



ALLAMA IQBAL OPEN UNIVERSITY
Semester Terminal Exam Autumn 2020

Program /level:	B.Ed	Maximum Marks	100
Title /Course Code	Physics III (6443)	Pass marks	50

Instructions for Exams:

1. Attempt All Questions.
2. Write answers in your own words and avoid copying from an internet source or any book.
3. Be precise, avoid unnecessary details, answer to each question must be between 600-800 words.
4. Students are advised to upload their answer sheets/solutions on LMS portal as soon as they complete their answers and not to wait for 8:30 PM.
5. Submissions after due date & time will not be entertained. Attach undertaking with each course code which were allowed to attempt in Urdu.
6. If plagiarism found, Student may be declared fail.

Q. No.	Questions	Marks
Q.No.1	<p>a) Explain Coulomb,s Law and provide examples of its application in physics.</p> <p>b) An electric dipole in a uniform electric field of magnitude 5.0×10^5 N/C that is directed parallel to the plane of the figure. The charges are $\pm 1.6 \times 10^{-19}$ C; both lie in the plane and are separated by $0.125 \text{ nm} = 0.125 \times 10^{-9} \text{ m}$. Find (i) the magnitude and direction of the electric dipole moment; (ii) the magnitude and direction of the torque.</p> <p>c) Electric charge is distributed uniformly along an infinitely long, thinwire. The charge per unit length is l (assumed positive). Find the electricfield by using Gauss's law.</p>	10+13+10
Q.No.2	<p>a) If a square capacitor has side 6cm and the distance between the plates is 0.15mm, what is the charge on the capacitor when the voltage across it is 15V? What is the internal energy of this capacitor?</p> <p>b) Derive formula for calculating the current in a single loop. Also discuss the applications of Kirchhoff's laws.</p>	16+17
Q.No.3	<p>a) Derive the expression for the magnetic force due to current carrying wire $F_B = iLB\sin\theta$. Also explain how the direction of magnetic force can be find?</p> <p>b) Suppose the long solenoid has 600 turns per meter and cross-sectional area 6.0 cm^2. The current in its windings is increasing at 50 A/s. (a) Find the magnitude of the induced emf in the wire loopoutside the solenoid. (b) Find the magnitude of the induced electric field within the loop if its radius is 4.0 cm.</p> <p>c) Discuss magnetism in detail and its types, also draw MH diagrams for each type.</p>	10+10+14