ROLL NO

UBLIC SERVICE COMMISSION

NED COMPETITIVE EXAMINATION
ECRUITMENT TO THE POSTS OF
MANAGEMENT SERVICE, ETC -2023
CASE NO. 1C2024

JECT: PHYSICS (PAPER-II)

MAXIMUM MARKS: 100

n must be attempted at one place instead of at different places.
ccordance with Q. No. in the Q. Paper.
iii. No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
iv. Extra attempt of any question or any part of the question will not be considered.

NOTE: **Attempt Five Questions in All. Calculator is allowed (Non-Programmable). Attempt in Urdu or English.**

Q. No. 1:
a) State and Prove Poynting Theorem.
b) Write down FOUR Maxell's equations.
c) What is Poynting Vector. Write down its Unit. **(10+4+6=20 Marks)**

Q. No. 2:
a) Explain the formation of Hysteresis Loop in a Ferromagnetic Material. What is Coercivity and Retentivity.
b) An electron is circulating in a circular orbit of radius 5.1 Pm. If a magnetic field of induction of B = 2.00 webers/m2 acts at right angle to the plane of the orbit, Calculate the change in its magnetic moment. **(10+10=20 Marks)**

Q. No. 3:
a) Define Fermi level and sketch energy band diagram for a p-n junction diode.
b) Discuss the characteristics and I-V curve for a diode in forward and reverse biased conditions.
c) Explain the construction and working of a light emitting diode (LED). **(4+10+6=20 Marks)**

. No. 4:
a) What are the advantages of digital electronics over analogue? Describe major limitations to the use of digital techniques.
b) What are the advantages of octal over hexadecimal number system? Why is hexadecimal number system used instead of the octal number system when working with 8- and 16-bit digital computers?
c) How error correction is done using parity codes? **(8+8+4=20 Marks)**

. No. 5:
a) What is Pauli Exclusion Principle. How it is helpful for the distribution of electrons in different orbits of an atom.
b) What are Quantum Numbers. Explain their importance. **(12+8=20 Marks)**

No. 6:
a) What is Zeeman effect. Explain Anomalous Zeeman effect.
b) Calculate the energy of d-orbital of the 3rd orbit of H-atom under the influence of weak external magnetic field. **(12+8=20 Marks)**

No. 7:
a) What is a mass spectrograph? Discuss its construction, working principle, operation and applications.
b) What do you mean by nuclear spin? How nuclear magneton is different from Bohr magneton?
c) Differentiate between natural and artificial sources of radioactivity. **(8+8+4=20 Marks)**

. No. 8:
a) Explain the phenomena of nuclear fusion in detail. Elaborate the nuclear fusion reactions taking place on sun.
b) Write a brief note on the construction of a TOKAMAK. **(15+5=20 Marks)**