B.Tech. SEM -V (E & TC Engg.) 2014 Course (CBCS) : SUMMER - 2019

SUBJECT: ELECTROMAGNETIC ENGINEERING

Day: Wednesday
Date: 15/05/2019

S-2019-2704

Time: 10.00 AM TO 01.00 PM
Max Marks: 60

N.B.:

1) All questions are **COMPULSORY.**
2) Figures tot eh right indicate **FULL** marks.
3) Assume suitable data if necessary.

Q.1 **a)** Explain the concept of curl and Divergence. **(05)**

b) Express the following points in cylindrical and spherical co- ordinates: **(05)**
i) P (1, -4, -3) ii) Q (3, 0, 5)

OR

Q.1 **a)** What is the significance of electromagnetic field? **(05)**

b) If $U = xz - x^2y + y^2z^2$, evaluate div(grad U). **(05)**

Q.2 **a)** Determine the electric filed due to continuous line charge. **(05)**

b) What is Gauss law? Explain it. **(05)**

OR

Q.2 **a)** What is divergence theorem? Explain it. **(05)**

b) What is electric flux density? **(05)**

Q.3 **a)** Explain the boundary condition of magnetic field. **(05)**

b) What is Biot's Savart law? Explain it. **(05)**

OR

Q.3 **a)** Determine the force on a current element. **(05)**

b) What is Ampere's Circuital law? Explain the magnetic field intensity through infinitely long co-axial transmission line. **(05)**

Q.4 **a)** Explain the Maxwell's equation. **(05)**

b) What is displacement current? **(05)**

OR

Q.4 **a)** State Faraday's law and explain it. **(05)**

b) What is mmf in moving loop in static magnetic field? **(05)**

Q.5 **a)** Determine the plane wave equation in free space and dielectric media. **(05)**

b) State Poynting theorem and explain it. **(05)**

OR

Q.5 **a)** Define the boundary condition of electromagnetic wave. **(05)**

b) What is the effect on transmitted electromagnetic wave when it is reflected at normal incidence? **(05)**

Q.6 **a)** Derive an expression for transmission line equation of lossless medium. **(05)**

b) An air line has a characteristic impedance of 70Ω and a phase constant of 3rad/m at 100 MHz. Calculate the inductance per meter and capacitance per meter of the line. **(05)**

OR

Q.6 **a)** What is VSWR? **(05)**

b) What do you mean by attenuation of waves? **(05)**

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