QP CODE: 23800334

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Reg No : .....

Name : .....

INTEGRATED PG DEGREE EXAMINATION, DECEMBER 2023

Third Semester

INTEGRATED MSC BASIC SCIENCE-CHEMISTRY

Complementary - ICH3CM05 - PHYSICS III - MODERN PHYSICS, ELECTRODYNAMIC AND TRANSDUCERS

2020 ADMISSION ONWARDS

65C60337

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. State and explain Pauli's exclusion principle.
2. Explain drawbacks of Bohr atom model.
3. Explain the term mass defect.
4. Mention the properties of nuclear forces.
5. What is Gauss law in magnetic field?Explain its physical significance.
6. Name the force experienced by the charge moving with velocity v in electric and magnetic field.Obtain the expression.When will be force due to magnetic field maximum?
7. How Maxwells equation gets modified in conducting media?
8. What is electrical transducers?
9. What are solar cells?
10. Expalin ionization transducer?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Calculate the shortest wavelength occuring in the Balmer series.Given the wavelength of the Hα line as 6563Å.
12. Calculate the time required for 20% of a sample of radioactive substance to disintegrate. Given, the half life of the substance =1.4 $X10^{10}$ years.
13. Write a note on carbon dating.
14. State and prove Ampere's circuital theorem.
15. A solenoid of length 2m has 1000 turns. If a current of 1 A lows through it,find the strength of the field at the centre and also at the ends.
16. Obtain modified Maxwell's equation
17. Explain photovoltaic cell?
18. What is thermoelectric transducers?

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Give an account of different quantum numbers required to satisfy the state of electron in an atom.Describe Pauli's exclusion principle and use it to find distribution of electron in different shells
20. Explain different coupling schemes with example.
21. What is Biot-Savart law?Find magnetic field due to a circular loop carrying steady current along the axis of the coil.
22. Explain actuators.

(2×5=10 weightage)