FUNDAMENTALS OF ELECTRICAL ENGINEERING (BEE 101)	Department of Applied Science & Engineering	Year: 2022-23
	Assignment – I (Based on CO-1) (DC CIRCUIT ANALYSIS) (SAMPLE FORMAT)	Semester: ODD

1. Differentiate active and passive elements with examples
2. What do you understand by unilateral and bilateral elements? Give examples.
3. Write Difference between EMF and Potential Difference
4. On what factors do the resistance of a conductor depends?
5. Define ideal voltage source and ideal current source.
6. Explain Practical current source and practical voltage Source
7. Draw the V-I Characteristic of ideal voltage source and ideal current source.
8. Determine current in 4Ω resistor by using mesh analysis in the circuit shown in figure below
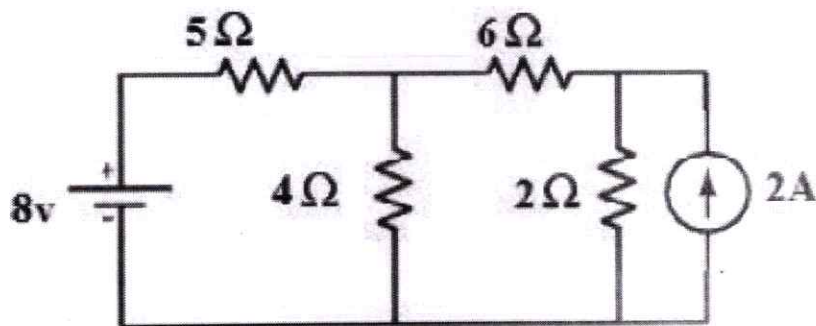
9. Using Nodal analysis find the current through $2\ \Omega$ resistance shown in Fig
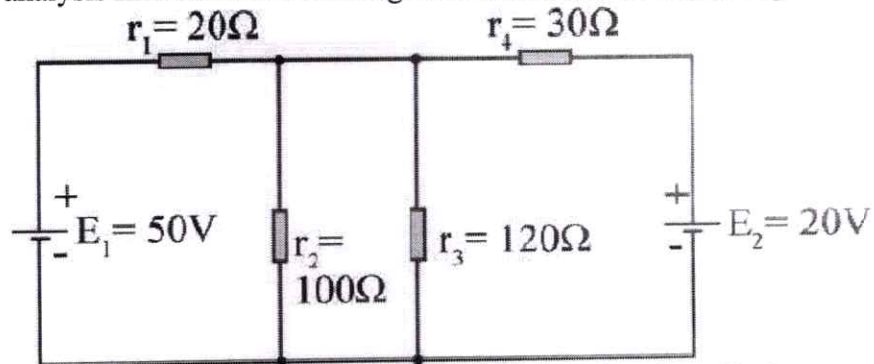
10. Find the current in all the resistance by mesh current method and verify the answer by node voltage method.
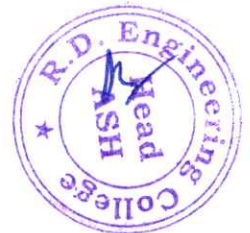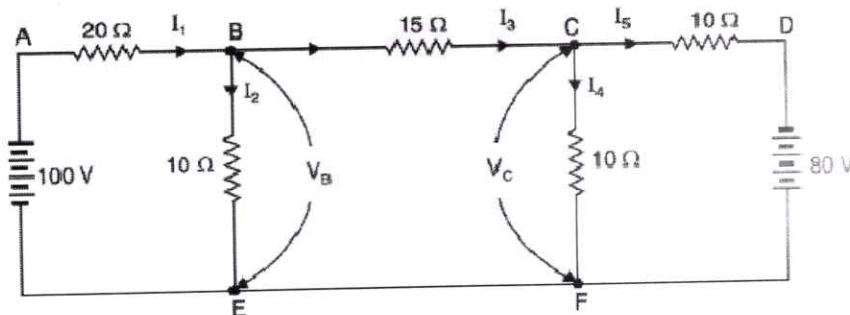

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FUNDAMENTALS OF ELECTRICAL ENGINEERING (BEE 101)	Department of Applied Science & Engineering **Assignment – II** **(Based on CO-2)** **(AC CIRCUIT ANALYSIS)** **(SAMPLE FORMAT)**	Year: 2022-23
		Semester: ODD

1. Find the average value, RMS value and foam factor of half wave rectified alternate current.
2. An alternating voltage is V=100sin100t, find (a) Amplitude. (b) Time period and frequency. (c) Angular velocity (d) Foam Factor (e) Crest factor.
3. Draw the phasor diagram for the following voltages. Calculate the resultant voltage, also find the RMS voltage.
   $V_1=100\sin500t$, $V_2=200\sin(500t+\pi/3)$, $V_3=-50\cos500t$ and $V_4=150\sin(500t-\pi/4)$.
4. A 120V, 100W lamp is to be connected to a 220V, 50Hz AC Supply. What value of pure inductance should be connected in series an order that lamp is run on the rated voltage.
5. What do you mean by Apparent Power, Active Power and Reactive Power?
6. Determine the following in the circuit shown in figure.
   i) Admittance of each parallel branch
   ii) Total circuit impedance
   iii) Supply current and power factor
   iv) Total power supplied
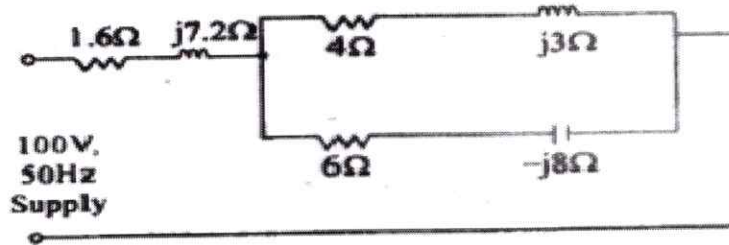
7. Explain series resonance in RLC circuit. What are bandwidth and quality factor of the circuit.
8. Why series resonant circuit is known as accepter circuit and parallel resonant circuit as rejecter circuit?
9. Derive the expression for resonant frequency and quality factor for an AC circuit under the condition of parallel resonance.
10. A coil of resistance 100Ω and inductance of 1H is connected in series with a condensor of capacitance $200\mu F$ across a 240V, 50Hz supply. Determine the following:
    a) Impedance   b) Current   c) power factor   d) Voltage across coil   e) voltage across capacitor
11. Define band width and quality factor in series RLC circuit. A parallel resonant circuit consists of a coil, having a resistance of 150Ω and an inductance of 0.24H, in parallel with a lossless capacitor of capacitance $3\mu F$. find its resonance frequency, Q-factor and bandwidth
12. Drive the relation between line voltage, phase voltage and Line current, Phase Current for a star connected 3-ϕ balanced system.
13. Drive the relation between line voltage, phase voltage and Line current, Phase Current for a delta connected 3-ϕ balanced system.
14. A balanced star connected load of $(8+j6)$ Ω per phase is connected to a 3-ϕ 400V supply. Find the line current, power factor and three phases VAs.
15. A balanced delta connected load of $(12+j9)\Omega$/phase is connected to 3-ϕ 400V Supply. Calculate line current, power factor and power drawn, reactive VA and total VA.

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	Department of Applied Science & Engineering	Year: 2022-23
FUNDAMENTALS OF ELECTRICAL ENGINEERING (BEE 101)	**Assignment – III (Based on CO-3) (MAGNETIC CIRCUIT & TRANSFORMER) (SAMPLE FORMAT)**	Semester: ODD

1. Explain different types of magnetic material with examples.
2. Define following with respect to a magnetic circuit:
   (i)MMF **(ii)**Reluctance **(ii)** Flux **(iii)** Magnetic field intensity **(iv)** Flux density
3. Why transformer is not used on DC?
4. Why transformer rated is in VA? Explain.
5. Write ideal transformer conditions.
6. Explain the principle of operation of 1-ϕ transformer. Derive emf equation for a 1-ϕ transformer.
7. Draw and explain the no load and full load phasor diagram of 1-ϕ transformer.
8. A 20kVA, 2000V/200V, 1-ϕ, 50Hz transformer has a primary resistance of 1.5Ω and reactance 2Ω. The secondary resistance and reactance are 0.015Ω and 0.02Ω respectively. The No load current of transformer is 1A at 0.2 Power factor. Determine:-
   i. Equivalent resistance, reactance and impedance referred to primary.
   ii. Supply Current
   iii. Total Copper loss
   iv. Draw Approximate equivalent circuit
9. Explain why the hysteresis loss and eddy current loss occur in a transformer. Explain how these losses can be reduced in a transformer.
10. Define efficiency and find condition for maximum efficiency of transformer.
11. In a 25kVA, 2000/200 V transformer, the constant and variable losses are 350W and 400Wrespectively. Calculate the efficiency on unity power factor at (i) full load and (ii) half load.
12. A single phase 100kVA, 6.6kV/230V, 50Hz transformer has 90% efficiency at 0.8 pf lagging power factor both at full load and also at half load. Determine iron and copper loss at full load for transformer.
13. Define voltage regulation of single phase transformer? What should be its value for an ideal transformer?
14. A 4kVA, 200/400V, 50Hz 1- ϕ transformer has equivalent resistance referred to primary as 0.15Ω. Calculate:
    i) Total Copper losses on full load
    ii) The efficiency while supplying full load at 0.9 power factor lagging.
    iii) The efficiency while supplying half load at 0.8 power factor leading.
    Assume total iron losses equal to 60 W
15. Calculate the voltage regulation of transformer whose ohmic drop is 1.5% and leakage reactance drop is 5% at 0.8 pf lagging.
16. A transformer is rated as 100kVA. At full load its copper loss is 1200W and iron losses are 960W.calculate:
    a) Efficiency at full load, unity pf
    b) Efficiency at 75% full load, 0.7 pf lagging
    c) The load kVA at which maximum efficiency occurs
    d) The maximum efficiency at 0.85 pf lagging.

FUNDAMENTALS OF ELECTRICAL ENGINEERING (BEE 101)	Department of Applied Science & Engineering **Assignment – IV** **(Based on CO-4)** **(ELECTRICAL MACHINES)** **(SAMPLE FORMAT)**	Year: 2022-23
		Semester: ODD

1. Write the function of commutator and brushes in a DC generator.
2. Why is induced EMF in the dc motor called the Back or Counter emf
3. What are the factors affecting speed of a DC Motor? Compare lap and wave type armature winding.
4. Derive emf and torque equation of DC machine. Explain different operating characteristics and
5. applications of DC motors.
6. A 4 pole 1500 rpm DC generator has a lap wound armature having 240 conductors. If flux per pole is 0.04wb. calculate the emf generated in the armature.
7. A 6 – poles lap wound DC shunt motor has 250 armature conductors, a flux of 0.04wb/pole and runs at 1200 rpm. The armature and field winding resistances are 1Ω and 220Ω respectively. It is connected to a 220V dc supply. Determine
   (i) Induced emf in the motor   **(ii)** Armature current   **(iii)** Input supply current   **(iv)** Mechanical power developed in the motor   **(v)** Torque developed
8. How can we change the direction of rotation of dc motor?
9. Why DC series motor never started on no load?
10. Write the construction and working principle of a three phase induction motor. Draw its torque-slip characteristics and show operating, breaking and generating regions of motor.
11. Discuss the important features of squirrel cage and phase wound rotor constructions in an induction motor. What are the advantages of wound rotor motors over squirrel cage motors?
12. Explain the term slip. What is the value at starting and at synchronous speed?
13. A 3-Φ , 50Hz induction motor has 4 poles and operates with a slip of 4% at a certain load. Determine:-
    i) The speed of rotor with respect to stator
    ii) The frequency of rotor current
    iii) The speed of rotor magnetic field with respect to rotor
    iv) The speed of rotor magnetic field with respect to Stator
    v) The speed of rotor magnetic field with respect to Stator magnetic field
14. A 4 pole 3- ϕ induction motor runs at 1440 rpm. Supply voltage is 500V at 50Hz. Mechanical power output is 20.3 Hp and mechanical loss is 2.23 Hp. Calculate:-
    i) Mechanical power developed
    ii) Rotor copper loss
    iii) efficiency
15. Using double field revolving theory, explain why 1-ϕ induction motor is not self-starting. Describe capacitor start- capacitor run method for starting 1-ϕ induction motor and give two applications of such motor.
16. Explain principle of operation of alternator and synchronous motor. Give the applications of both alternator and synchronous motor
17. . Difference between synchronous motor and induction (asynchronous) motor

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FUNDAMENTALS OF ELECTRICAL ENGINEERING (BEE 101)	Department of Applied Science & Engineering	Year: 2022-23
	Assignment – V **(Based on CO-5)** (ELECTRICAL INSTALLATIONS) **(SAMPLE FORMAT)**	Semester: ODD

1. Why proper earthing is necessary? What is the importance of earth's resistance value?
2. Why Earth pin is made thicker and bigger than line and neutral?
3. What is the difference between neutral and earthing?
4. Discuss important characteristics of batteries.
5. Describe characteristics of lead acid battery.
6. Discuss battery backup. Explain its calculation with suitable example.
7. Calculate the backup of battery of 100Ah connected to load of 100W and supply voltage is 12V.
8. Explain the construction, rating and specific applications of at least types of wires and cables used in electrical engineering.
9. Calculate the energy consumption per day in a house using 5 CFLs of 20W each, 3 Fans of 60W each of 3 hours a day.
10. Explain :- (i) MCB
                (ii) MCCB
                (iii) ELCB
                (iv) SFU

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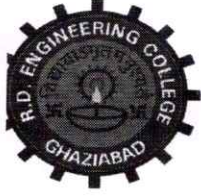
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SAMPLE FORMAT

ASSIGNMENT-1 (CO1)

Q1. Assume we have the following application that models soccer teams, the games they play, and the players in each team. In the design, we want to capture the following: • We have a set of teams, each team has an ID (unique identifier), name, main stadium, and to which city this team belongs.
• Each team has many players, and each player belongs to one team. Each player has a number (unique identifier), name, DoB, start year, and shirt number that he uses.
• Teams play matches, in each match there is a host team and a guest team. The match takes place in the stadium of the host team.
• For each match we need to keep track of the following:
The date on which the game is played .The final result of the match. The players participated in the match. For each player, how many goals he scored, whether or not he took yellow card, and whether or not he took red card. During the match, one player may substitute another player. We want to capture this substitution and the time at which it took place.
• Each match has exactly three referees. For each referee we have an ID (unique identifier), name, DoB, years of experience. One referee is the main referee and the other two are assistant referee.

Design an ER diagram to capture the above requirements. State any assumptions you have that affects your design (use the back of the page if needed). Make sure cardinalities and primary keys are clear.

Q2. Discuss 3 level of abstraction or schemas architecture of DBMS.

Q3. What is the significance of physical data independence and logical data independence?

Q4. What is the difference between a weak entity type and a strong entity type?

Q5. Explain the concepts of specialization ,aggregation and generalization in EER.

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SAMPLE FORMAT

ASSIGNMENT-2 (CO2)

Q1 Consider the following relations: Doctor(SSN, FirstName, LastName, Specialty, YearsOfExperience, PhoneNum) Patient(SSN, FirstName, LastName, Address, DOB, PrimaryDoctor_SSN) Medicine(TradeName, UnitPrice, GenericFlag) Prescription(Id, Date, Doctor_SSN, Patient_SSN) Prescription_Medicine(Prescription Id, TradeName, NumOfUnits)

 ➢ The Doctor relation has attributes Social Security Number (SSN), first and last names, specialty, the number of experience years, and the phone number.
 ➢ The Patient relation has attributes SSN, first and last names, address, date of birth (DOB), and the SSN of the patient's primary doctor.
 ➢ The Medicine relation has attributes trade name, unit price, and whether or not the medicine is generic (True or False).
 ➢ The Prescription relation has attributes the prescription id, the date in which the prescription is written, the SSN of the doctor who wrote the prescription, and the SSN of the patient to whom the prescription is written.
 ➢ The Prescription_Medicine relation stores the medicines written in each prescription along with their quantities (number of units).

Write the relational algebra expressions for the following queries (consider the three performance/optimization rules taken in class)

 1. List the trade name of generic medicine with unit price less than $50.
 2. List the first and last name of patients whose primary doctor named 'John Smith'.
 3. List the first and last name of doctors who are not primary doctors to any patient
 4. For medicines written in more than 20 prescriptions, report the trade name and the total number of units prescribed.
 5. List the SSN of patients who have 'Aspirin' and 'Vitamin' trade names in one prescription.
 6. List the SNN of distinct patients who have 'Aspirin' prescribed to them by doctor named 'John Smith'.

Q2. What are Triggers? Explain with example.

Q3. Explain entity integrity constraints and referential integrity constraints.

Q4. What do you mean by query and subquery ? Discuss Cursors also.

Q5. Discuss the features of relational model.

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SAMPLE FORMAT

ASSIGNMENT-3 (CO3)

Q1 Consider the following relations: Doctor(SSN, FirstName, LastName, Specialty, YearsOfExperience, PhoneNum) Patient(SSN, FirstName, LastName, Address, DOB, PrimaryDoctor_SSN) Medicine(TradeName, UnitPrice, GenericFlag) Prescription(Id, Date, Doctor_SSN, Patient_SSN) Prescription_Medicine(Prescription Id, TradeName, NumOfUnits)

➢ The Doctor relation has attributes Social Security Number (SSN), first and last names, specialty, the number of experience years, and the phone number.
➢ The Patient relation has attributes SSN, first and last names, address, date of birth (DOB), and the SSN of the patient's primary doctor.
➢ The Medicine relation has attributes trade name, unit price, and whether or not the medicine is generic (True or False).
➢ The Prescription relation has attributes the prescription id, the date in which the prescription is written, the SSN of the doctor who wrote the prescription, and the SSN of the patient to whom the prescription is written.
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1. List the trade name of generic medicine with unit price less than $50.
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6. List the SNN of distinct patients who have 'Aspirin' prescribed to them by doctor named 'John Smith'.

Q2. What are Triggers? Explain with example.

Q3. Explain entity integrity constraints and referential integrity constraints.

Q4. What do you mean by query and subquery ? Discuss Cursors also.

Q5. Discuss the features of relational model.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SAMPLE FORMAT

Assignment -4 (CO4)

Q1. Describe ACID properties of transactions.

Q2. Describe recoverable, non recoverable and cascadeless schedules.

Q3. Check whether the given schedule is conflict serializable or not

S: $r_1(A)$; $r_2(A)$, $r_1(B)$, $r_2(B)$, $r_3(B)$, $w_1(B)$, $w_2(B)$

Q4. Explain view serializability with example.

Q5. Describe Wait/Die and Wound/Wait deadlock protocols.

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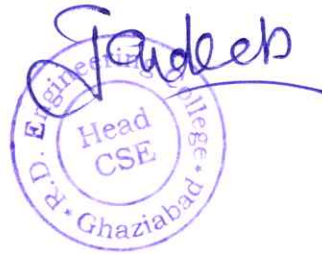under the aegis of IQAC
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SAMPLE FORMAT

Assignment 5 (CO5)

Q1. Explain Concurrency control with locking methods.

Q2. List and explain various issues while transactions are running concurrently in DBMS.

Q3. Discuss briefly about 2PL? List and explain the types of 2PL.

Q4. Describe basic timestamp ordering algorithm.

Q5. Discuss validation based protocol for concurrency control

Assignment Questions with CO- Statement

	MCA Department	Year: 2022-23
	Assignment – I **(Based on CO 1)**	Semester: Even

Name of the Faculty   : Ms.Swati Sharma

Subject:DBMS

Subject Code: KCA 204

Branch/Sem/Sec: MCA/IInd Sem

CO 1 Describe the features of a database system and its application and compare various types of data models.

(i) Write down the application area of DBMS.

(ii) Explain Database Languages & Interfaces.

(iii) Differentiate Between File System and DBMS.

(iv) Explain 3 tier Schema Architecture with suitable diagram.

(v) Briefly Describe Data abstraction.

(vi) What do you understand by Data Independence?

(vii) Write down the Advantages & Disadvantages of DBMS.

(viii) Define Data Models with its types.

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	MCA Department	**Year:** 2022-23
	Assignment – 2 **(Based on CO 2)**	**Semester: Even**

Name of the Faculty   : Ms.Swati Sharma

Subject:DBMS

Subject Code: KCA 204

Branch/Sem/Sec: MCA/IInd Sem

CO 2 Construct an ER Model for a given problem and transform it into a relation database schema

1. Determine the Relational algebra expression for following:

    Emp(EID,Ename,City)

2. Find the name of employees who either live in Delhi or live in Meerut.

3. Differentiate between the Generalization & Specialization.

4. What is Relational algebra? Explain its various operations ?

5. Draw an E-R Diagram of College management system.

6. Explain Different types of Keys.

7. Differentiate between all types of Attributes.

8. Define Mapping Constrance.

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		Year: 2022-23
MCA Department		
	Assignment – 3 **(Based on CO 3)**	**Semester: Even**

Name of the Faculty   : Ms.Swati Sharma

Subject:DBMS

Subject Code: KCA 204

Branch/Sem/Sec: MCA/IInd Sem

CO 3 Formulate solution to a query problem using SQL Commands, relational algebra, tuple calculus and domain calculus.

1. Explain Functional Dependencies.

2. What is multivalued dependencies ?

3. Differentiate between DBMS and RDBMS.

4. Define DDL and DML Commands.

5. Explain the term Tuple relational calculus.

6. What is Domain Relational Calculus.

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MCA

	MCA Department	Year: 2022-23
	Assignment – 4 (Based on CO 4)	Semester: Even

Name of the Faculty   : Ms.Swati Sharma

Subject:DBMS

Subject Code: KCA 204

Branch/Sem/Sec: MCA/IInd Sem

CO 4 Explain the need of normalization and normalize a given relation to the desired normal form.

1. Explain 1NF.

2. Define the term Second Normal Form with suitable example.

3. Differentiate between third normal form and BCNF.

4. What is Transaction. Explain its all state ?

5. Define ACID Properties.

6. Define Serializability schedule.

7. How to Check Dead lock in DBMS.

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	MCA Department	**Year:** 2022-23
	Assignment – 5 **(Based on CO 5)**	**Semester: Even**

Name of the Faculty : Ms.Swati Sharma

Subject:DBMS

Subject Code: KCA 204

Branch/Sem/Sec: MCA/IInd Sem

CO 5 Explain different approaches of transaction processing and concurrency control.

1. Define Conflict and View Serializable Schedule.

2. Explain Concurrency Control Techniques.

3. What is time stamping protocol.

4. Define validation based protocol.

5. Explain two phase locking.

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