INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad -500 043

COMPUTER SCIENCE AND ENGINEERING

TUTORIAL QUESTION BANK

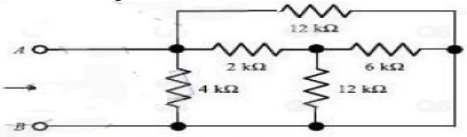
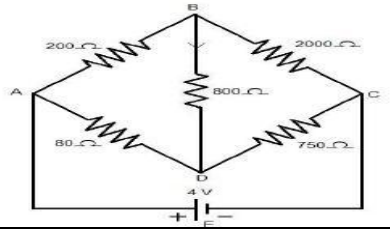
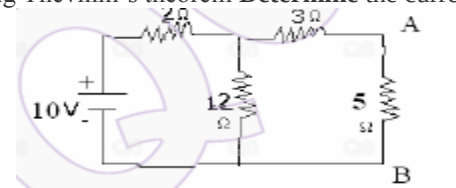
Course Name	:	**BASIC ELECTRICAL ENGINEERING**
Course Code	:	**A30202**
Class	:	II B. Tech I Semester
Branch	:	Computer Science and Engineering
Year	:	2016 – 2017
Course Faculty	:	Ms. Lekha Chandran, Associate professor Mr. K.Lingaswamy Reddy, Assistant professor

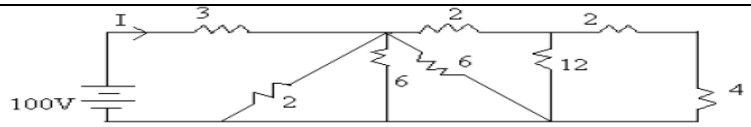
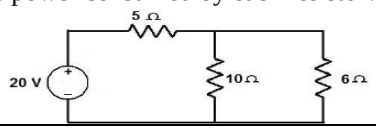
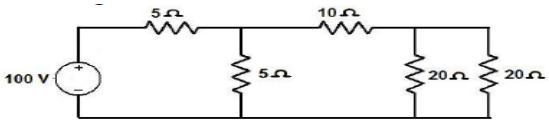
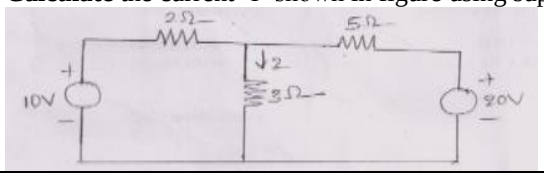
OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

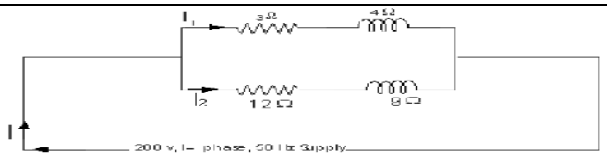
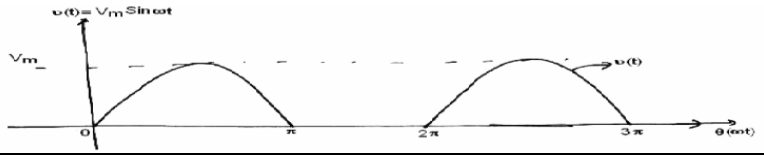
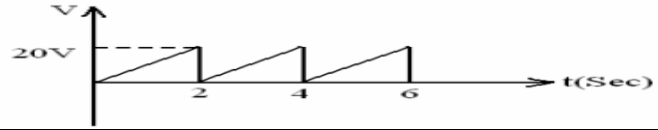
In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT -1 **INTRODUCTION TO ELECTRICAL ENGINEERING AND NETWORK ANALYSIS**		
Part - A (SHORT ANSWER QUESTIONS)			
1	**State** Kirchhoff's voltage law and Kirchhoff's Current law?	Remember	2
2	**Explain** ideal voltage and current source?	Understand	1
3	**Discuss** the applications of both series and parallel combination?	Understand	2
4	**Discuss** resistor, capacitor, and inductor with relevant expression?	Understand	2
5	**Explain** the equations for resistors in equivalent delta. If the resistors Ra, Rb and Rc are connected electrically in star?	Evaluate	2
6	**State** Ohm's law?	Evaluate	1
7	**State** Superposition Theorem?	Remember	3
8	**State** Thevinins Theorem?	Remember	3
9	**State** Maximum power transfer theorem?	Remember	3
10	**Explain** difference between series and parallel resistive circuit?	Understand	2
11	**Explain** the equations for resistors in equivalent star. If the resistors Ra, Rb and Rc are connected electrically in delta?	Evaluate	2

S. No	Question	Blooms Taxonomy Level	Course Outcome
12	**Discuss** limitations of ohm's law?	Understand	2
13	**Define** resistance and state its units. On which factors the resistance of a material depends?	Remember	7
14	**Define** conductance and state its units	Remember	7
15	**Define** electrical energy. state its units	Remember	7
Part - B(LONG ASNWERS QUESTIONS)			
1	**Explain** two capacitors are connected in series then Ceq=C1C2/C1+C2?	Evaluate	1
2	**Explain** derivation of star-delta conversion equations?	Evaluate	2
3	**Explain** derivation of delta-star conversion equations?	Evaluate	2
4	**Explain** in detail the volt-ampere relationship of R, L and C elements with neat diagrams?	Understand	1
5	**Explain** about series and parallel networks of resistor?	Understand	1
6	**Explain** about series and parallel networks of inductor?	Understand	1
7	**Explain** classification of network elements?	Understand	1
8	**Explain** superposition theorem?	Remember	3
9	**Explain** Thevinin's theorem?	Remember	3
10	**Derive** the condition for maximum power transfer theorem?	Evaluate	3
11	**Write** differences between ideal and practical voltage sources?	Understand	2
12	**Write** differences between ideal and practical current sources?	Understand	2
13	**Write** a notes on dependent sources?	Understand	2
14	**Write** down KVL and KCL and explain?	Understand	2
15	**Write** the characteristics of series and parallel circuits?	Understand	2
Part - C (Problem Solving and Critical Thinking Questions)			
1	**Find** the equivalent resistance for the following circuit? 	Apply	2
2	**Determine** the current through 800 ohm resistor in the network shown in figure 	Apply	2
3	If current flowing through a coil changes at the rate of 2amps/sec and the voltage induced is 20v. **Find** the inductance value?	Apply	1
4	By using Thevinin's theorem **Determine** the current through 5 ohm resistor? 	Apply	3

S. No	Question	Blooms Taxonomy Level	Course Outcome
5	 **Find** current I in the above circuit?	Apply	2
6	**Find** the power consumed by each resistor? 	Apply	1
7	**Find** the current in each resistor ? 	Apply	3
8	**Calculate** how to combine four 100 ohm resistors to obtain an equivalent resistance of a. 25 ohm, b. 60 ohm, c. 40 ohms?	Apply	2
9	**Calculate** the current 'I' shown in figure using super position theorem? 	Apply	2
10	If 3 capacitors of values 2mF, 4mF, 5mF are connected in parallel. **Calculate** the effective capacitance?	Apply	2
11	A piece of certain wire length of 40m length and 0.07cm in radius has a resistance of 15ohm, **Calculate** the specific resistance of the material?	Apply	2
12	If 3 capacitors of values 4mF, 6mF, 8mF are connected in series. **Calculate** the effective capacitance?	Apply	2
13	If 3 inductors of values 4mH, 6mH, 8mH are connected in series. **Calculate** the effective inductance?	Apply	2
14	If 3 inductors of values 4mH, 6mH, 8mH are connected in parallel. **Calculate** the effective inductance?	Apply	2
15	A 100W, 250V bulb is put in series with a 40W, 250V bulb across a 500V supply. What will be the power consumed by each bulb? Will such a combination work?	Apply	2
	UNIT – II **ALTERNATING QUANTITIES**		
Part - A (SHORT ANSWER QUESTION)			
1	**Define** RMS Value?	Remember	7
2	**State** advantages of alternating quantities?	Understand	7
3	**Define** form factor?	Remember	7
4	**Define** peak factor?	Remember	7
5	**Explain** significance of J factor?	Understand	7
6	**Define** average Value?	Remember	7
7	**Explain** polar form and rectangular form?	Understand	7
8	**Differentiate** ac and dc quantities?	Understand	7
9	**Define** time period	Remember	7

S. No	Question	Blooms Taxonomy Level	Course Outcome
10	**Define** cycle	Remember	7
11	**Define** frequency?	Remember	7
12	**Define** waveform?	Remember	7
13	**Define** peak value?	Remember	7
14	**Define** instantaneous value?	Remember	7
15	**Discuss** concept of phase and phase difference?	Remember	7
Part – B (LONG ASNWERS QUESTIONS)			
1	**Explain** following terms: i) Impedance ii) admittance iii) susceptance iv) conductance v)Power factor ?	Remember	7
2	**Write** about series RL circuit?	Understand	7
3	**Write** about series RC circuit?	Understand	7
4	**Explain** behavior of RLC Series circuit?	Understand	7
5	**Explain** i) rectangular form ii) polar form ?	Understand	7
6	**Explain** significance of J-Operator?	Understand	7
7	**Write** equations for RMS value, average value, form factor and peak factor?	Understand	7
8	**Discuss** what are the advantages of AC quantities?	Understand	7
9	**Explain** conversion from rectangular form to polar form?	Understand	7
10	**Explain** conversion from polar form to rectangular form?	Understand	7
11	**Explain** the behavior of ac through resistance (R)derive instantaneous value of v and i, average power ,power factor, instantaneous power,and relevant phasors.	Understand	7
12	**Explain** how the voltage and current in purely resistive circuit are in phase	Understand	7
13	**Explain** the behavior of ac through inductance (L).derive instantaneous value of v and i, average power, power factor, instantaneous power,and relevant phasors.	Understand	7
14	**Explain** the behavior of ac through capacitance(C).derive instantaneous value of v and i, average power, power factor, instantaneous power,and relevant phasors.	Understand	7
15	**Explain** admittance method to solve parallel circuit?	Understand	7
Part - C (Problem Solving and Critical Thinking Questions)			
1	A circuit consists of a resistance of 15ohm, a capacitance of 200 micro Farad and inductor of 0.05H all in series. If supply of 230V, 50Hz is applied to the ends of circuit. **Calculate** i) Current in the coil ii) Potential difference across each element?	Apply	7
2	**Write** about series RC circuit?	Understand	7
3	**Solve** the following parallel circuit and find out current in each branch and total current as shown in figure	Apply	7

S. No	Question	Blooms Taxonomy Level	Course Outcome
			
4	**Calculate** the RMS, and average values of an alternating quantity given by υ =20 cos (314t)?	Apply	7
5	**Find** form facto and peak factor? 	Apply	7
6	**Determine** the average and effective values of saw-tooth waveform as shown in below figure 	Apply	7
7	Two impedances z1=20+j10 and Z2= 10-j30 are connected in parallel and this combination is connected in series with Z3=30+jx. **Find** the value of 'x' which will produce resonance?	Apply	7
8	**Convert** from rectangular to polar i) z=30+j60?	Apply	7
9	**Convert** from rectangular to polar i) z=45+j50?	Apply	7
10	**Find** the voltage across R, L, phase angle in series R-L circuit, with R = 100 ohms and L = 50mH and input voltage 10V, 100Hz?	Apply	7
11	**Find** the voltage across R, C phase angle in series R-C circuit, with R = 100 ohms and C = 50μF and input voltage 10V, 100Hz?	Apply	7
12	**Find** the power, current in series R-C circuit, with R = 120 ohms and C =10μF and input voltage 100V, 50Hz?	Apply	7
13	**Find** the voltage across R, L, phase angle in series R-L circuit, with R = 100 ohms and L = 100mH and input voltage 10V, 100Hz?	Apply	7
14	A metal filament lamp rated 750w, 110v is to be connected in series with a capacitor across a 220v, 50HZ SUPPLY. **calculate** (i) The capacitance required (ii) the power factor	Apply	7
15	In a circuit the voltage across and the current through a load are given by(70+j0) and (6+j8) a respectively. **Calculate** the active and reactive powers and also the power factor?	Apply	7
	UNIT – III **TRANSFORMERS**		
Part - A (SHORT ANSWER QUESTION)			
1	**Define** transformation ratio?	Remember	5
2	**Explain** the purpose of laminating the core in a transformer?	Understand	5
3	**Explain** the emf equation of a transformer and define each term. ?	Remember	5
4	**Explain** does transformer draw any current when secondary is open? Why?	Understand	5
5	**Explain** mutual induction principle?	Understand	5
6	**Explain** why the transformer measured in KVA?	Understand	5

S. No	Question	Blooms Taxonomy Level	Course Outcome
7	**Discuss** what are the parts are in parts in transformer?	Understand	5
8	**Explain** the equivalent circuit diagram of transformer?	Understand	5
9	**Define** voltage regulation of a transformer?	Remember	5
10	**Explain** difference between core and shell type transformers?	Understand	5
11	**Explain** core type transformers?	Understand	5
12	**Explain** shell type transformers?	Understand	5
13	**Explain** iron losses of the transformers?	Understand	5
14	**Explain** iron losses of the transformers?	Understand	5
15	**Explain** core losses of the transformers?	Understand	5
Part – B (LONG ASNWERS QUESTIONS)			
1	**Describe** the construction details of transformer?	Understand	5
2	**Explain** the principle of operation of transformer?	Understand	5
3	**Explain** the OC test of a single phase transformer?	Understand	5
4	**Explain** the losses in a Transformer?	Understand	5
5	**Obtain** the condition for maximum efficiency of a transformer?	Evaluate	5
6	**Obtain** the equivalent circuit of a single phase transformer?	Evaluate	5
7	**Explain** the SC test of a single phase transformer?	Understand	5
8	**Explain** the determination of deducing equivalent circuit parameters?	Understand	5
9	**Explain** the ON load condition of a transformer?	Understand	5
10	**Explain** the NO load condition of a transformer?	Understand	5
11	**Explain** What are the differences between an Ideal transformer and Practical Transformer?	Understand	5
12	**Explain** self induction and mutual induction in detail. Also derive the expression for dynamically induced emf.	Understand	5
13	**Explain** in detail the difference between a core type and a shell type transformer.	Understand	5
14	**Derive** the approximate equivalent circuit of a 1 phase transformer.	Evaluate	5
15	**Derive** an emf equation of a single phase transformer.	Evaluate	5
Part - C (Problem Solving and Critical Thinking Questions)			
1	A 125 KVA transformer having primary voltage of 2000V at 50 Hz has 182 primary and 40 secondary turns. Neglecting losses, **calculate**: i) The full load primary and secondary currents. ii) The no-load secondary induced emf. iii) Maximum flux in the core.	Apply	5
2	Open Circuit and short circuit tests on a single phase transformer gave the following results. V0=200V, I0=0.7A, WO=20W ---------- test from primary side VS =10V, IS =10A, WS =40W ---------- test from primary side. **Determine** the equivalent circuit referred to primary side?	Apply	5
3	A transformer supplied a load of 32A at 415V. If the primary voltage is 3320V, **find** the following: (a) Secondary volt ampere (b) Primary current (c) Primary volt ampere. Neglect losses and magnetizing current.	Apply	5
4	A single phase transformer has 50 primary and 1000 secondary turns. Net cross sectional area of the core is 500 cm2. If the primary winding is connected to 50 Hz supply at 400 V, **Calculate** the value of Maximum flux density on core and the emf induced in the secondary?	Apply	5

S. No	Question	Blooms Taxonomy Level	Course Outcome
5	A transformer with 40 turns on the high voltage winding is used to step down the voltage from 240V to 120V. **Find** the number of turns in the low voltage winding. Open circuit and short circuit tests on a 5 KVA, 220/400V, 50 Hz, single phase transformer gave the following results: OC Test: 220V, 2A, 100W (lv side) SC Test: 40V, 11.4A, 200W (hv side) Obtain the equivalent circuit?	Apply	5
6	A 3300/230V, 50Hz, 1-phase transformer is to be work at maximum flux density of 1.2 wb/m2 in the core is 150 cm2 . **Calculate** suitable value of primary and secondary turns?	Apply	5
7	A single phase 50Hz transformer has 80 turns on the primary winding and 280 in the secondary winding. The voltage applied across the primary winding is 240 V. **Calculate** (i) the maximum flux density in the core (ii) induced emf in the secondary winding. The net cross sectional area of the core can be taken 200cm2?	Apply	5
8	A 15kVA 2400-240-V, 60 Hz transformer has a magnetic core of 50-cm2 cross section and a mean length of 66.7 cm. The application of 2400 V causes magnetic field intensity of 450 AT/m (RMS) and a maximum flux density of 1.5 T. **Determine** i. The turn's ratio ii. The number of turns in each winding iii. The magnetizing current	Apply	5
9	The emf per turn of a 1- φ, 2200/220 V, 50 Hz transformer is approximately 12V. **Calculate** i) The number of primary and secondary turns, and	Apply	5
10	A 440/110 v transformer has a primary resistance of 0.03 ohms and secondary resistance of 0.02 ohms if iron losses at normal input is 150 watts. **Determine** the secondary current at which maximum efficiency will occur and the value of this maximum efficiency at a unity power factor load?	Apply	5
11	The maximum flux density in the core of 250/3000 Volts 50 Hz single phase transformer is 1.2 webers per square meter. If the emf per turn is 8 volts determine primary and secondary turns and area of the core.	Apply	5
12	A single phase 2200V/250V, 50 Hz transformer has a net core area of 36 cm2 and maximum flux density of 6 Wb / m2. Calculate the number of turns of primary and secondary?	Apply	5
13	The primary winding of a 50 HZ single phase transformer has 1480 turns and ised from 8400 V supply. The secondary winding has 200 turns. Find the peak value of flux in the core and the secondary Voltage.	Apply	5
14	The primary winding of a 50 HZ single phase transformer has 480 turns and ised from 6400 V supply. The secondary winding has 20 turns. Find the peak value of flux in the core and the secondary Voltage.	Apply	5
15	The emf per turn of a 1- φ, 2200/220 V, 50 Hz transformer is approximately 12V. **Calculate** i) The net cross-sectional area of core for a maximum flux density of 1.5 T.	Apply	5
	UNIT –IV **DC AND AC MACHINES**		
Part - A (SHORT ANSWER QUESTION)			
1	**Define** slip in induction motor?	Remember	5
2	**State** Fleming's Left Hand Rule?	Remember	5
3	**Write** down the emf equation of a dc generator?	Understand	5

S. No	Question	Blooms Taxonomy Level	Course Outcome
4	**Write** down the torque equation of a D.C motor?	Understand	5
5	**State** the function of brushes?	Remember	5
6	**State** Fleming's Right Hand Rule?	Remember	6
7	**Write** expression for rotor current frequency?	Understand	6
8	**What** is principle operation of 3-phase induction motor?	Understand	6
9	**Explain** the slip-torque characteristics of 3-phase induction motor?	Understand	6
10	**State** two types of induction motors?	Understand	6
11	**State** Fleming's right Hand Rule?	Understand	6
12	**What** is principle operation of dc generator?	Understand	6
13	**State** the function of commutator?	Remember	6
14	**State** the function of slots?	Remember	6
15	**State** the function of slip rings?	Remember	6
Part – B (LONG ASNWERS QUESTIONS)			
1	**Explain** the classification of DC generator?	Understand	5
2	**Derive** the equation for induced EMF of a DC generator?	Evaluate	5
3	**Derive** the torque equation of DC motor?	Evaluate	5
4	**Explain** the principle and construction of a 3 phase induction motor?	Understand	6
5	**Derive** the expression for rotor frequency?	Evaluate	6
6	**Explain** why does an induction motor never runs at Synchronous speed?	Understand	6
7	**Obtain** the condition for maximum running torque of an induction motor?	Understand	6
8	**Explain** the classification of DC Motor and explain?	Understand	6
9	**Explain** the significance of back emf in a DC motor?	Understand	6
10	**Explain** the load characteristics of shunt, series and compound generators?	Understand	6
11	**Explain** the reasons for the following i. A series motor should not be connected to a load through a belt ii. A series motor develops a high starting torque iii. A differential compound motor is very rarely used iv. A shunt motor runs at almost constant speed irrespective of load current.	Understand	6
12	**Explain** How may the direction of rotation of dc shunt motor be reversed? What is the effect of reversing the line terminals?	Understand	6
13	**Explain:** i. Slip speed ii. Slip iii. Synchronous Speed iv. Torque.	Understand	6
14	**Explain** Why an induction motor is called a rotating transformer? Justify	Understand	6
15	**Derive** the expression for the armature torque and shaft torque of a DC motor	Evaluate	5
Part – C (Problem Solving and Critical Thinking Questions)			
1	**Calculate** the e.m.f by 4 pole wave wound generator having 65 slots with 12 conductors per slot when driven at 1200 rpm the flux per pole is 0.02 wb?	Apply	5
2	A dynamo has a rated armature current at 250 amps what is the current per path of the armature if the armature winding is lap or wave wound? The machine has 12 poles.	Apply	5

S. No	Question	Blooms Taxonomy Level	Course Outcome
3	A 6 pole lap wound dc generator has 600 conductors on its armature flux per pole is 0.02 wb. **Calculate** i) The speed at which the generator must be run to generate 300v. ii) What would be the speed if the generated were wave wound?	Apply	5
4	A 230 volts dc shunt motor takes 51 A at full load. Resistances of armature and field windings are 0.1ohm and 230 ohms respectively. **Determine** i. armature current ii. field current iii. Back emf developed at full load?	Apply	5
5	In case of an 8-pole induction motor the supply frequency was 50 Hz and the shaft speed was735 rpm. **Determine** i) Synchronous speed ii) Slip speed per unit slip iii) Percentage slip?	Apply	6
6	**Calculate** the value of torque established by the armature of a 4pole motor having 774 conductors, two paths in parallel,24 m wb flux per pole , when the total armature current is 50 amps.	Apply	5
7	A 6 pole DC Long shunt generator having an armature, series and shunt field resistances of 0.25 Ω, 0.5 and 100 Ω respectively delivers a load current of 35 Amps at a voltage of 200V.Take 2Volt as total brush drop. **Calculate** the induced EMF?	Apply	5
8	**Calculate** the induced EMF for a 6 pole DC Shunt generator having an armature and field Resistances of 0.25 Ω and 50 Ω respectively delivers a load current of 25 Amps at a voltage of 220V. Take 1Volt as total brush drop	Apply	5
9	A 6 – pole dc shunt generator with a wave – wound armature has 960 conductors. It runs at a speed of 500 rpm. A load of 20Ω is connected to the generator at a terminal voltage of 240V.The armature and field resistances are 0.3Ω and 240Ω respectively. **Find** the armature Current, the induced emf and flux per pole?	Apply	5
10	A 6-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 970 rpm. **Calculate** i) Percentage slip ii) The frequency of the induced current in the rotor?	Apply	6
11	A short shunt compound generator supplied 7.5 KW at 230 V. The shunt field, series field and armature resistances are 100, 0.3 and 0.4 respectively. Calculate the induced emf and the load resistance.	Apply	6
12	A 4 pole DC generator with a shunt field resistance of 100 and armature resistance of 1 has 378 wave connected conductors in its armature. The flux per pole is 0.02 Wb. If a load resistance of 10 is connected across the Armature terminals and the generator is driven at 1000 rpm, calculate the power absorbed by the load	Apply	6
13	A 4 pole wave wound DC generator has 50 slots and 24 conductors per slot. The flux per pole is 10 mWb. Determine the induced emf in the armature if it is rotating at a speed of 700rpm	Apply	6
14	An 8 pole lap wound dc generator has 960 conductors, a flux of 40 milliwebers and is driven at 400 rpm. Find induced emf.	Apply	6
15	The armature of a 6 pole, DC shunt motor takes 300 A at the speed of 400 Revolutions per minute. The flux per pole is 75 mWb. The number of armature turns is 500. The torque lost in windage, friction and iron losses can be Assumed a 2.5%. Calculate i. Torque developed by the armature ii. Shaft torque iii. Shaft power in KW.	Apply	6
UNIT –V BASIC INSTRUMENTS			
Part - A (SHORT ANSWER QUESTION)			
1	**What** are the types of measuring instruments?	Understand	4

S. No	Question	Blooms Taxonomy Level	Course Outcome
2	**Write** short notes on moving iron instruments?	Understand	4
3	**Write** short notes on moving iron instruments with attraction type?	Understand	4
4	**Write** short notes on moving iron instruments with repulsion type?	Understand	4
5	**Define** air friction damping?	Remember	4
6	**Write** short notes on spring control mechanism?	Understand	4
7	**Write** short notes on gravity control?	Understand	4
8	**What** is mean by instrument?	Understand	4
9	**Write** different types of torques?	Understand	4
10	**Write** short notes on controlling torque?	Understand	4
11	**Define** fluid friction damping	Remember	4
12	**Define** eddy current damping?	Remember	4
13	**What** are Different types of instrument?	Understand	4
14	**Write** short notes on moving coil instruments?	Understand	4
15	**What** are the differences between moving iron and coil instruments?	Understand	4
Part – B (LONG ASNWERS QUESTIONS)			
1	**Explain** working principle of permanent magnet moving coil instrument?	Understand	4
2	**Explain** working principle of moving iron repulsion type instrument?	Understand	4
3	**Explain** working principle of moving iron attraction type instrument?	Understand	4
4	**Explain** working of different types of torques produced in indicating instruments?	Understand	4
5	**Explain** i) Deflecting torque ii) Controlling torque iii) Damping torque?	Understand	4
6	**Mention** advantages and disadvantages of MIinstruments?	Understand	4
7	**Explain** the essential requirements of instruments?	Understand	4
8	**Classify** of electrical instruments?		4
9	**Discuss** advantages and disadvantages of MI instruments?	Understand	4
10	**Explain** the significance of controlling torque and damping torque relevant to the operation of indicating instruments?	Understand	4
11	**Explain** With neat sketch, explain the process of eddy current damping.	Understand	4
12	**Explain** Why is the scale of a MI instrument non uniform? Explain.	Understand	4
13	**Discuss** the classification of electrical instruments	Understand	4
14	**Explain** the significance of controlling torque and damping torque relevant to the operation of indicating instruments.	Understand	4
15	Explain with neat sketch the construction and working of a MI ammeter and MC Ammeter.	Understand	4
Part – C (Problem Solving and Critical Thinking Questions)			
1	A moving-coil instrument gives a full scale deflection. When the current is 40 mA and its resistance is 25. **Calculate** the value of the shunt to be connected in parallel with the meter to enable it to be used as an ammeter for measuring currents up to 50 A.?	Apply	4
2	A moving-coil instrument having a resistance of 10 ohms, gives a full scale deflection. When the current is 8 mA. **Calculate** the value of the multiplier to be connected in series with the instrument so that it can be used as a voltmeter for measuring full scale deflection up to 100 V?	Apply	4

S. No	Question	Blooms Taxonomy Level	Course Outcome
3	A moving-coil instrument gives full.scale.deflection. For a current of 10 mA. Neglecting the resistance of the instrument. **calculate** the approximate value of series resistance needed to enable the instrument to measure up to (a) 20 V	Apply	4
4	A meter of resistance 50 ohms has a full scale deflection of 4 mA. **Determine** the value of shunt resistance required in order that full scale deflection should be (a) 15 mA ?	Apply	4
5	A moving-coil instrument having a resistance of 20, gives af.s.d. when the current is5 mA. **Calculate** the value of the multiplier to be connected in series with the instrument so that it can be used as a voltmeter for measuring full. Scale. Deflection up to 200 V?	Apply	4
6	A moving-coil instrument has a full scale deflection of 20 mA and a resistance of 25. **Calculate** the values of resistance required to enable the instrument to be used (a) as a 0–10 A ammeter and (b) as a 0–100 V voltmeter. State the mode of resistance connection in each case?	Apply	4
7	A PMMC instrument has a coil dimensions 15mm*12mm. the flux density in the air gap is 1.8 mWb/m*m and the spring constant 0.14micro N-m/rad. **Determine** the number of turns required to produce an angular deflection of 90degrees when a current of 5mA is flowing through the coil?	Apply	4
8	A PMMC instrument has a coil dimensions 18mm*16mm. the flux density in the air gap is 1.5 mWb/m*m and the spring constant 0.18micro N-m/rad. **Determine** the number of turns required to produce an angular deflection of 90degrees when a current of 3mA is flowing through the coil?	Apply	4
9	A moving-coil instrument has a full scale deflection of 20 mA and a resistance of 25. **Calculate** the values of resistance required to enable the instrument to be used (a) as a 0–100 V voltmeter. State the mode of resistance connection in each case?	Apply	4
10	A moving-coil instrument gives full.scale.deflection. For a current of 10 mA. Neglecting the resistance of the instrument. **calculate** the approximate value of series resistance needed to enable the instrument to measure up to (a)100V	Apply	4
11	A moving-coil instrument gives full.scale.deflection. For a current of 10 mA. Neglecting the resistance of the instrument. **calculate** the approximate value of series resistance needed to enable the instrument to measure up to (a)200V	Apply	4
12	A meter of resistance 50 ohms has a full scale deflection of 4 mA. **Determine** the value of shunt resistance required in order that full scale deflection should be (a) 20?	Apply	4
13	A meter of resistance 50 ohms has a full scale deflection of 4 mA. **Determine** the value of shunt resistance required in order that full scale deflection should be (a) 100 A?	Apply	4
14	A PMMC instrument has a coil dimensions 18mm*16mm. the flux density in the air gap is 1.8mWb/m*m and the spring constant 0.28micro N-m/rad. **Determine** the number of turns required to produce an angular deflection of 95degrees when a current of 4mA is flowing through the coil?	Apply	4
15	A moving-coil instrument gives a full scale deflection. When the current is 50 mA and its resistance is 35. **Calculate** the value of the shunt to be connected in parallel with the meter to enable it to be used as an ammeter for measuring currents up to 60 A.?	Apply	4

Prepared By: Ms. Lekha Chandran, Associate professor.
Mr. K. Lingaswamy Reddy, Assistant Professor

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