B)$
(B) $P(A)P(B)$
(C) $P(A|B)$
(D) 1

MATHEMATICS – Section B (Numerical Value) [Q71–Q75]

(Enter the correct numerical value. Integer or decimal as required.)

Q71. Sum of first 10 natural numbers:

Q72. Value of ${}^5C_2$:

Q73. If $|A|=4$ (2×2), $|\text{adj } A| =$

Q74. $d/dx\ (x^3)$ at $x=2$:

Q75. $\int_0^2 x\ dx =$

ANSWER KEY – MOCK TEST 4

Q1:(A)	Q2:(B)	Q3:(C)	Q4:(B)	Q5:(A)
Q6:(B)	Q7:(B)	Q8:(A)	Q9:(B)	Q10:(B)
Q11:(A)	Q12:(A)	Q13:(A)	Q14:(B)	Q15:(C)
Q16:(A)	Q17:(C)	Q18:(C)	Q19:(B)	Q20:(B)
Q21:5	Q22:19	Q23:89.0	Q24:4001	Q25:31.9
Q26:(A)	Q27:(A)	Q28:(C)	Q29:(B)	Q30:(A)
Q31:(B)	Q32:(B)	Q33:(B)	Q34:(B)	Q35:(A)
Q36:(A)	Q37:(B)	Q38:(B)	Q39:(C)	Q40:(C)
Q41:(A)	Q42:(A)	Q43:(B)	Q44:(B)	Q45:(C)
Q46:7	Q47:4	Q48:0.07	Q49:2	Q50:6
Q51:(A)	Q52:(A)	Q53:(C)	Q54:(A)	Q55:(C)
Q56:(A)	Q57:(A)	Q58:(A)	Q59:(B)	Q60:(A)
Q61:(A)	Q62:(B)	Q63:(A)	Q64:(A)	Q65:(A)
Q66:(A)	Q67:(B)	Q68:(A)	Q69:(A)	Q70:(A)
Q71:58	Q72:13	Q73:7	Q74:15	Q75:5

Score = (No. of correct × 4) − (No. of incorrect × 1). Unattempted = 0. Max = 300.