



General Instructions

- (i) The test is of 2 hours duration.
- (ii) This test paper consists of 100 questions. The maximum marks are 100.
- (iii) Each question carries +1 marks for correct answer and $-1/3$ mark for wrong answer.

1. One mole of glucose molecules contains approximately:

- (A) 3.01×10^{23} molecules
- (B) 6.02×10^{23} molecules
- (C) 1.204×10^{24} molecules
- (D) 9.03×10^{23} molecules

2. Benzaldehyde on treatment with concentrated NaOH undergoes Cannizzaro reaction to form:

- (A) Benzyl alcohol and sodium benzoate
- (B) Benzoic acid and ethanol
- (C) Benzyl chloride and sodium benzoate
- (D) Benzene and sodium formate

3. At equilibrium for the reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$, the concentrations are $[\text{N}_2] = 0.20 \text{ M}$, $[\text{H}_2] = 0.60 \text{ M}$ and $[\text{NH}_3] = 0.80 \text{ M}$. The value of K_c is:

- (A) 7.4
 - (B) 14.8
 - (C) 22.2
 - (D) 44.4
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4. A solution is prepared by dissolving 5.85 g of NaCl (Molar mass = 58.5 g mol^{-1}) in water to make 500 mL of solution. The molarity of the solution is:

- (A) 0.1 M
 - (B) 0.2 M
 - (C) 0.5 M
 - (D) 1.0 M
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5. According to Valence Bond Theory, the hybridization of the central metal ion in $[\text{Ni}(\text{CN})_4]^{2-}$ is:

- (A) sp^3
 - (B) dsp^2
 - (C) d^2sp^3
 - (D) sp^2
-

6. According to Molecular Orbital Theory, the bond order of O_2 is:

- (A) 1
 - (B) 1.5
 - (C) 2
 - (D) 3
-

7. 100 mL of 2 M HCl is diluted to 500 mL. The molarity of the diluted solution is:

- (A) 0.2 M
 - (B) 0.4 M
 - (C) 0.5 M
 - (D) 1.0 M
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8. The IUPAC name of $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$ is:

- (A) Butan-1-ol
 - (B) Butan-2-ol
 - (C) Propan-2-ol
 - (D) 2-Methylpropan-1-ol
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9. The coordination number of cobalt in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$ is:

- (A) 3
 - (B) 4
 - (C) 6
 - (D) 8
-

10. Which reagent converts ethanol into bromoethane?

- (A) KMnO_4
 - (B) PBr_3
 - (C) NaOH
 - (D) H_2SO_4
-

11. A diode is forward biased by 0.7 V. If the forward resistance is $10\ \Omega$, the current through the diode is:

- (A) 0.007 A
 - (B) 0.07 A
 - (C) 0.7 A
 - (D) 7 A
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12. In Young's double-slit experiment, the slit separation is 0.4 mm and the screen is 2 m away. If light of wavelength 600 nm is used, the fringe width is:

- (A) 2 mm
 - (B) 3 mm
 - (C) 4 mm
 - (D) 5 mm
-

13. The entropy change when 400 J of heat is absorbed reversibly at 400 K is:

- (A) 0.5 J K^{-1}
 - (B) 1 J K^{-1}
 - (C) 2 J K^{-1}
 - (D) 4 J K^{-1}
-

14. In Young's double-slit experiment, the wavelength of light is doubled while all other parameters remain unchanged. The fringe width becomes:

- (A) Half of the original
 - (B) Unchanged
 - (C) Double the original
 - (D) Four times the original
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15. The resistance of a semiconductor decreases when its temperature increases because:

- (A) the number of free charge carriers increases
 - (B) electron mass decreases
 - (C) atomic spacing increases
 - (D) mobility becomes zero
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16. An electromagnetic wave has a frequency of 150 MHz. Its wavelength in air is approximately:

- (A) 0.5 m
 - (B) 1 m
 - (C) 2 m
 - (D) 4 m
-

17. A radioactive substance has a half-life of 5 days. If its initial mass is 80 g, the mass remaining after 15 days is:

- (A) 40 g
 - (B) 20 g
 - (C) 10 g
 - (D) 5 g
-

18. A coil of 100 turns experiences a change in magnetic flux from 0.05 Wb to 0.01 Wb in 0.2 s. The induced emf is:

- (A) 10 V
- (B) 15 V
- (C) 20 V
- (D) 25 V

19. A convex lens of refractive index 1.5 has radii of curvature +20 cm and –20 cm. The focal length of the lens is:

- (A) 10 cm
- (B) 20 cm
- (C) 40 cm
- (D) 80 cm

20. The measured length of a rod is (20.0 ± 0.2) cm. The percentage error in the measurement is:

- (A) 0.5%
- (B) 1%
- (C) 2%
- (D) 5%

21. Who among the following is the ex-officio Chairman of the Rajya Sabha?

- (A) Leader of Opposition
- (B) President of India
- (C) Vice-President of India
- (D) Senior Member of Rajya Sabha

22. The Strait of Hormuz is located between which countries?

- (A) Iran and Saudi Arabia
- (B) Iran and Oman, and the UAE

- (C) Oman and Saudi Arabia
 - (D) Iraq and Iran
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23. Chilika Lake, the largest salt water lake in India in the state of Odisha, lies to the south of the:

- (A) Baitarani delta
 - (B) Brahmani delta
 - (C) Budhabalanga delta
 - (D) Mahanadi delta
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24. Who was the Union Home Minister of India as of June 2025, following the general elections?

- (A) Nirmala Sitharaman
 - (B) Rajnath Singh
 - (C) Amit Shah
 - (D) Piyush Goyal
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25. Which Indian Ocean island country uses the "Rufiyaa" as its official currency for domestic and international transactions?

- (A) Sri Lanka
 - (B) Maldives
 - (C) Mauritius
 - (D) Seychelles
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26. Which condition is characterised by reduced clotting ability of blood?

- (A) Leukaemia
- (B) Haemophilia
- (C) Polycythemia
- (D) Atherosclerosis

27. Match the following:

	List I		List II
(A)	Heroin	(i)	Obtained from the inflorescences of the plant <i>Cannabis sativa</i>
(B)	Natural cannabinoids	(ii)	Diacetyl morphine
(C)	Coca	(iii)	Also called as <i>Papaver somniferum</i>
(D)	Poppy plant	(iv)	<i>Erythroxylum coca</i>

- (A) (A) → (iii); (B) → (iv); (C) → (i); (D) → (ii)
- (B) (A) → (ii); (B) → (i); (C) → (iv); (D) → (iii)
- (C) (A) → (iii); (B) → (iv); (C) → (i); (D) → (ii)
- (D) (A) → (i); (B) → (ii); (C) → (iii); (D) → (iv)

28. Analysis of the species-area relationships indicate the value of Z to be in the range of:

- (A) 0.1 to 0.5
- (B) 0.5 - 1.1
- (C) 0.6 - 1.2
- (D) 1.2 - 2.0

29. A permanent cure for ADA deficiency could be through:

- (A) Bone marrow transplantation
- (B) Modified lymphocyte transfusion
- (C) Gene therapy at early embryonic stages
- (D) Enzyme replacement therapy

30. Filiform apparatus is found in:

- (A) Antipodal cell
- (B) Egg cell
- (C) Secondary nucleus
- (D) Synergids

31. Match the following:

List 1 (Group)	List 2 (Example)
A. Bryophyta	1. Cycas
B. Pteridophytes	2. Ulothrix
C. Gymnosperm	3. Marchantia
D. Algae	4. Equisetum

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

32. Common in Darwin's finches and Australian marsupials is:

- (A) They are all extinct.
- (B) They show adaptive radiation.
- (C) They have homologous organs.
- (D) They are all found in South America.

33. Which of the following belongs to the Solanaceae family?

- (A) Potato, Tomato, Brinjal
 - (B) Wheat, Rice, Maize
 - (C) Rose, Apple, Pear
 - (D) Pea, Gram, Soybean
-

34. Which disease is caused by Plasmodium?

- (A) Dengue
 - (B) Typhoid
 - (C) Malaria
 - (D) Filariasis
-

35. Which growth regulator promotes fruit ripening?

- (A) Auxin
 - (B) Gibberellin
 - (C) Cytokinin
 - (D) Ethylene
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36. Which hormone-based contraceptive prevents ovulation?

- (A) Copper-T
 - (B) Condoms
 - (C) Oral pills
 - (D) Diaphragm
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37. Below given are two statements:

Statement I: MTPs are considered relatively safe during the first trimester

Statement II: Government of India legalised MTP in 1971

In the light of above statements, choose the most appropriate answer from the options given below:

- (A) Both statement I and II are correct
 - (B) Both statement I and II are incorrect
 - (C) Statement I is correct and statement II is incorrect
 - (D) Statement I is incorrect and statement II is correct
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38. Which of the following hormones control(s) the menstrual cycle in human beings?

- (A) FSH
 - (B) LH
 - (C) FSH, LH, estrogen
 - (D) Oxytocin
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39. Which of the following is the correct sequence of taxonomic hierarchy?

- (A) Kingdom → Phylum → Class → Order → Family → Genus → Species
 - (B) Species → Genus → Family → Order → Class → Phylum → Kingdom
 - (C) Kingdom → Class → Phylum → Order → Family → Genus → Species
 - (D) Phylum → Kingdom → Class → Order → Family → Genus → Species
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40. Which statements correctly describe Mycoplasma?

- 1. They lack a cell wall.**
- 2. They can survive without oxygen.**
- 3. They are the smallest known free-living organisms.**
- 4. Their cell membrane contains sterols.**

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