Department of Electrical Engineering

II Year III Semester

3EE2-01: Advance Mathematics

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1. Define Interpolation.	BLT-1	CO-1
2. Write Gauss Forward, Backward and Stirling's Formula.	BLT-1	CO-1
3. Find by Newton-Raphson Method, the real root of equation xex-2 = 0 correct to three decimal places.	BLT-3	CO-1
4. Find the real root of the equation x (log(10) x) - 1.2 = 0 by Regula Falsi Method correct to the three places of decimal.	BLT-3	CO-1
5. Evaluate integration with limit 0 to 1 $\{1/(1+x^2)\}$ dx by using (i) Trapezoidal Rule (ii) Simpson's 1/3 rule (iii) Simpson's 3/8 Rule.	BLT-4	CO-1

ASSIGNMENT-II

1. Compute L.T of f(t) = e(2t) + 4t(3) – 5 sin 3t + 7 cos2t.	BLT-3	CO-2
2. Compute L.T of sinh 3t.	BLT-3	CO-2
3. Find the laplace transform of :- (i) L(t sin at) (ii) L(t2 et sin 4t) (iii) L(sinat – at cosat)	BLT-3	CO-2
4. Find The L.T of (i) t (1 - cos at) (ii) $\left(\frac{Cos\ at - Cos\ bt}{t}\right)$	BLT-3	CO-2
5. Use Convolution Theorem to find (i) $L^{-1}\left\{\frac{1}{(s-1)(s-2)}\right\}$ (ii) $L^{-1}\left\{\frac{1}{s^2+(s+1)^2}\right\}$	BLT-4	CO-2

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE2-01: Advance Mathematics

Note: Each Assignment of Maximum marks10.All question carries equal marksASSIGNMENT-III

1. Prove that the function e^x (cosy = I sin y)is analytic and find its derivative.	BLT-4	CO-3
2. Write Regula-False method formula.	BLT-2	CO-3
3. Given the following pair of values of x and y (i)Find the value of y at x = 10 (ii) Find the value of x at y = 15 X: 5 6 9 11 Y: 12 13 14 16	BLT-4	CO-3
4. Given the Following Data, evalute (i) y (25), (ii) y (32) and (iii) y (73). X: 10 20 30 40 50 60 70 80 Y: .9848 .9397 .8660 .7660 .6428 .500 .3420 .1737	BLT-4	CO-3
5. Prove that the function $e^x(\cos y + i \sin y)$ is analytic and find its derivative.	BLT-2	CO-3

ASSIGNMENT-IV

1. Find the Fourier transform of $f(x) = \begin{cases} 1-x^2, & \lvert x\rvert < a \\ 0, & \lvert x\rvert > a \end{cases}$. Hence prove that: $\int_0^\infty \left(\frac{x\cos x - \sin x}{x^3}\right)\cos\frac{x}{2}dx = -\frac{3\pi}{16}$.	BLT-4	CO-4
2. Express the function $f(x) = \begin{cases} \frac{2}{\pi}\sin x, 0 \le x \le \pi \\ 0, \quad x > \pi \end{cases}$ as a Fourier sine integral and hence evaluate $\int_0^\infty \frac{\sin\pi\lambda \sin x\lambda}{1-\lambda^2}d\lambda$.	BLT-3	CO-4
3. Find the Fourier transform of the following functions: $f(x) = \begin{cases} 1-x^2, & \lvert x\rvert < 1 \\ 0, & \lvert x\rvert > 1 \end{cases}$	BLT-3	CO-4
4. Find the Fourier sine and cosine transform of the function: $f(x) = x$.	BLT-3	CO-4
5. Define the analytic function and derive C-R conditions for analytic function and examine the nature of the function $f(z) = \frac{x^2y^5(x+iy)}{x^4+y^{10}}, z \neq 0, f(0) = 0$ in the region including the origin.	BLT-4	CO-4

*BLT: BLT shows the **Bloom's taxonomy** levels.

II Year III Semester

3EE2-01: Advance Mathematics

Note: Each Assignment of Maximum marks10.All question carries equal marks

ASSIGNMENT-V

1. If $Z(u_n) = \bar{u}(z), n \geq 0$ then show that $\lim_{z\to\infty} \bar{u}(z) = u_0$.	BLT-3	CO-5
2. Find the Z-transform of $n^1; n \geq 0$.	BLT-2	CO-5
3. Using convolution theorem, find $Z^{-1}\left[\frac{z^2}{(z-3)(z-1)}\right]; n \geq 0$..	BLT-4	CO-5
4. Using convolution theorem, find $Z^{-1}\left[\frac{z^2}{(z-3)(z-1)}\right]; n \geq 0$.	BLT-4	CO-5
5. Solve $u_{n+2} + 4u_{n+1} + 3u_n = 3^n$ with $u_0 = 0$, $u_1 = 1$.	BLT-3	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE1-03 Managerial Economics and Financial Accounting

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1	What is circular flow of income in economy? Explain with diagram.	BLT-2	CO-1
2	Explain the scope of managerial economics.	BLT-2	CO-1
3	What is mixed economy?	BLT-1	CO-1
4	Differentiate inductive and deductive approach of economy.	BLT-4	CO-1
5	What do you mean by Managerial Economics?	BLT-1	CO-1

ASSIGNMENT-II

1	Write down the types of variation in demand with graph.	BLT-2	CO-2
2	Explain the law of supply.	BLT-2	CO-2
3	What are the various determinants of demand?	BLT-1	CO-2
4	What are the various degrees of elasticity of demand?	BLT-1	CO-2
5	Define supply?	BLT-1	CO-2

ASSIGNMENT-III

1	What is production function?	BLT-1	CO-3
2	Define monopoly.	BLT-1	CO-3
3	Explain the concept of isoquants with its properties	BLT-2	CO-3
4	What is fund flow ? Prepare the format of it.	BLT-3	CO-3
5	Elaborate the term market structure, with the help of its various features.	BLT-2	CO-3

ASSIGNMENT-IV

1	What are the various types of ratios.	BLT-1	CO-4
2	Why there is need of financial analysis?	BLT-1	CO-4
3	What are the various short run costs, explain with the help of curves?	BLT-2	CO-4
4	Expand the terms TFC, TVC, MC , AC, AVC and AFC.	BLT-2	CO-4
5	What do you mean by accounting?	BLT-1	CO-4

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE1-03 Managerial Economics and Financial Accounting

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-V

1	Compute MP and AP from the given information-	BLT -4	CO -5
2	Prepare final accounts of Mr. Ram and Bro. from the following extracted data-	BLT -5	CO -5
3	What is demand?	BLT -1	CO -5
4	What is circular flow of income in economy? Explain with diagram.	BLT -1	CO -5

Labour	10	20	30	40	50	60	70	80	90	100
Output	550	660	780	950	1200	1350	1300	1300	1250	1050

Capital	2,00,000	Discount received	2,000
Drawings	20,000	Manufacturing expenses	75,000
Sales	10,00,000	Salaries	22,000
Debtors	1,00,000	Factory Rent	9,000
Purchase Return	6,000	Investment	5,000
Bills payable	28,000	Furniture	60,000
Bad Debts	2,000	Purchase	6,00,000
Printing and stationary	4,000	Creditors	1,20,000
Interest received	500	Sales return	14,000
Loan from Mohan	9,000	Bills receivable	60,000
Carriage outwards	3,000	Advertisement	4,000
Carriage inwards	22,000	Discount allowed	1,000
Depreciation	4,500	Plant and machinery	90,000
Stock on 01.04.21	1,37,500	Cash in hand	58,000
Other expenses	5,000	Cash at bank	70,000
		Closing Stock	50,000

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE3-04:Power Generation Process

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1. Explain the construction and working thermal power plant.	BLT-2	CO-1
2. Give the comparison of hydro, nuclear, thermal and gas power plant.	BLT-2	CO-1
3. Explain pumped storage plant with neat and clean sketch.	BLT-2	CO-1
4. Explain the working of closed cycle gas power plant.	BLT-3	CO-1
5. What do you mean by nuclear fuel? Explain the different components of nuclear reactor with suitable diagram.	BLT-3	CO-1

ASSIGNMENT-II

1 Explain the impacts of thermal and hydro power plants on environment.	BLT-2	CO-2
2 Explain Indian Energy scene.	BLT-3	CO-2
3 What is Photovoltaic effect?	BLT-1	CO-2
4 Explain the conservation of natural resources and sustainable energy system.	BLT-2	CO-2
5 What are the impacts of gas power plants on environment?	BLT-1	CO-2

ASSIGNMENT-III

1 What is demand factor?	BLT-1	CO-3
2 What is duration load curve?	BLT-1	CO-3
3 Write the different types of electrical loads with their examples.	BLT-3	CO-3
4 Draw and explain load curve and load duration curve.	BLT-2	CO-3
5 Explain the following; i. Mass Curve ii. Energy load curve iii. Active and reactive power iv. Utilization factor	BLT-2	CO-3

ASSIGNMENT-IV

1 Define load factor with its formula?	BLT-1	CO-4
2 What is Plant capacity factor?	BLT-1	CO-4
3 What are the effects of low poor factor?	BLT-2	CO-4
4 Explain the shunt capacitor method of power factor improvement for single phase and three phase load.	BLT-3	CO-4
5 What are the method of energy cost reduction? Give the detailed description.	BLT-3	CO-4

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE3-04: Power Generation Process

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-V

1What is the effect of load factor on unit energy cost?	BLT-1	CO-5
2What are the types of costs of power plant?	BLT-1	CO-5
3Give any two causes of low power factor.	BLT-1	CO-5
4A hydro power plant supplies following types of load. The load are: Industrial load: 1500kw Commercial load: 750kw Residential load: 450kw Irrigation Load: 100kw If the energy generated per year is 4.5×106 KWH and the maximum demand is 2500 kw. Calculate(a) Diversity Factor (b) Annual Load Factor	BLT-5	CO-5
5. Drive the condition of most economic power factor i)when KW demand is constant ii)when KVA demand is constant	BLT-4	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.

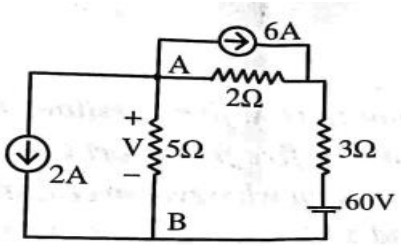
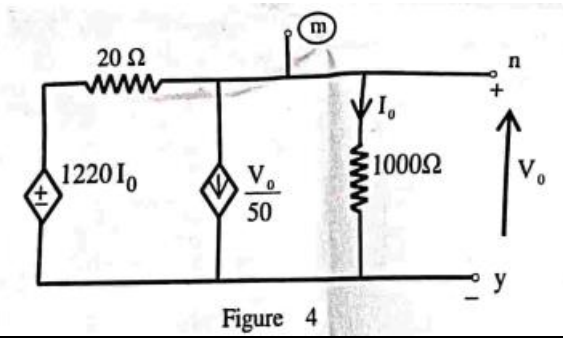
Department of Electrical Engineering

II Year III Semester

3EE4-05:Electrical Circuit Analysis

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1. Define the concept Duality and Dual networks with an example.	BLT-2	CO-1
2. State and explain maximum power transfer theorem?	BLT-2	CO-1
3. State and explain Compensation theorem and verify it using an example.	BLT-1	CO-1
4. Apply superposition theorem to the given circuit (figure 1) to find the voltage drop V across the 5 ohm resistor.  Figure −1	BLT-3	CO-1
5. Find Thevenin's equivalent circuit for network shown in figure 4 at the left of terminals n-y.  Figure 4	BLT-5	CO-1

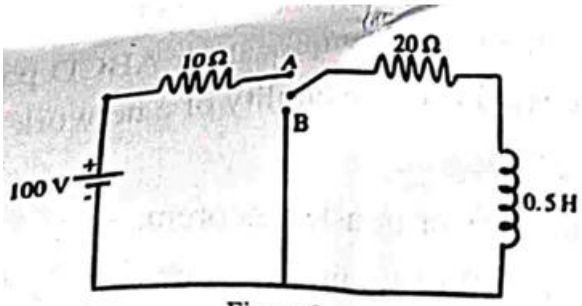
*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

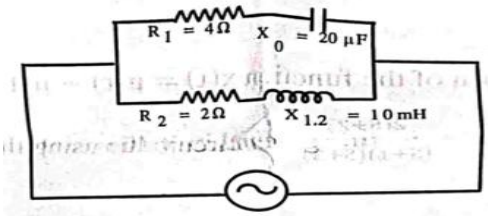
II Year III Semester

3EE4-05: Electrical Circuit Analysis

Note: Each Assignment of Maximum marks10.All question carries equal marksASSIGNMENT-II

1. Explain initial and final condition in network elements.	BLT-2	CO-2
2. State and explain the following theorem. Verify them using an example. 1) Reciprocity theorem 2) Tellegens Theorem	BLT-2	CO-2
3. Find the transient response of series RC circuit having DC excitation.	BLT-2	CO-2
4. In the figure 2, switch is closed at position A at t= 0, the switch is moved to position B. Find the current in both the cases.  Figure 2.	BLT-5	CO-2
5. Find the transient response of series RL and RC circuit having sinusoidal excitation.	BLT-3	CO-2

ASSIGNMENT-III

1. Find the resonant frequency for the parallel circuit shown in figure 3. R1= 4 Ohm, R2= 2 Ohm, Xc = 20 micro farad, XL= 10mH.  Figure 3	BLT-5	CO-3
2. What is the relationship between line and phase voltages and currents in a star connection? Also explain Power factor, apparent power and reactive power.	BLT-2	CO-3
3. A series RLC circuit has R= 10 ohm, L= 1H, C= 20 micro farad. A 100 V, 50 Hz supply is applied across the circuit. Find the input current and voltage across the elements.	BLT-5	CO-3
4. Explain DOT convention in coupled circuit with suitable example.	BLT-2	CO-3
5. Explain Power triangle with diagram.	BLT-2	CO-3

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

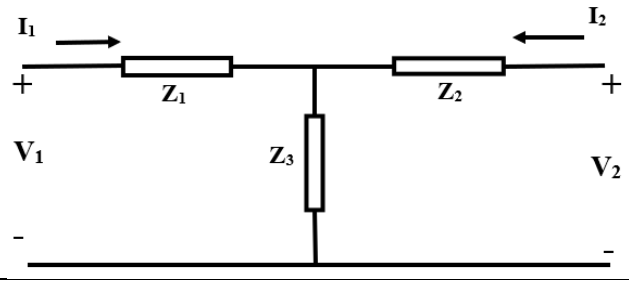
3EE4-05: Electrical Circuit Analysis

Note: Each Assignment of Maximum marks10.All question carries equal marks

ASSIGNMENT-IV

1. State and explain the restrictions on the location of poles and zeros for driving point function. What is the physical significance of this? Explain.	BLT-2	CO-4
2. Write down the necessary condition of stability of a network function.	BLT-1	CO-4
3. Write down the definition of inverse Laplace transform.	BLT-2	CO-4
4. A 3- phase load has a resistance of 10 ohms in each phase and is connected in (a) Star and (b) Delta against a 400 volts three phase supply. Compare the power consumed in both the cases.	BLT-4	CO-4

ASSIGNMENT-V

1. Express Y- parameters in terms of all other parameters.	BLT-2	CO-5
2. Explain different types of interconnections of two-port networks.	BLT-2	CO-5
3. Write the condition of symmetry and reciprocity for ABCD parameters.	BLT-1	CO-5
4. The z- parameters of a two-port network are Z11 = 10 Ω, Z22 = 20 Ω, Z12 = Z21 = 5 Ω. 1) Find ABCD parameters 2) Find hybrid parameters of this two-port network	BLT-4	CO-5
5. Find Z – parameters of the following circuit: 	BLT-4	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE4-06: Analog Electronics

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1	Explain the working of the Zener Diode? What do you understand by Avalanche Breakdown?	BLT-2	CO-1
2	Draw the VI characteristics of PN junction diode.	BLT-3	CO-1
3	What is PIV of a diode in a rectifier circuits?	BLT-1	CO-1
4	Explain the working of Full Wave Rectifier? Calculate the Rectification Efficiency, Ripple Factor and Transformer Utilization Factor for it?	BLT-3	CO-1
5	Design a Zener voltage regulator to provide regulated output voltage of 5.6 V for a variable load resistance that varies from 300Ω to 6kΩ. Zener diode parameters are IZmin= 0.25 mA and PZ= 280mW. The input voltage is considered as constant at 15V.	BLT-6	CO-1

ASSIGNMENT-II

1	Explain and draw the Input and output characteristics of CE amplifier.	BLT-2	CO-2
2	What is the different type of biasing in transistor and explain it.	BLT-2	CO-2
3	What is the Quiescent Point? How it will affect the working of the transistor? Draw the load line of the CE configuration where Vcc=10V, load resistance Rc is 8 kΩ. Determine the operating point Q for Zero signals if base current is 15μA and β is 40?	BLT-4	CO-2
4	Write the short notes on following a) Advantages of transistor b) d.c. load line c) Operating point	BLT-2	CO-2
5	Design small-signal model of CE amplifier with its parameter such as voltage gain, current gain, input resistance and output resistance	BLT-6	CO-2

ASSIGNMENT-III

1	State Barkhausen's criteria for oscillation.	BLT-1	CO-3
2	What are multistage amplifiers?	BLT-1	CO-3
3	Differentiate between oscillator and amplifier.	BLT-2	CO-3
4	Explain the principle of Instrumentation amplifier and derive the gain for the circuit.	BLT-2	CO-3
5	What is the difference between Clipper and Clamper Circuit? Explain the positive clipper with the help of diagram?	BLT-3	CO-3

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE4-06: Analog Electronics

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-IV

1	What are the characteristics of ideal OP-AMP?	BLT-1	CO-4
2	What is lag compensator?	BLT-1	CO-4
3	Compare the active and passive filter.	BLT-3	CO-4
4	Discuss the operation of op-amp as comparator circuit.	BLT-2	CO-4
5	Compare the active and passive filter.	BLT-2	CO-4

ASSIGNMENT-V

1What is the difference between A/D and D/A converter? Give one application of each.	BLT-3	CO-5
2Explain zero crossing detector.	BLT-2	CO-5
3What is precision circuit? Explain the precision half wave rectifier in detail.	BLT-1	CO-5
4Explain Schmitt trigger circuit. How Schmitt trigger circuit achieve hysteresis.	BLT-2	CO-5
5 Define the following electrical parameters a) I/P offset voltage b) CMRR c) Slew rate d) I/P bias current	BLT-1	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE 4-07: Electrical Machine -1

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1	Define the following terms: a) Magnetic field Intensity b) Magnetic Flux Density c) Magneto- Motive Force (MMF) d) Reluctance	BLT-1	CO-1
2	Sketch the shapes of magnetic field around a current carrying conductor. How can be the direction of the field be determined?	BLT-3	CO-1
3	Give the analogy between electric and magnetic circuits.	BLT-1	CO-1
4	What do you mean by magnetic leakage and fringing in the magnetic circuit?	BLT-2	CO-1
5	What are the different classes of permanent magnet? Give application of each class.	BLT-2	CO-1

ASSIGNMENT-II

1	For a singly excited magnetic system drive the relation for the magnetic energy stored in terms of reluctance.	BLT-2	CO-2
2	Show that the magnetic stored density per unit volume is given by ½ B2 /μ Joule/m3	BLT-3	CO-2
3	Distinguish between singly excited and doubly excited magnetic systems.	BLT-2	CO-2
4	Explain B-H curve in ferromagnetic materials	BLT-2	CO-2
5	Draw and explain general block diagram of an electromechanical energy conversion device.	BLT-4	CO-2

ASSIGNMENT-III

1	Describe the main parts of DC machine with suitable sketches. Explain the main functions of each part.	BLT-4	CO-3
2	Differentiate between the good and bad commutations. Discuss the mechanical and electrical conditions leading to poor commutations in DC machine.	BLT-5	CO-3
3	Explain the armature reaction in DC machine with and diagram. What are the methods to limit the armature reaction?	BLT-2	CO-3
4	Derive the expression for the generated emf in a DC generator.	BLT-4	CO-3
5	A 6 pole lap wound dc generator has 600 conductors in armature. The flux per pole is 0.05 Wb. Calculate generated voltage when the speed of the generator is 1000 rpm. Also find the electromagnetic torque if the generator supplies 20A current.	BLT-5	CO-3

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE 4-07: Electrical Machine -1

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-IV

1	Explain speed current and speed torque characteristics of dc shunt motor and dc series motors.	BLT-2	CO-4
2	Draw and explain the armature circuit for DC motor and DC generator.	BLT-2	CO-4
3	Explain the types of dc excitation given to the dc generator.	BLT-2	CO-4
4	Describe all types of the V-I characteristics of DC shunt and DC series generator.	BLT-1	CO-4
5	Describe the types of braking used in DC shunt motor.	BLT-1	CO-4

ASSIGNMENT-V

1Explain construction and operation of 1 phase transformer.	BLT-1	CO-5
2Explain losses and efficiency testing open circuit and short circuit test	BLT-2	CO-5
3Explain the separation of hysteresis and eddy current losses in transformer.	BLT-2	CO-5
4Write down the cooling method of transformers	BLT-1	CO-5
5 Explain the effect of non-linear BH curve of magnetic core material.	BLT-2	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE 4-08: Electro-Magnetic Fields

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

1	For given points P (2, -3, -5) and Q (12, -8, 3), write the position vector and distance vector in cartesian co-ordinate form. Assume reference point is origin.	BLT-4	CO-1
2	Express the cartesian co-ordinate P (2, 3, 6) into cylindrical and spherical co-ordinates. Show all steps in detail.	BLT-2	CO-1
3	For given points P (2, -3, -5) and Q (12, -8, 3), find the vector product. (P x Q).	BLT-3	CO-1
4	Find the divergence and curl of the following vector. $\overline{A} = 2xy\overline{a_x} + x^2z\overline{a_y} + z^3\overline{a_z}$	BLT-3	CO-1
5	Derive the volume of sphere of radius R using integration	BLT-4	CO-1

ASSIGNMENT-II

1	Write down the statement of Coulomb's law and prove it.	BLT-1	CO-2
2	Proof the Gauss's Law by taking point charge at the origin.	BLT-3	CO-2
3	Derive the Electric field due to infinite line charge.	BLT-3	CO-2
4	Derive the expression of electric field intensity due to infinite sheet of charge.	BLT-3	CO-2
5	A charge Q1 = -20 μC is located at P(-6, 4 , 6) and a charge Q2 = 50 μC is located at R (5, 8 , -2) in a free space. Find the force exerted on Q2 by Q1 in vector form. The distances given are in meters.	BLT-5	CO-2

ASSIGNMENT-III

1	Write difference between convection and conduction current.	BLT-2	CO-3
2	Derive the ohm's Law in point form.	BLT-3	CO-3
3	Derive the boundary conditions expressions for two homogeneous isotropic dielectrics with relative permittivity of $\varepsilon r1$ and $\varepsilon r2$.	BLT-3	CO-3
4	Determine whether or not the following potential field satisfy the Laplace's equation. $(a)\ V = x^2 - y^2 + z^2$ $(b)\ V = r\cos\Phi + z$ $(c)\ V = r\cos\Theta + \Phi$	BLT-5	CO-3
5	Derive the formula to calculate the capacitance of a two-wire line.	BLT-5	CO-3

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Electrical Engineering

II Year III Semester

3EE 4-08: Electro-Magnetic Fields

Note: Each Assignment of Maximum marks10.All question carries equal marksASSIGNMENT-IV

1	Describe the analogy between Electric and Magnetic field.	BLT-2	CO-4
2	Derive the magnetic field intensity due to straight filamentary conductor of finite length.	BLT-4	CO-4
3	Write down the Maxwell's equations for static field in point (or differential) and integral form.	BLT-2	CO-4
4	What are the Scalar and Vector Magnetic potentials.	BLT-1	CO-4
5	Planes z = 0 and z = 4 carry current K = -10ax A/m and K = l0ay A/m, respectively. Determine H at (a) (1,1,1) (b) (0, -3 , 10)	BLT-5	CO-4

ASSIGNMENT-V

1Derive the Lorentz force equation or Magnetic force on a moving charge.	BLT-3	CO-5
2Classify the materials in terms of their magnetic properties.	BLT-2	CO-5
3Write down the analogy between electric and magnetic circuits.	BLT-1	CO-5
4Derive the expression of magnetic flus density B for a magnetic dipole.	BLT-4	CO-5
5 Derive the boundary conditions expressions for two homogeneous isotropic dielectrics with relative permeability of μr1 and μr2 .	BLT-5	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.