

**ELECTRONICS AND
TELECOMMUNICATION ENGINEERING**

Paper—I

(Conventional)

Time Allowed : Three Hours

Maximum Marks : 200

INSTRUCTIONS

Candidates should attempt Question No. 1 which is compulsory and any FOUR from the remaining questions.

The number of marks carried by each question is indicated at the end of the question.

Answers must be written only in ENGLISH.

Assume suitable data, if necessary, and indicate the same clearly.

Unless otherwise indicated, symbols and notations have their usual meanings.

Values of the following constants may be used wherever necessary.

Electronic charge = -1.6×10^{-19} coulomb.

Free space permeability = $4\pi \times 10^{-7}$ henry/m.

Free space permittivity = $\left(\frac{1}{36\pi}\right) \times 10^{-9}$ farad/m.

Velocity of light in free space = 3×10^8 m/sec.

Boltzmann constant = 1.38×10^{-23} joule/K.

Planck constant = 6.626×10^{-34} joule-sec.

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web the $\text{Ag}^+ \text{aq}$ and $\text{Cl}^- \text{aq}$ ions become $\text{AgCl} \text{s}$ but the $\text{Na}^+ \text{aq}$ ions and the $\text{NO}_3^- \text{aq}$ ions stay as $\text{Na}^+ \text{aq}$ ions and $\text{NO}_3^- \text{aq}$ ions these two ions are examples of spectator ions ions that do nothing in the overall course of a chemical reaction

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web aug 8 2022 a spectator ion is an ion that does not take part in the chemical reaction and is found in solution both before and after the reaction the net ionic equation is the chemical equation that shows only those elements compounds and ions that are directly involved in the chemical reaction

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web the new format requires students to write balanced chemical equations showing only the reacting substances excluding spectator ions for three different sets of reactants and to answer a short question requiring no calculator about each reaction the questions are intended to test the students understanding of the meaning of the reactions

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web jun 2 2023 the spectator ions are cut out from a reaction hence the net ionic equation for the above reaction would be $2\text{Cl}^- (\text{aq}) + \text{Cu}^{2+} (\text{aq}) \rightarrow \text{CuCl}_2 (\text{s})$ $2\text{Cl}^- (\text{aq}) + \text{Cu}^{2+} (\text{aq}) \rightarrow \text{CuCl}_2 (\text{s})$ these spectator ions are not actively involved in the reaction the existence of spectator ions affects the debye length