Reg. No.																

Question Paper Code	14508

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Second Semester

M.E. - Communication Systems

24PCOPC203 - ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	EMI stands for a) Electromagnetic Induction b) Electromagnetic Interference c) Electrical Magnetic Interface d) None	1	K1	CO1
2.	EMC ensures a) Signal boosting b) System compatibility c) Heat reduction d) Power storage	1	K2	CO1
3.	A communication cable picks up noise from nearby power lines. Identify the type of coupling. a) Radiative coupling b) Capacitive coupling c) Inductive coupling d) Impedance coupling	1	K3	CO1
4.	Filters used for EMI suppression mainly _____. a) Amplify noise signals b) Block unwanted frequency components c) Generate harmonics d) Increase signal distortion	1	K1	CO2
5.	Radiated EMI travels through a) Cable b) Space c) Ground wire d) Resistor	1	K2	CO2
6.	Identify the technique applied to reduce radiated EMI from a cable. a) Increase cable length b) Use shielding c) Remove insulation d) Increase current	1	K3	CO2
7.	Capacitive coupling depends on a) Magnetic field b) Electric field c) Gravity d) Heat	1	K1	CO3
8.	Ground loops are mainly caused by a) Single grounding point b) Multiple ground paths c) Shielding d) Filtering	1	K2	CO3
9.	Shielding effectiveness is expressed in a) Ohms b) Tesla c) Decibel (dB) d) Hertz	1	K3	CO3
10.	The organization which develops international EMC standards is _____. a) NASA b) IEC c) WHO d) ISRO	1	K1	CO4
11.	EMC standards are required for electronic devices _____. a) To increase cost b) To ensure compatibility and safe operation c) To reduce efficiency d) To increase noise	1	K2	CO4
12.	The standard which is applied for testing a consumer electronic device in a residential environment is _____. a) Industrial standard b) Military standard c) CISPR Class B standard d) ISO standard	1	K3	CO4

13.	LISN stands for _____. a) Line Impedance Stabilization Network b) Low Input Signal Network c) Linear Isolation System Node d) Load Impedance Signal Node	*1*	*K1*	*CO5*
14.	The function of a spectrum analyzer in EMI testing is _____. a) To generate signals b) To display frequency and amplitude of signals c) To reduce noise d) To amplify signals	*1*	*K2*	*CO5*
15.	If EMI levels are within limits during testing, what conclusion should be applied? a) Device fails b) Device complies with standards c) Device is unstable d) Device must be modified	*1*	*K3*	*CO6*
16.	During an EMI test in an anechoic chamber, the measured emission level of a device is below the specified standard limit. What action should be applied? a) Increase signal frequency b) Modify circuit design c) Approve the device as compliant d) Repeat test without reason	*1*	*K3*	*CO6*

PART – A (ii) (Short Answer Questions)
(6 × 3 = 18 Marks)
Answer ALL Questions

17.	Analyze how electromagnetic interference occurs between electronic subsystems by examining the sources, coupling paths, and resulting effects on system performance.	*3*	*K4*	*CO1*
18.	Apply grounding techniques to reduce electromagnetic interference in an electronic system.	*3*	*K3*	*CO2*
19.	Examine the effect of apertures in shielding enclosures on shielding effectiveness.	*3*	*K4*	*CO3*
20.	List major international EMC standards and their roles.	*3*	*K3*	*CO4*
21.	Make use of current probes in an EMI setup to identify common-mode noise sources in cables.	*3*	*K3*	*CO5*
22.	Analyze the EMI test results obtained from an anechoic and determine whether the device meets emission limits.	*3*	*K4*	*CO5*

PART - B (Descriptive Answer Questions)
(6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Apply EMI classification principles todistinguish between emission and susceptibility in electronic systems**.**	*11*	*K3*	*CO1*
		OR			
	b)	Apply EMI/EMC principles to identify sources and victims of electromagnetic interference and classify EMI coupling mechanisms in electronic systems.	*11*	*K3*	*CO1*
24.	a)	Make use of electromagnetic shielding principles todetermine shielding effectiveness in practical systems**.**	*11*	*K3*	*CO2*
		OR			
	b)	ApplyEMI mitigation techniques in PCB and system-level design**.**	*11*	*K3*	*CO2*
25.	a)	Analyzetheeffectiveness of different shielding materialsin reducing electromagnetic interference by consideringmaterial properties, frequency, and enclosure design.	*11*	*K4*	*CO3*
		OR			
	b)	Analyzethe impact of PCB layout and grounding techniqueson EMI reduction inmixed-signal electronic systems**.**	*11*	*K4*	*CO3*
26.	a)	Use the classification of EMC standards (basic, generic, and product standards) to identify suitable standards for testing an industrial electronic system.	*11*	*K3*	*CO4*
		OR			

	b)	Apply the guidelines of standardization bodies such as ANSI and IEC to select appropriate EMC testing procedures.	*11*	*K3*	*CO4*
27.	a)	Apply the procedure of conducted emission testing using a LISN and spectrum analyzer to evaluate EMI in a switched-mode power supply.	*11*	*K3*	*CO5*
		OR			
	b)	Apply EMI measurement techniques using spectrum analyzers, antennas, and current probes to detect radiated emissions in a communication system.	*11*	*K3*	*CO5*
28.	a)	Analyze radiated emission data obtained from an anechoic chamber and determine whether the device complies with EMC standards.	*11*	*K4*	*CO5*
		OR			
	b)	Analyze the EMI test results obtained from an open area test site (OATS) and determine whether the device meets specified emission limits.	*11*	*K4*	*CO5*