G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY (AT), KURNOOL   **SET 3**
B.Tech – II Year - II Semester (R15) MID II Examinations
Branch: EEE

GPCET
Pioneering Innovative Education

Sub: Electro Magnetic Fields   **Date: 12-05-2017**
Time: 1½ Hrs.   **Max Marks: 30M**

Question 1 is compulsory. Answer one from 2 or 3 and one from 4 or 5.

	Question	Marks	Unit	CO	Cognitive Level
1.a)	What do you mean by magnetic flux and also mention the S.I units.	2	III	C209.3	Understand
1.b)	What is the expression magnetic field intensity due to finite length conductor.	2	III	C209.3	Understand
1.c)	If two coils have self inductances of 10mH and 40 mH and a mutual inductance between the coils of 2.5 mH. Find out the value of coefficient of coupling factor.	2	IV	C209.5	Apply
1.d)	List out any two differences between statically and dynamically induced emf.	2	V	C209.6	Understand
1.e)	Define wave velocity in wave equation.	2	V	C209.6	Remember
2.a)	Explain the concept of Biot- Savart's Law.	4	III	C209.3	Understand
2.b)	Define and establish Ampere's Circutial Law for electromagnetic field .	4	III	C209.4	Remember
3.a)	Derive the expression for Torque on a current loop placed in magnetic field.	4	III	C209.4	Remember
3.b)	Determine the force per meter length between two long parallel wires A & B separated by 6 cm in air carrying currents of 42 Amps. (i) In same direction. (ii) In the opposite direction.	4	IV	C209.5	Understand
4.a)	Derive the expression for inductance of solenoid and toroid with neat diagrams.	4	IV	C209.5	Create
4.b)	State and explain the Faraday's Law of electro magnetic induction.	4	IV	C209.6	Understand
5.a)	What do you mean by displacement current ? Explain in detail	4	V	C209.6	Understand
5.b)	Derive Maxwell's equations for time varying fields and Static fields both in Differential and integral form.	4	V	C209.6	Create

Signature of the Faculty   Signature of the HOD

GPCET
Pioneering Innovative Education

Sub: Electro Magnetic Fields   **Date: 12-05-2017**

Time: 1½ Hrs.   **Max Marks: 30M**

Question 1 is compulsory. Answer one from 2 or 3 and one from 4 or 5

	Question	Marks	Unit	CO	Cognitive Level
1.a)	State the expression of Biot-Savart's Law.	2	III	C209.3	Understand
1.b)	What is the significance of vector magnetic potential.	2	IV	C209.5	Remember
1.c)	What do you mean by wave length.	2	V	C209.6	Remember
1.d)	List out any two differences between statically and dynamically induced emf.	2	V	C209.6	Understand
1.e)	What is expression for inductance of co-axial cable.	2	IV	C209.5	Understand
2.a)	Derive an expression for magnetic field intensity H due to a current carrying conductor of finite length using Biot- Savart's Law.	4	III	C209.3	Create
2.b)	Derive the expression for Torque on a current loop placed in magnetic field.	4	III	C209.4	Create
3.a)	Determine the force per meter length between two long parallel wires A & B separated by 6 cm in air carrying currents of 42 Amps. (i) In same direction. (ii) In the opposite direction.	4	III	C209.4	Apply
3.b)	Derive the expression for inductance of solenoid and toroid with neat diagrams.	4	IV	C209.5	Create
4.a)	Derive the expressions for energy stored in magnetic field?	4	IV	C209.5	Create
4.b)	Explain Neumann's formula?	4	IV	C209.5	Understand
5.a)	What do you mean poynting vector and derive the expression for pointing theorem.	4	V	C209.6	Understand
5.b)	State Maxwell's equations for static fields. Explain how they are modified for time varying electric and magnetic fields .	4	V	C209.6	Create

Signature of the Faculty   Signature of the HOD

GPCET
Pioneering Innovative Education

Sub: Electro Magnetic Fields   **Date: 12-05-2017**
Time: 1½ Hrs.   **Max Marks: 30M**

Question 1 is compulsory. Answer one from 2 or 3 and one from 4 or 5 and 6 or 7

	Question	Marks	Unit	CO	Cognitive Level
1.a)	Write the statement of Amperes Circuital Law.	2	III	C209.3	Remember
1.b)	Define self and mutual inductance in electro magnetic circuits.	2	IV	C209.5	Understand
1.c)	A solenoid with air core has 1000 turns of wire.It's length is 800mm and core radius is 60mm. what is inductance.	2	IV	C209.5	Apply
1.d)	State stoke's theorem.	2	III	C209.4	Remember
1.e)	What do mean by skin-depth.	2	V	C209.6	Remember
2.a)	Derive an expression for magnetic field intensity H due to a current carrying conductor of infinite length using Biot- Savart's Law.	4	III	C209.3	Remember
2.b)	Derive the expression for Torque on a current loop placed in magnetic field.	4	III	C209.4	Create
3.a)	State Maxwell's equations for static fields. Explain how they are modified for time varying electric and magnetic fields .	4	V	C209.6	Create
3.b)	Derive the expression for self inductance of a co-axial cable.	4	IV	C209.5	Create
4.a)	A toroidal coil of 1200 turns has a mean radius of 30cm and a radius of winding of 2cm. What is the self-inductance With (i) Air core (ii) $\mu_{r=}900$?	4	IV	C209.5	Apply
4.b)	Explain about Scalar and Vector magnetic potentials.	4	IV	C209.5	Understand
5.a)	State and explain the Faraday's Laws of electro magnetic induction.	4	V	C209.6	Remember
5.b)	Explain about the motion of uniform plane wave in dielectrics with necessary equations.	4	V	C209.6	Understand

Signature of the Faculty   Signature of the HOD

GPCET
Pioneering Innovative Education

G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY (AT), KURNOOL   **SET 2**
B.Tech – II Year - II Semester (R15) MID II Examinations
Branch: EEE

Sub: Electro Magnetic Fields   **Date: 12-05-2017**
Time: 1½ Hrs.   **Max Marks: 30M**

Question 1 is compulsory. Answer one from 2 or 3 and one from 4 or 5.

	Question	Marks	Unit	CO	Cognitive Level
1.a)	Define self and mutual inductance in electro magnetic circuits.	1	IV	C209.5	Understand
1.b)	A solenoid with air core has 1200 turns of wire.It's length is 900mm and core radius is 50mm. what is inductance.	1	IV	C209.5	Apply
1.c)	What is the expression for magnetic field intensity due to infinite length conductor.	1	III	C209.4	Remember
1.d)	What is meant by wave length and loss tangent.	1	V	C209.6	Remember
1.e)	What is meant by Skindepth.	1	V	C209.6	Remember
2.a)	A copper wire carries a current of 1 A. Determine the displacement current in the wire at 1 MHz. for copper $\varepsilon = \varepsilon_0$ and conductivity of the copper is 5.8×10^7 Mho/m.	4	V	C209.6	Apply
2.b)	State and establish the evidence of Ampere's Circuital Law for electro magnetic field.	4	III	C209.4	Understand
3.a)	Derive the expression for Torque on a current loop placed in magnetic field.	4	III	C209.4	Create
3.b)	Derive the expression for self inductance of a co-axial cable.	4	IV	C209.5	Create
4.a)	A toroidal coil of 1200 turns has a mean radius of 30cm and a radius of winding of 2cm. What is the self-inductance With (i) Air core (ii) μ_r=900?	4	IV	C209.5	Apply
4.b)	Explain about Scalar and Vector magnetic potentials.	8	IV	C209.5	Understand
5.a)	State and explain the Faraday's Laws of electro magnetic induction.	4	V	C209.6	Remember
5.b)	Explain about the motion of uniform plane wave in perfect conductor with necessary equations.	4	V	C209.6	Understand

Signature of the Faculty   Signature of the HOD