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| **HY/PHAK/1222/C 29-SEP-2022** | | | |
| **HALF YEARLY EXAMINATION (2022 -23)** | | | |
| **Subject: PHYSICS**  **Grade: XII** | | Max. Marks: 70Time: 3 Hrs | |
|  | **SECTION A** | |  |
| 1 | 3C | | 1 |
| 2 | 20V | |  |
| 3 | copper decreases and that of silicon increases | |  |
| 4 | small couple per unit twist | |  |
| 5 | (B) and (D), respectively | | 1 |
| 6 | The electron will continue to move with uniform velocity along the axis of the solenoid | | 1 |
| 7 | 4960 Ω | |  |
| 8 | √2 | |  |
| 9 | The angle of incidence in the denser medium must be greater than the critical angle for the two media | | 1 |
| 10 | Fo/fe | | 1 |
|  | **SECTION B** | |  |
| 11 | F = 2kp/r3  F = 2kp / (r/2)3 (1/2 mark)  F = 8f = 32 x 8 = 256N (1/2 mark) | | 1 |
| 12 | Diagram – 1 mark | | 1 |
| 13 | Zero | | 1 |
| 14 | Decreases beacaue of the repulsive force. | | 1 |
| 15 | diagram | | 1 |
| 16 | Increases  Reason | | 1 |
| 17 | Definition and unit | | 1 |
|  | OR | |  |
|  | Phosphor-Bronze wire is used for suspension in a moving coil galvanometer because it has small restoring torque per unit twist and high tensile strength--------------------1/2 +1/2 | |  |
| 18 | graph | | 1 |
|  | OR | |  |
|  | No , justification ---------------------------------------------------------1/2 +1/2 | |  |
| 19 | Eq = qvB  V = E/B | | 1 |
| 20 | Expression | | 1 |
|  | **SECTION C** | |  |
| 21 | OR | | 2 |
| 22 | **OR**  Electric flux on right side=+ 400b3  Electric flux on left side=-200b3  Net Electric flux =+200b3 | | 2 |
| 23 |  | | 2 |
| 24 | **OR** | | 2 |
| 25 |  | | 2 |
| 26 | Proof | | 2 |
| 27 |  | |  |
|  | **SECTION D** | |  |
| 28 |  | | 3 |
| 29 | 1. reason 2. Vd = i/nAe = 1.1x10-4m/s (1.5 marks)   T = l/vd = 2.72 x 104s (1.5 marks) | | 3 |
| 30 |  | | 3 |
| 31 | 1. E = σ/ €0 + 2σ/€0 = 3σ/€0 (1 mark)(towards sheet 2) (1/2 mark) 2. E = σ/2€0 (1 mark) (directed towards sheet 2) (1/2 mark)   **OR**   1. Inner surface = -q/ 4πr12 (1 mark) outer surface = Q+q / 4πr22 (1 mark) 2. E = k (Q+q)/x2 (1 mark) | | 3 |
| 32 |  | | 3 |
| 33 |  | | 3 |
| 34 | 1. Diagam + labelling (2 marks) 2. L3 OBJECTIVE   L1 EYEPIECE 1mark)  **OR** | | 3 |
|  |  | |  |
|  | **SECTION E** | |  |
| 35 | 1. Properties (1 mark) diagram ( 1mark) reason (1 mark)     **OR**   1. Derivation | | 5 |
| 36 | a. Proof (2 marks)  b. (i) half (ii) no effect (iii) half (3 marks)   1. Derivation (3 marks) | | 5 |
|  | In loop ABCFA  +80 – 20 I2 + 40 I1 = 0 4 = I2 - 2 I1  In loop FCDEA -40 I1 -10(I1 + I2) + 40 = 0 ½ ½ ½ 1  Writing two loop equations 1 + 1 Calculation of currents through 40 Ω and 20 Ω resistors 1 8 -50 I1 - 10 I2 + 40 = 0 5 I1 + I2 = 4  Solving these two equations  I1 = 0A & I2 = 4 | |  |
| 37 | 1. Diagram -1/2+1/2   Derivation -2    OR   1. Derivation and diagram (3 marks)     (2 marks) | | 5 |

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