|  |  |
| --- | --- |
| **A close-up of a sign  Description automatically generated** | |
| **UT/PHAK/1223/A 30-OCT-2023** | |
| **UNIT TEST (2023-24) Answer key** | |
| **Subject: PHYSICS**  **Grade: XII** | **Max. Marks:50**  **Time: 2 ½ Hours** |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | (d) along abc if I increases | 1 |
|  | (D) 1. 0 V | 1 |
|  | (b) inductor decreases and the capacitor increases | 1 |
|  | Ultraviolet rays | 1 |
|  | 5 cm | 1 |
|  | f ' = f , f " =2f | 1 |
|  | 95 nm | 1 |
|  | 3 u | 1 |
|  | Question Nos. 9 to 10 are Assertion (A) and statements Reason (R) type questions.  Given below are two statements labelled as Assertion (A) and Reason (R).  Select the most appropriate answer from the options given . |  |
|  | Correct option – a: Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). | 1 |
|  | Correct option – a: Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). | 1 |
| 11 | Diamagnetic material.  Properties :  (i) They have the tendency to move from stronger to weaker part of the external magnetic field.  (ii) They expel magnetic field lines.  (iii) Such substances are repelled by a bar magnet.  (iv) When placed in an external magnetic field, a net magnetic dipole moment is developed inside it which is in a direction opposite to that of the applied magnetic field. (Any two) | 1  ½ + ½ |
| 12 |  | ½  ½  1 |
| 13 |  | 1 +1 |
| 14 | 1. circuit is given by inductor and avg power is zero | ½  ½ |
|  | 1. R1> R2   Reason | ½  ½ |
| 15 | **OR**  Diagram  Derivation | ½  ½  ½  ½  ½  1 ½ |
| 16 | Derivation | 2 |
|  | **SECTION C** |  |
| 17 | **OR**  Derivation of current ----------- 2  Derivation of reactance --------1/2  -----------------1/2 |  |
| 18 | 1. Current carried by a conductor due to flow of charges is called conduction current. Displacement current is not due to flow of charges but due to changing electric field/electric flux. Oe expreesion for displacement current 2. This is because water molecules present in most materials readily absorb infrared waves. After absorption, their thermal motion increases, that is, they heat up and heat their surroundings. | 1  1  1 |
| 19 | Diagram  Derivation  Advantage and reason | 1  1  1 |
| 20 |  |  |
| 21 | Definition of distnace of closest approach and impact paprameter | 1  ½  ½  1 |
| 22 | Draw the graph showing the variation of binding energy per nucleon with the  mass number What are the main - Physics - Nuclei - 10792181 |  Meritnation.com  Features of diagram (any two)  1. Binding energy per nucleon is practically independent of atomic number for nuclei of middle mass number (30 <A < 170)  2. The curve has maximum of about 8.75 MeV for A= 56 and has a value of 7.6 MeV for A= 238  3. Binding energy per nucleon is lower for both light nuclei (A<30) and heavy nuclei (A>170)  Two lighter nuclei fuse together to form heavier nuclei as the binding energy per nucleon of fused heavier nuclei is more than the binding energy per nucleon of the lighter nuclei. Thus the final system is more tightly bound | 1  1  1 |
|  | **SECTION D** |  |
| 23 | Derivation      **OR**  Principle  Working  Derivation  image | 2  2  ½  1  2  1 ½ |
| 24 | Derivation  Ray diagram    Angle of incidence = 60 degree  Angle of deviation = 60 degree  **OR**  Derivation | 3  ½  ½  1  3  1  1 |

\*\*\*