CUET UG 2026 — MODEL QUESTION PAPER - 1

Stream: Science (PCM) | Physics · Chemistry · Mathematics

GENERAL INSTRUCTIONS

1. This paper consists of three sections:
   - Physics (Q1–20)
   - Chemistry (Q21–40)
   - Mathematics (Q41–60)
2. Each question carries 5 marks.
3. All questions are compulsory.
4. Mark only ONE option per question.
5. Questions are based on Class 12 NCERT syllabus.
6. Use rough space provided; do not write on answer sheet.
7. Calculators and electronic devices are NOT allowed.
8. Do not mark anything on the question paper.

SECTION 1: PHYSICS

(Questions 1–20 | 5 marks each | Negative marking: −1)

1. A charge of 2 μC is placed at the origin. Electric potential at 0.5 m is:
   (A) 18,000 V
   (B) 36,000 V
   (C) 72,000 V
   (D) 9,000 V

2. A current of 3 A flows through a 4 Ω resistor for 5 s. Heat generated is:
   (A) 60 J
   (B) 180 J
   (C) 240 J
   (D) 120 J

3. A concave mirror (f = 15 cm), object at 45 cm. Image distance is:
   (A) 22.5 cm
   (B) 30 cm
   (C) 45 cm
   (D) 60 cm

4. If velocity of electron doubles, de Broglie wavelength becomes:
   (A) λ/2
   (B) 2λ
   (C) λ/4
   (D) 4λ

5. Transformer: $N_1 = 200$, $N_2 = 1000$, $V_1 = 220$ V. Find V_2:
   (A) 44 V
   (B) 1100 V
   (C) 440 V
   (D) 2200 V

6. Speed of light in medium (n = 1.5):
   (A) 3×10^8 m/s
   (B) 2×10^8 m/s
   (C) 1.5×10^8 m/s
   (D) 4.5×10^8 m/s

7. SHM (A = 5 cm, f = 2 Hz). Maximum velocity:
   (A) 10π cm/s
   (B) 20π cm/s
   (C) 5π cm/s
   (D) 40π cm/s

8. In forward bias, depletion layer:
   (A) Increases
   (B) Remains same
   (C) Decreases
   (D) Disappears

9. Work function = 3 eV. Threshold frequency:
   (A) 7.25×10^{14} Hz
   (B) 4.83×10^{14} Hz
   (C) 3.62×10^{14} Hz
   (D) 9.66×10^{14} Hz

10. Inductance = 2 H, di/dt = 3 A/s. EMF:
    (A) 1.5 V
    (B) 3 V
    (C) 6 V
    (D) 9 V

11. Prism (A = 60°, n = √2). Minimum deviation:
    (A) 30°
    (B) 45°
    (C) 60°
    (D) 90°

12. Mass defect = 0.01 u. Energy released:
    (A) 93.15 MeV
    (B) 9.315 MeV
    (C) 931.5 MeV
    (D) 0.9315 MeV

13. Capacitors 4 μF and 6 μF in series:
    (A) 10 μF
    (B) 2.4 μF
    (C) 1.2 μF
    (D) 24 μF

14. Half-life = 5 years. Fraction after 20 years:
    (A) 1/4
    (B) 1/8
    (C) 1/16
    (D) 1/32

15. EM waves in vacuum travel at:
    (A) Depends on frequency
    (B) 3×10^8 m/s
    (C) Depends on wavelength
    (D) Less than 3×10^8 m/s

16. Gate with output 1 only if all inputs are 1:
    (A) OR
    (B) NOR
    (C) AND
    (D) NAND

17. Total internal reflection is used in:
    (A) Periscope
    (B) Optical fibre
    (C) Microscope
    (D) Telescope

18. Maximum binding energy per nucleon:
    (A) Hydrogen
    (B) Helium
    (C) Iron
    (D) Uranium

19. Critical angle depends on:
    (A) Frequency only
    (B) Refractive index only
    (C) Both
    (D) Neither

20. Full-wave rectifier output frequency:
    (A) Same
    (B) Half
    (C) Double
    (D) Four times

SECTION 2: CHEMISTRY

(Questions 21–40 | 5 marks each | Negative marking: −1)

21. Highest lattice energy:
    (A) NaF
    (B) NaCl
    (C) NaBr
    (D) NaI

22. IUPAC name of $CH_3–CH(OH)–CH_2–CH_3$:
    (A) 1-Butanol
    (B) 2-Butanol
    (C) 3-Butanol
    (D) Butanol

23. First-order reaction half-life:
    (A) 5 min
    (B) 10 min
    (C) 20 min
    (D) 40 min

24. Lyophilic colloid:
    (A) Gold sol
    (B) Starch
    (C) As_2S_3
    (D) $Fe(OH)_3$

25. Fastest SN1:
(A) CH_3Cl
(B) $(CH_3)_2CHCl$
(C) $(CH_3)_3CCl$
(D) C_2H_5Cl

26. Oxidation state of Mn in $KMnO_4$:
(A) +2
(B) +4
(C) +6
(D) +7

27. Lanthanide used in magnets:
(A) La
(B) Ce
(C) Nd
(D) Eu

28. Electrons transferred: $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$
(A) 1
(B) 2
(C) 3
(D) 4

29. Non-stick cookware polymer:
(A) Bakelite
(B) Teflon
(C) Nylon
(D) PVC

30. Geometry of $[Ni(CN)_4]^{2-}$:
(A) Tetrahedral
(B) Square planar
(C) Octahedral
(D) Trigonal planar

31. Glucose & fructose:
    (A) Disaccharides
    (B) Polysaccharides
    (C) Epimers
    (D) Enantiomers

32. Acid for fertilizers:
    (A) HCl
    (B) H_2SO_4
    (C) HNO_3
    (D) H_3PO_4

33. Degree of unsaturation of benzene:
    (A) 2
    (B) 3
    (C) 4
    (D) 5

34. Ksp of AgCl → molar solubility:
    (A) 1.34×10^{-5} M
    (B) 9×10^{-6} M
    (C) 1.8×10^{-10} M
    (D) 3.6×10^{-10} M

35. Primary amine:
    (A) $(CH_3)_3N$
    (B) $(CH_3)_2NH$
    (C) CH_3NH_2
    (D) $C_2H_5NHCH_3$

36. Oxidation occurs at:
    (A) Cathode
    (B) Anode
    (C) Salt bridge
    (D) Electrolyte

37. Reagent to distinguish aldehyde/ketone:
    (A) Lucas
    (B) Tollens

(C) HCN

(D) NaOH

38. Bond order of O_2:
(A) 1

(B) 1.5

(C) 2

(D) 2.5

39. Greenhouse gas:
(A) N_2

(B) O_2

(C) CO_2

(D) Ar

40. Catalyst in Haber process:
(A) Pt

(B) V_2O_5

(C) Fe

(D) Ni

SECTION 3: MATHEMATICS

(Questions 41–60 | 5 marks each | Negative marking: −1)

41. If |A| = 5 (3×3), then |3A| =
(A) 15

(B) 45

(C) 135

(D) 375

42. Solutions of sin x = x/10:
(A) 1

(B) 3

(C) 5

(D) 7

43. $\int_0^{\pi} sin^2x\ dx$ =
    (A) π/2
    (B) π/4
    (C) π
    (D) 0

44. Angle between vectors:
    (A) 30°
    (B) 45°
    (C) 60°
    (D) 90°

45. P(A∩B) (independent):
    (A) 0.7
    (B) 0.12
    (C) 0.1
    (D) 0.58

46. Solution of dy/dx = y/x:
    (A) $y = cx^2$
    (B) $y = cx$
    (C) $y = c/x$
    (D) $y = ce^x$

47. Focus of $y^2 = 8x$:
    (A) (2,0)
    (B) (0,2)
    (C) (−2,0)
    (D) (4,0)

48. f'(2) for $f(x)=x^2-3x+2$:
    (A) 0
    (B) 1
    (C) 2
    (D) 3

49. $\cos^{-1}(\cos 7\pi/6)$:
    (A) $7\pi/6$
    (B) $\pi/6$
    (C) $5\pi/6$
    (D) $11\pi/6$

50. $\lim (\sin 3x/\sin 5x) =$
    (A) 1
    (B) 3/5
    (C) 5/3
    (D) 0

51. 4-digit numbers (no repetition):
    (A) 60
    (B) 120
    (C) 24
    (D) 5

52. Sum of GP:
    (A) 1
    (B) 2
    (C) 3
    (D) ∞

53. NOT a function:
    (A) $y=x^2$
    (B) $x=y^2$
    (C) $y=\sin x$
    (D) $y=|x|$

54. Area between $y=x^2$ and $y=x$:
    (A) 1/6
    (B) 1/3
    (C) 1/2
    (D) 1

55. Collinearity (1,2), (3,k), (5,8):
(A) 3
(B) 4
(C) 5
(D) 6

56. Coefficient of x^5 in $(1+x)^{10}$:
(A) 120
(B) 210
(C) 252
(D) 310

57. Elements in AUB:
(A) 4
(B) 5
(C) 6
(D) 3

58. Line through (1,3), slope 2:
(A) y=2x+1
(B) y=2x−1
(C) y=2x+3
(D) y=2x−3

59. $\int e^x(\sin x + \cos x)dx =$
(A) $e^x \sin x + C$
(B) $e^x \cos x + C$
(C) $e^x(\sin x + \cos x) + C$
(D) $e^x \tan x + C$

60. $\tan(\pi/4 + \pi/4) =$
(A) 0
(B) 1
(C) Undefined
(D) $\sqrt{3}$

✦ END OF QUESTION PAPER ✦

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