**RUBRICS: HSSC 1st ANNUAL EXAMINATION 2022**

**SUBJECT: PHYSICS HSSC-II (Hard Area)**

| **Q.# /Part #** | **Criteria**  | **Level 1 (Marks)** | **Level 2(Marks)** | **Level 3 (Marks)** | **Level 4 (Marks)** |
| --- | --- | --- | --- | --- | --- |
| 2 (i) | Explanation | Correctly explaining polarization of dielectric, decrease in E and V, increase in C with formulae (3) | Partially correct (2) | Any relevant information (1) | Wrong answer (0) |
| $$2(ii)$$ | Logical decision and Explanation | Correct logical decision (yes) and explaining with Gauss’s law to show E=0 inside charged balloon (3) | Partially correct response (2) | Some relevant information (1) | Wrong answer (0) |
| $$2(iii)$$ | Scientific reasoning | Correct explanation with formula (3) | Partially correct (2) | Any relevant information (1) | Wrong answer (0) |
| $$2(iv)$$ | Definition | Correct definition (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Deducing the condition | Correct explanation i.e. deducing OR explaining the condition for balancing correctly (2) | Partially correct response (1) | Any relevant information (0.5) | Wrong answer (0) |
| $$2(v)$$ | Explanation | Correct explanation with formula (3) | Partially correct response (2) | Any relevant information (1) | Wrong answer (0) |
| $$2\left(vi\right)$$ | Calculation | Correct calculation and correct answer (3) | Partially correct calculation (2) | Some correct mathematical steps (1) | Wrong answer (0) |
| $$2(vii)$$ | Reason for production of eddy current  | Correct Reason (1.5) | Partially correct (1) | Any relevant information (0.5) | Wrong answer (0) |
| Minimization of eddy currents  | Correct method (1.5) | Partially correct (1) | Any relevant information (0.5) | Wrong answer (0) |
| $$2(viii)$$ | Explanation | Correct explanation (3) | Partially correct (2) | Any relevant information (1) | Wrong answer (0) |
| $2(ix$) | Explanation/Proof | Correct explanation EITHER using voltage current graphs OR proof using power formula (3) | Partially correct response (2) | Some relevant information (1) | Wrong answer (0) |
| $2(x$) | Basic principle | Correct description (3) | Partially correct description (2) | Some relevant information (1) | Wrong answer (0) |
| $$2(xi)$$ | Working principle | Correctly explaining the principle (3) | Partially correct explanation (2) | Some relevant information (1) | Wrong answer (0) |
| $$2(xii)$$ | Scientific Reasoning  | Correct explanation (3) | Partially correct explanation (2) | Some relevant information (1) | Wrong answer (0) |
| 2(xiii) | Figure | Correct (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Explanation | Correct explanation (2) | Partially correct (1) | Some relevant information (0.5) | Wrong answer (0) |
| $$2(xiv)$$ | Definition | Correct definition(1) | Partially correct definition (0.5) | Wrong answer (0) |  |
| Operation | Correctly explaining the operation with circuit diagram (2) | Partially correct response (1) | Some relevant information (0.5) | Wrong answer (0) |
| $$2(xv)$$ | Definition/Description | Correct definition/description (1) | Partially correct definition/description (0.5) | Wrong answer (0) |  |
| Explanation | Correct explanation (2) | Partially correct explanation (1) | Some relevant information (0.5) | Wrong answer (0) |
| 2(xvi) | For shortest wave length | Correct calculation (1.5) | Partially correct (1) | Some relevant information (0.5) | Wrong answer (0) |
| For longest wave length | Correct calculation (1.5) | Partially correct (1) | Some relevant information (0.5) | Wrong answer (0) |
| 2(xvii) | Scientific Reasoning | Correct explanation (3) | Partially correct explanation (2) | Some relevant information (1) | Wrong answer (0) |
| 2(xviii) | Construction | Correct construction (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Working | Correct working (2) | Partially correct (1) | Some relevant information (0.5) | Wrong answer (0) |
| 2(xix) | Binding energy | Correctly calculating binding energy (3) | Partially correct response (2) | Some correct mathematical steps (1) | Wrong answer (0) |
| 2(xx) | Explanation | Correct explanation (3) | Partially correct (2) | Some relevant information (1) | Wrong answer (0) |
| $$3(a)$$ | Principle | Correctly stating the principle (1) | Partially correct response (0.5) | Wrong answer (0) |  |
| Graph | Correct graph (1) | Partially correct graph (0.5) | Wrong answer (0) |  |
| Explanation  | Correct explanation (3) | Partially correct explanation (2) | Some relevant information (1) | Wrong answer (0) |
| $3(b$) | Figure | Correct figure (1) | Partially correct figure (0.5) | Wrong answer (0) |  |
| Derivation | Correct derivation (3) | Partially correct derivation (2) | Some correct mathematical steps (1) | Wrong answer (0) |
| 3 (c) | Hystersis loop graph/curve  | Correctly drawing the graph (1) | Partially correct graph (0.5) | Wrong answer (0) |  |
| Explanation | Correct explanation (3) | Partially correct explanation (2) | Some relevant information (1) | Wrong answer (0) |
| $4$ (a) | Phasor diagram | Correct (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Derivation of impedance | Correct derivation (2) | Partially correct (1) | Some correct mathematical steps (0.5) | Wrong answer (0) |
| Derivation of resonant frequency | Correct derivation (2) | Partially correct (1) | Some correct mathematical steps (0.5) | Wrong answer (0) |
| 4 (b) | Statement | Correct statement (1) | Partially correct statement (0.5) | Wrong answer (0) |  |
| Derivation | Correct derivation with figure (3) | Partially correct response (2) | Some correct mathematical steps (1) | Wrong answer (0) |
| 4 (c) | Equations | Two correct loop equations (2) | One correct loop equation (1) | Wrong (0) |  |
| Calculation | Correct calculation (2) | Partially correct (1) | Some correct mathematical steps (0.5) | Wrong answer (0) |
| 5 (a) | Definition | Correct definition (1) | Partially correct definition (0.5) | Wrong answer (0) |  |
| Principle | Describing the principle correctly (1) | Partially correct description (0.5) | Wrong answer (0) |  |
| Construction | Correct description of the construction (2) | Partially correct description (1) | Some relevant information (0.5) | Wrong answer (0) |
| Working | Correctly describing the working (3) | Partially correct description (2) | Some relevant information (1) | Wrong answer (0) |
| 5 (b) | Postulates  | Correctly describing both the postulates (2) | Correctly describing any one postulate (1) | Some relevant information (0.5) | Wrong answer (0) |
| Time dilation | Correct explanation with formula (2) | Partially correct response (1) | Some relevant information (0.5) | Wrong answer (0) |
| Length contraction  | Correct explanation with formula (2) | Partially correct response (1) | Some relevant information (0.5) | Wrong answer (0) |