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| **PT1/PH/1223/B 17-APR-2023** | | | |
| **PERIODIC TEST – I (2023-24)** | | | |
| **Subject: PHYSICS (ANSWER KEY)**  **Grade: XII** | | Max. Marks: 35Time:1 hour 15 min | |
|  | **SECTION A(1MARK)** | |  |
| 1 | b | | 1 |
| 2 | c | | 1 |
| 3. | d | | 1 |
| 4 | a | | 1 |
| 5. | c | | 1 |
| 6. | Ans: a | | 1 |
| 7. | Ans:d | | 1 |
| 8. | .Ans:a | | 1 |
|  | **SECTION C (2MARKS)** | |  |
| 9. | (a)diagram  b) Two field lines never cross each other because due to this there will be two directions for electric field, which is not possible. So, two field lines never cross each other at any point | |  |
| 10. | derivation | | 2 |
| 11. |  | | 2 |
| 12. | **a)** Electric dipole moment is defined as the product of charge and the distance between the charges and is directed from negative to positive charge. The SI unit of electric dipole moment is coulomb metre (Cm).  b) | | 2 |
| 13 | Statement (1mark)  Proof(1mark) | |  |
|  | SECTION D (3MARKS) | |  |
| 14. | Ans:  OR  Ans: a)54Nm2/C (1mark)  b) zero(1mark)  c)63Nm2/C (1mark) | | 3 |
| 15. | Derivation(3marks) | | 3 |
| 16. | a) q1 and q2 are opposite signs and q2 is smaller in magnitudeb) 2a/3 | | 3 |
| 17. | **(a)** http://img1.mnimgs.com/img/curr/1/12/16/245/5671/NS_21-10-08_Sravana_12_Physics_1_34_NRJ_SS_html_60d2b61f.jpg  Distance between the two charges, AB = 20 cm  ∴AO = OB = 10 cm  Net electric field at point O = *E*  Electric field at point O caused by +3μC charge, E1**…………………………..(1/2mark)**  http://img1.mnimgs.com/img/curr/1/12/16/245/5671/NS_21-10-08_Sravana_12_Physics_1_34_NRJ_SS_html_15b6e68c.gif along OB  Magnitude of electric field at point O caused by −3μC charge,E2 **…………………..(1/2mark)**  http://img1.mnimgs.com/img/curr/1/12/16/245/5671/NS_21-10-08_Sravana_12_Physics_1_34_NRJ_SS_html_4829d0c5.gif = http://img1.mnimgs.com/img/curr/1/12/16/245/5671/NS_21-10-08_Sravana_12_Physics_1_34_NRJ_SS_html_621dee13.gif along OB  E=E1+E2= 5.4 × 106 N/C along OB**………………………………(1mark)**  **(b)** A test charge of amount 1.5 × 10−9 C is placed at mid-point O.  *q* = 1.5 × 10−9 C  ∴*F = qE***………………………………………….(1/2mark*)***  = 8.1 × 10−3 N  Therefore, the force experienced by the test charge is 8.1 × 10−3 N along OA**………….(1/2mark)** | | 3 |
|  | SECTION E (5MARKS) | |  |
| 18. | Ans:a)Derivation (2marks)  b)Graph(1mark)  c)(2marks)  OR  Ans: a) Derivation (2marks)  b) Diagram (1mark)  c) (2marks) | | 5 |

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