

**B.Tech. - VIEP - ELECTRICAL ENGINEERING
(BTELVI)**

Term-End Examination

00426

June, 2015

BIEE-009 : APPLIED ELECTROMAGNETICS

Time : 3 hours

Maximum Marks : 70

Note : Attempt any **seven** questions. Assume missing data, if any.

1. State the Gauss's law and prove it for a charge q . Also define electric flux. 10
2. Derive the expression for electric field due to a uniform infinite line charge at a point P, which is at distance 'r' perpendicular to the charge line. 10
3. What is electric field polarization ? Also explain elliptical polarization with the help of a mathematical expression. 10
4. If the electric potential is given by $V = x^2yz + Ay^3$,
 - (a) find A so that Laplace's equation is satisfied.
 - (b) With the value of A, determine the electric field at (2, 1, -1). 10

5. Derive the expression for electrical energy density stored in static electric field. 10
6. Discuss the Biot-Savart's law. Also obtain the expression for magnetic field at point P due to a current (I) carrying ring as shown in Figure 1. The point P is at distance 'r' from the centre of the ring and the radius of the ring is 'a'. 10

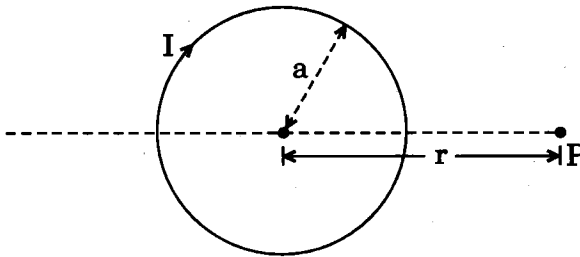


Figure 1

7. Discuss the various kinds of transmission lines. What are the elements of a transmission line? Also discuss about the primary constants of a transmission line. 10
8. Write the Maxwell's equations. Also explain their practical meaning and relate them to previous theories. 10
9. State and prove Poynting's theorem. 10

10. Write short notes on any *two* of the following : *2×5=10*

- (a) Wave Polarization
 - (b) Standing Wave Ratio
 - (c) Continuity Equation
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