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 7 | 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 particle starts from rest with acceleration 2 m/s². Distance in 5th second is:
(A) 9 m
(B) 11 m
(C) 13 m
(D) 15 m

Q2. Dimensional formula of Planck's constant is same as:
(A) Linear momentum
(B) Angular momentum
(C) Force
(D) Energy

Q3. A body of mass 2 kg has KE = 16 J. Momentum is:
(A) 8 kg m/s
(B) 4 kg m/s
(C) 16 kg m/s
(D) 32 kg m/s

Q4. Escape velocity from earth surface is approximately:
(A) 7.9 km/s
(B) 11.2 km/s
(C) 16.7 km/s
(D) 3 km/s

Q5. In SHM, maximum acceleration is at:
(A) Mean position
(B) Extreme position
(C) Anywhere
(D) None

Q6. Two resistors 4 Ω and 12 Ω in parallel. Equivalent R =
(A) 3 Ω
(B) 16 Ω
(C) 8 Ω
(D) 6 Ω

Q7. Unit of magnetic flux is:
(A) Tesla
(B) Weber
(C) Henry
(D) Ampere

Q8. Faraday's law states induced emf equals rate of change of:
(A) Current
(B) Magnetic flux
(C) Charge
(D) Resistance

Q9. A convex lens of f = 20 cm forms real image at 60 cm. Object distance =
(A) 15 cm
(B) 30 cm
(C) 40 cm
(D) 25 cm

Q10. In YDSE, fringe width is proportional to:
(A) λ
(B) 1/λ
(C) d
(D) Intensity

Q11. Work function = 4 eV. Threshold wavelength ≈
(A) 3100 Å
(B) 4000 Å
(C) 2500 Å
(D) 5000 Å

Q12. Bohr radius of first orbit of H-atom is:
(A) 0.53 Å
(B) 0.053 Å
(C) 5.3 Å
(D) 1 Å

Q13. Half-life of a radioactive sample is 10 days. Fraction left after 30 days:
(A) 1/2
(B) 1/4
(C) 1/8
(D) 1/16

Q14. Transformer: Np=100, Ns=500, Vp=20 V. Vs =
(A) 4 V
(B) 100 V
(C) 20 V

(D) 500 V

Q15. Electric flux through one face of a cube with charge +q at centre:
(A) q/ε_0
(B) $q/6\varepsilon_0$
(C) $q/2\varepsilon_0$
(D) 0

Q16. Magnetic field inside long solenoid is:
(A) Zero
(B) Uniform & parallel to axis
(C) Non-uniform
(D) Perpendicular

Q17. At resonance in series LCR, impedance is:
(A) Maximum
(B) Minimum (=R)
(C) Zero
(D) XL

Q18. de Broglie wavelength of electron $\propto$
(A) $\sqrt{V}$
(B) $1/\sqrt{V}$
(C) V
(D) 1/V

Q19. Nuclear force is:
(A) Charge dependent
(B) Long range
(C) Short range & charge independent
(D) Spin independent only

Q20. In p-n junction, depletion width increases in:
(A) Forward bias
(B) Reverse bias
(C) Zero bias
(D) Heavy doping

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

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

Q21. A body is projected at 45° with speed 20 m/s (g=10). Maximum height in metres is:

Q22. Resistance of a wire is 10 Ω. If length is doubled and radius halved, new resistance (in Ω) is:

Q23. A capacitor of 2 μF is charged to 100 V. Energy stored (in mJ) is:

Q24. Time period of a simple pendulum of length 1 m ($g=\pi^2$) is (in s):

Q25. A photon of wavelength 4000 Å has energy (in eV) approximately (hc=12400 eV·Å):

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

Q26. Number of moles in 22.4 L of O_2 at STP is:
(A) 0.5
(B) 1
(C) 2
(D) 0.25

Q27. Highest first ionisation enthalpy among Na, Mg, Al, Si is of:
(A) Na
(B) Mg
(C) Al
(D) Si

Q28. Hybridisation of carbon in ethyne is:
(A) sp^3
(B) sp^2
(C) sp
(D) sp^3d

Q29. pH of 0.001 M HCl is:
(A) 1
(B) 2
(C) 3
(D) 4

Q30. Oxidation number of Cr in $K_2Cr_2O_7$ is:
(A) +3
(B) +6
(C) +7
(D) +2

Q31. Rate constant of first-order reaction has unit:
(A) $mol\ L^{-1}\ s^{-1}$
(B) s^{-1}
(C) $L\ mol^{-1}\ s^{-1}$
(D) $L^2\ mol^{-2}\ s^{-1}$

Q32. Shape of XeF_4 is:
(A) Tetrahedral
(B) Square planar

(C) See-saw
(D) Octahedral

Q33. IUPAC name of $CH_3–CH=CH–CHO$ is:
(A) But-2-enal
(B) But-2-en-1-al
(C) Butenal
(D) But-1-en-3-al

Q34. Strongest acid among HF, HCl, HBr, HI is:
(A) HF
(B) HCl
(C) HBr
(D) HI

Q35. Bond order of N_2 is:
(A) 2
(B) 2.5
(C) 3
(D) 1

Q36. Conjugate base of $H_2PO_4^-$ is:
(A) H_3PO_4
(B) HPO_4^{2-}
(C) PO_4^{3-}
(D) H_2PO_4

Q37. Faraday's first law: mass deposited $\propto$
(A) Time only
(B) Current only
(C) Quantity of electricity
(D) Resistance

Q38. Number of unpaired electrons in Fe^{3+} (Z=26) is:
(A) 3
(B) 4
(C) 5
(D) 6

Q39. Henderson equation for buffer is pH =
(A) pKa + log([salt]/[acid])
(B) pKa − log([salt]/[acid])
(C) pKa
(D) 7

Q40. Which is diamagnetic?
(A) O_2
(B) O_2^+
(C) O_2^-
(D) O_2^{2-}

Q41. SN1 reaction is favoured by:
(A) 1° alkyl halide
(B) 3° alkyl halide
(C) Methyl halide
(D) 2° only

Q42. Glucose is an:
(A) Aldohexose
(B) Ketohexose
(C) Aldopentose
(D) Ketopentose

Q43. Common name of ethanoic acid is:
(A) Formic acid
(B) Acetic acid
(C) Propionic acid
(D) Butyric acid

Q44. Secondary amine is:
(A) CH_3NH_2
(B) $(CH_3)_2NH$
(C) $(CH_3)_3N$
(D) $C_6H_5NH_2$

Q45. Hybridisation of central atom in SF_6 is:
(A) sp^3
(B) sp^3d
(C) sp^3d^2
(D) sp^2

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

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

Q46. Molarity of a solution containing 5 g NaOH in 250 mL solution is:

Q47. pH of 0.01 M NaOH is:

Q48. Number of moles of electrons required to deposit 1 mole of Al from Al^{3+} is:

Q49. Half-life of a first-order reaction with k = 0.0693 min^{-1} is (in min):

Q50. Osmotic pressure of 0.1 M ideal solution at 27°C (R=0.082) is (in atm):

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

Q51. If roots of $x^2-5x+k=0$ are equal, k =
(A) 25/4
(B) 5/2
(C) 25
(D) 5

Q52. ${}^nC_r + {}^nC_{r-1}$ =
(A) ${}^{n+1}C_r$
(B) ${}^nC_{r+1}$
(C) ${}^{n+1}C_{r-1}$
(D) ${}^{n-1}C_r$

Q53. Sum of infinite GP 1 + 1/3 + 1/9 + ... is:
(A) 3/2
(B) 2/3
(C) 3
(D) 1

Q54. If |A|=5 for 3×3 matrix, |adj A| =
(A) 5
(B) 25
(C) 125
(D) 1/5

Q55. sin 75° =
(A) $(\sqrt{6}+\sqrt{2})/4$
(B) $(\sqrt{6}-\sqrt{2})/4$
(C) $\sqrt{3}/2$
(D) 1/2

Q56. $\lim_{x\to 0} (\sin x)/x$ =
(A) 0
(B) 1
(C) ∞
(D) Does not exist

Q57. d/dx $(\sin^{-1}x)$ =
(A) $1/\sqrt{(1-x^2)}$
(B) $-1/\sqrt{(1-x^2)}$
(C) $1/(1+x^2)$
(D) $\sqrt{(1-x^2)}$

Q58. $\int e^x\,dx$ =
(A) $e^x + C$
(B) $x\,e^x + C$
(C) $e^x/x + C$
(D) $\ln x + C$

Q59. Solution of dy/dx = y is:
(A) y = x+C
(B) $y = Ce^x$
(C) y = C/x
(D) y = Cx

Q60. Distance of (1,2) from 3x+4y−5=0 is:
(A) 2
(B) 1
(C) 3/5
(D) 6/5

Q61. Centre of $x^2+y^2-4x+6y-3=0$ is:
(A) (2,−3)
(B) (−2,3)
(C) (2,3)
(D) (−2,−3)

Q62. Eccentricity of ellipse $x^2/25 + y^2/9 = 1$ is:
(A) 4/5
(B) 3/5
(C) 5/4
(D) $\sqrt{(16/25)}$

Q63. P(A)=0.4, P(B)=0.3, P(A∩B)=0.1 → P(A∪B)=
(A) 0.6
(B) 0.7
(C) 0.5
(D) 0.8

Q64. Arrangements of letters of DELHI is:
(A) 120
(B) 60
(C) 24
(D) 720

Q65. Complex number with $|z|=\sqrt{2}$, arg=π/4 is:
(A) 1+i

(B) 1−i
(C) −1+i
(D) −1−i

Q66. Range of √(9−x²) is:
(A) [0,3]
(B) [−3,3]
(C) [0,9]
(D) (−∞,3]

Q67. ∫₀^{π/2} sin x dx =
(A) 1
(B) 0
(C) 2
(D) π/2

Q68. Maximum of x³−3x+2 on [−2,2] is:
(A) 4
(B) 0
(C) 2
(D) 6

Q69. If |a|=3, |b|=4, a·b=6, |a×b| =
(A) √108
(B) √72
(C) 6
(D) √48

Q70. If P(A)=1/2, P(B)=1/3 independent, P(A∩B)=
(A) 1/6
(B) 5/6
(C) 1
(D) 1/2

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

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

Q71. Sum of first 20 natural numbers is:

Q72. Value of $^{10}C_2$ is:

Q73. If A is 2×2 matrix with |A|=3, then |2A| is:

Q74. Derivative of x^2 at x=3 is:

Q75. Area under y=x from x=0 to x=4 is:

ANSWER KEY – MOCK TEST 7

Q1:(A)	Q2:(B)	Q3:(A)	Q4:(B)	Q5:(B)
Q6:(A)	Q7:(B)	Q8:(B)	Q9:(B)	Q10:(A)
Q11:(A)	Q12:(A)	Q13:(C)	Q14:(B)	Q15:(B)
Q16:(B)	Q17:(B)	Q18:(B)	Q19:(C)	Q20:(B)
Q21:14	Q22:84	Q23:14	Q24:6	Q25:3.1
Q26:(B)	Q27:(D)	Q28:(C)	Q29:(C)	Q30:(B)
Q31:(B)	Q32:(B)	Q33:(B)	Q34:(D)	Q35:(C)
Q36:(B)	Q37:(C)	Q38:(C)	Q39:(A)	Q40:(D)
Q41:(B)	Q42:(A)	Q43:(B)	Q44:(B)	Q45:(C)
Q46:0.53	Q47:13	Q48:4	Q49:11	Q50:2.58
Q51:(A)	Q52:(A)	Q53:(A)	Q54:(B)	Q55:(A)
Q56:(B)	Q57:(A)	Q58:(A)	Q59:(B)	Q60:(D)
Q61:(A)	Q62:(A)	Q63:(A)	Q64:(A)	Q65:(A)
Q66:(A)	Q67:(A)	Q68:(A)	Q69:(A)	Q70:(A)
Q71:222	Q72:57	Q73:24	Q74:18	Q75:20

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