SATYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(NAAC Accredited, Approved by A.I.C.T.E, & Permanently Affiliated to JNTU, Kakinada)
Gajularega, Vizianagaram, Andhra Pradesh 535002
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E-Mail: sitam@sitam.co.in Website: www.sitam.co.in

Saturday, October 30, 2021

INSTITUTE ACADEMIC CALENDAR FOR B.TECH II/III/IV YEAR (2021-22)

I SEMESTER			
Date		Description	Weeks
From	To		
01-10-2021		Commencement of Class Work	
01-10-2021	20-11-2021	1 Unit of Instructions	7Weeks
22-11-2021	27-11-2021	1 Mid Examinations	1Week
2nd October 2021		Gandhi Jayanthi Celebrations – NCC	
1st week of October 2021		Technical Workshop/Conference /Seminar– Dept of Civil Engg	
3rd week of October 2021		Technical Workshop/Conference /Seminar – Dept of CSE	
1st week of November 2021		Technical Workshop/Conference /Seminar – Dept of Mech Engg	
29-11-2021	15-01-2022	2 Unit of Instructions	7Weeks
07th December 2021		Indian Armed forces Flag Day celebrations by NCC	
22nd December 2021		Mathematics Day celebrations by Dept of HBS	
12th January 2022		National youth day celebrations by Dept of CSE	
13th January 2022		Sankranthi Sambaralu celebrations by Dept of EEE	
17-01-2022	22-01-2022	2 Mid Examinations	1Week
24-01-2022	29-01-2022	Preparation & Practicals	1Week
31-01-2022	12-02-2022	End Examinations	2Weeks
1st week of January 2022		Technical Workshop/Conference /Seminar – Dept of ECE	
2nd week of January 2022		Technical Workshop/Conference /Seminar – Dept of EEE	
26th January 2022		Republic Day Celebrations - NCC	
29th January 2022		Sri Botcha Gurunaidu and Sri Majji Ramarao memorial scholarship awards - Dept of ECE	

Principal

Dr.D.V.RAMAMURTHY
Principal
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Saturday, October 30, 2021

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II SEMESTER			
Date		Description	Weeks
From	To		
14-02-2022		Commencement of Class Work	
14-02-2022	02-04-2022	1 Unit of Instructions	7Weeks
3rd week of February 2022		Technical Workshop/Conference /Seminar – Dept of Civil Engg	
28th February 2022		National Science Day celebrations by Dept of HBS	
1st week of March 2022		Technical Workshop/Conference /Seminar – Dept of Mech Engg	
08th March 2022		International Womens Day Celebrations by Dept of Mech. Engg	
3rd week of March 2022		Technical Workshop/Conference /Seminar – Dept of CSE	
22nd March 2022		Worlds Water Day Celebrations by Dept of Civil Engg	
04-04-2022	09-04-2022	1 Mid Examinations	1Week
11-04-2022	28-05-2022	2 Unit of Instructions	7Weeks
07th April 2022		Worlds Health Day Celebrations by NSS	
2nd week of April 2022		Technical Workshop/Conference /Seminar – Dept of ECE	
22nd April 2022		Worlds Earth Day Celebrations by Dept of Civil Engg	
1st week of May 2022		Technical Workshop/Conference /Seminar – Dept of EEE	
30-05-2022	04-06-2022	2 Mid Examinations	1Week
06-06-2022	11-06-2022	Preparation & Practicals	1Week
13-06-2022	25-06-2022	End Examinations	2Weeks
21st June 2022		International Yoga Day Celebrations by NCC	

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Subject Code:R2021012 **Subject Name:- STRENGTH OF MATERIALS-I**

CIVIL ENGINEERING

Date: 05-01-2022 **Duration : 90 min**

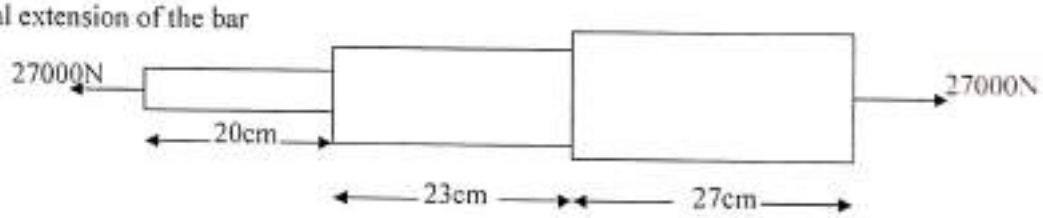
ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

(Q1) A) Define principle of superposition.

PO6	CO1	2 marks

B) An axial pull of 35000N is acting on a bar consisting of three lengths as shown in the figure. If the Young's modulus is $2.1 * 10^5$ N/mm^2. Determine i) Stresses in each section

ii) Total extension of the bar



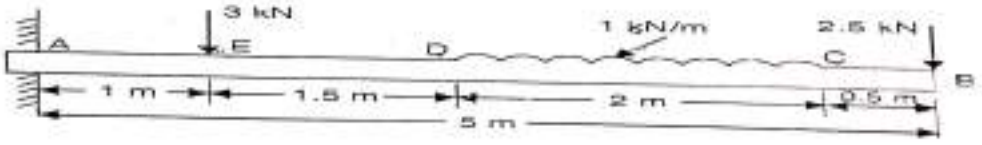
Take diameters of section-1 as 3cm, section-2 as 3.5 cm, section-3 as 5.4 cm

PO6	CO1	8 marks

Q2) A) Write the types of beams.

PO2 & PO6	CO1	2 marks

B) A cantilever beam of length 5.0 m is loaded as shown in fig. Draw the shear force and bending moment diagrams for the cantilever.



PO6	CO1 & CO2	8 marks

(Q3) A) State the assumptions made in the theory of simple bending.

PO5	CO1 & CO3	5 marks

B) Define section modulus for rectangular section.

PO5	CO3	5 marks

Name of the paper-setter: **G. Goutham Kumar**	Department of the Paper-setter: **CIVIL**
Date: **05-01-2020**	Signature of the paper-setter:

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III-B.TECH MID-II EXAMINATIONS – Jan 2022

Subject Code: R1931013 **Subject Name: Water Resources Engineering-I**

CIVIL ENGINEERING

Date: 20-01-2022 **Duration : 90 min**

ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

1. (a) What is flood routing? Write down basic flood routing equation. Explain in detail any one method of flood routing.

CO 1	PO 1	5 Marks

(b) Derive the Muskingum routing equation and the expressions for the routing coefficients C_0, C_1 and C_2.

CO 3	PO 2	5 Marks

2. (a) State Dupuit's assumptions for obtaining general equations governing ground water flow. Derive an expression for the confined aquifer. How can the expression be used to evaluate the aquifer permeability?

CO 1	PO 1	5 Marks

(b) A 10cm diameter well was pumped at a uniform rate of 500 litres/min., while observations of drawdown were made in an observation well located at a distance of 50m from the well. The original head of water, measured from the top of the impervious layer was 25m. The hydraulic conductivity of the aquifer was 1.83×10^{-3} m/min. determine the drawdown at the face of the well and assuming that the flow to the unconfined aquifer is unsteady state.

CO 2	PO 2	5 Marks

3. (a) Discuss in detail the various causes and effects of Floods and describe the method of estimating a Tr – year flood using Gumbel's distribution.

CO 4	PO 2	5 Marks

(b) A State and explain the Rational Method which is used for computing the peak rate of runoff for the design of urban storm water drains. What are the limitations of this method?

CO 4	PO 2	5 Marks

Name of the paper-setter: **Dr. G Ravi Kishore**	Department of the Paper-setter: **Civil**
Date: **08-01-2022**	Signature of the paper-setter:

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IV-B.TECH I-SEM MID-II EXAMINATIONS – JAN 2022

Subject Code:R1641011 **Subject Name: EE-II**

CIVIL ENGINEERING

Date: 18-1-2022 **Duration : 90 min**

ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

(Q1) a) What are the objectives of Oxidation Pond? 4M
b) What do you mean by Nitrification? 3M
C) Define sewage sickness? 3M

PO1& PO7	CO3,CO5	10 marks

(Q2) a) Describe the ultimate disposal of waste water? 5M
b) Discuss the process involved in a trickling filter? 5M

PO1& PO7	CO3,CO5	10 marks

(Q3) a) Explain the process of Activated Sludge with meat sketch? 5M
b) Differentiate Between Aerobic & Anaerobic Process? 5M

PO7	CO3	10 marks

Name of the paper-setter: **M. BHARGAVI**	Department of the Paper-setter: **CIVIL**
Date: **12-1-2022**	Signature of the paper-setter:

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II-B.TECH I-SEM I-MID EXAMINATIONS – Jan -2022

Subject Code:R2021024 **Subject Name : DC MACHINES AND TRANSFORMERS**

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Date:06-01-2022
ANSWER ALL QUESTIONS

Duration : 90 min
TOTAL MARKS : 30

(Q1) a) Explain the principle of operation of a dc generator and derive it's EMF equation?
b) A short - shunt compound generator delivers a load current of 30 A at 220v , and has a armature, series field and shunt field resistances of 0.05 ohms and 0.30 ohms ,200 ohms respectively. Calculate the induced emf and armature current allow 1.0 v per brush for contact drop?

CO1	PO1	5+5=10 Marks

(Q2) a) Describe the process of voltage build up in self-excited generators?
b) Explain the concept of armature reaction in DC motors?

CO2	PO2	5+5=10 Marks

(Q3) a) Explain speed-current, torque-current and speed-torque characteristics of DC shunt motor?
b) A 4 pole 240V, wave connected shunt motor gives 1119 kw when running at 1000 rpm and drawing armature and field currents of 50 A &1.0 A respectively. it has 540 conductors ,it's resistance is 0.1ohm .assuming a drop of 1 volt per brush. find a)total torque b)use full torque c) Use full flux/pole?

CO3	PO2	5+5=10 Marks

Name of the paper-setter: **P.KARUNAKAR**	Department of the Paper-setter: **EEE**
Date: **02-01-22**	Signature of the paper-setter:

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II-B.TECH II-SEM I-MID EXAMINATIONS – Apr -2022

Subject Code:R2022024 **Subject Name : INDUCTION AND SYNCHRONOUS MACHINES**

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Date: 28-04-2022 **Duration : 90 min**

ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

(Q1) **a)** Discuss in detail about the principle of operation of a 3-phase induction motor?
b) A 3 phase slip ring induction motor with star-connected rotor has an induced emf of 120 volts between slip rings at stand still with normal voltage applied to the stator, the rotor winding has a resistance per phase of 0.3 ohm and stand still leakage reactance per phase of 1.50 ohm. Calculate rotor current /phase when the rotor is developing maximum torque?

CO1	PO1	5+5=10 Marks

(Q2) **a)** Discuss briefly the following;(i) Crawling (ii) Cogging?
b) The ratio of maximum torque to full – load torque in a 3- phase squirrel –cage induction motor is 2.2: 1. Determine the ratio of actual starting torque to full – load torque for the following cases :(i) Direct starting, (ii) Star –delta starting, and (iii) Auto –transformer starting tapping of 70%. The rotor resistance and standstill reactance per phase are 0.5 Ω and 5 Ω respectively?

CO2	PO2	5+5=10 Marks

(Q3) **a)** Derive the torque-slip equation for a 3-phase induction motor and also the equation for slip at which maximum torque occurs?
b) Explain the speed control of induction motor with V/f control method?

CO2	PO2	5+5=10 Marks

Name of the paper-setter: **P.KARUNAKAR**	Department of the Paper-setter: **EEE**
Date: **22-04-22**	Signature of the paper-setter:

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II-B.TECH I-SEM I-MID EXAMINATIONS – JAN -2022

Subject Code:R2021033 **Subject Name: PRODUCTION OF TECHNOLOGY**

MECHANICAL ENGINEERING

Date:06-01-2022 **Duration : 90 min**

ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

Q1.A) Discuss the steps involved in making a casting?

B) Explain briefly about various pattern allowances?

PO5	CO1	5+5=10 marks

Q2. A) Sketch and explain the process of investment casting. What are its limitations?

B) Sketch and explain the process of Die casting and its applications?

PO5	CO2	5+5=10 marks

Q3 List out the classification of welding processes? Give Advantages, and Limitations of welding. (10M)

PO1	CO5	10 marks

Name of the paper-setter:**S.PRASANTH**	Department of the Paper-setter:**Mechanical**
Date:**03-01-2022**	Signature of the paper-setter: S Prasanth

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III-B.TECH I-SEM I-MID EXAMINATIONS – November -2021

Subject Code:R1931032 **Subject Name: DESIGN OF MACHINE MEMBERS-II**

MECHANICAL ENGINEERING

Date: 23-11-2021 **Duration : 90 min**
ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

(Q1) Select a single row deep groove ball bearing for a radial load of 4000N and an axial load of 5000N, operating at a speed of 1600rpm for an average life of 5 years at 10 hours per day. Assume uniform and steady load.

PO2	CO1	10 marks

(Q2) The following data is given for the connecting rod of a diesel engine: Cylinder bore =85 mm, Length of connecting rod = 350 mm, Maximum gas pressure = 3 MPa, factor of safety against the buckling failure = 5, l/d ratio for piston pin bearing = 1.5, l/d ratio for crank pin bearing = 1.25, Allowable bearing pressure for piston pin bearing = 13 MPa, Allowable bearing pressure for crankpin bearing = 11 MPa, stroke length = 140mm, mass of reciprocating parts = 1.5kg, engine speed = 2000 rpm, allowable stress in the bolts as 90 N/mm^2 and in cap as 95 N/mm^2, density of connecting rod = 7800 kg/m^3 calculate: a) Dimensions of the cross section of connecting rod b) Dimensions of small and big end bearings c) Nominal diameter of bolts for the cap d) Thickness of cap and.

PO2	CO2	10 marks

(Q3) A) Design a cast iron piston for a single acting four stroke diesel engine with the following data Cylinder bore = 300mm, Length of stroke = 250mm, Speed = 600 rpm, Brake mean effective pressure = 0.6MPa, Maximum gas pressure = 4MPa, Fuel consumption = 0.25 kg per BP per h . Assume suitable data if required and state the assumptions made. (6M)

B). Explain types of flat belt drives? (4M)

PO2	CO3	6+4=10 marks

Name of the paper-setter: **S.PRASANTH**	Department of the Paper-setter: **Mechanical**
Date: **19-11-2021**	Signature of the paper-setter: S. Prasanth

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IV-B. TECH II-SEM I-MID EXAMINATIONS – APRIL 2022

Subject Code: R164203B **Subject Name: NDE (SET-1)**

MECHANICAL ENGINEERING

Date: 16-04-2022 **Duration: 90 min**
ANSWER ALL QUESTIONS **TOTAL MARKS: 30**

(Q1) What is Radiography? Explain the principle of working of radiographic test. Illustrate about safety aspects of industrial radiography?

PO1	CO1	10 marks

(Q2) Explain about the procedure of liquid penetrant test?

PO2	CO1	10 marks

(Q3) Describe briefly the generation of ultrasonic waves?

PO1	CO1	10 marks

Name of the paper-setter: **M JAYA PRAKASH**	Department of the Paper-setter: **Mechanical**
Date: **16-04-2022**	Signature of the paper-setter:

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Gajula Rega, Vizianagaram - 535 002, ANDHRA PRADESH, INDIA
IV-B.TECH II-SEM I-MID EXAMINATIONS – April -2022

Subject Code:R1642032 **Subject Name: UNCONVENTIONAL MACHINING PROCESSES**
SET 1

MECHANICAL ENGINEERING

Date: 12-04-2022 **Duration : 90 min**
ANSWER ALL QUESTIONS **TOTAL MARKS : 30**

(Q1) a) State the classification of non-traditional machining processes based on energy domain.
b) Briefly discuss the mechanisms involved in material removal by USM.

PO2	CO1	5+5=10 marks

(Q2) a) Explain the principle of electrochemical grinding with neat sketch.
b) Calculate the metal removal rate in mm3/min in Electrochemical machining of a material having density 8000 kg/m3, atomic wt 56, valence 2 when current used is 1000 A and Faraday constant is 96500 columb/mole

PO2	CO2	5+5=10 marks

(Q3) a) Explain about R-C circuit used for pulse generation in EDM process.
b) Explain the functions and characteristics of dielectric fluid used in EDM process.

PO2	CO2	5+5=10 marks

Name of the paper-setter: **S.PRASANTH**	Department of the Paper-setter: **Mechanical**
Date:**08-04-2022**	Signature of the paper-setter: S Prasanth

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ELECTRONICS AND COMMUNICATION ENGINEERING

II-B.TECH -I-SEM- I-MID-EXAMINATIONS – Jan– 2022

SWITCHING THEORY AND LOGIC DESIGN

CODE: R2021042 **TIME:2.00 – 3.30PM**

DATE: 07-01-2022 **DURATION:90 M**

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. a) Represent $(199)_{10}$ in the following code: (i) Binary (ii) BCD (iii) 2421 (iv) 84-2-1

   b) Convert the following. i. $(AB)_{16} = (\ )_{10}$ ii. $(1234)_8 = (\ )_{10}$ iii. $(10110011)_2 = (\ )_{10}$

CO2	PO1	10Marks

2. For the given function F(A, B, C, D, E) =Σ(0,1, 2, 3, 4, 5, 9, 10, 16, 17, 18, 19, 20, 22, 25, 26)+ Σd (7, 11, 12, 13, 15, 23, 27, 28, 29, 30). Obtain minimal SOP expression using KMap.

CO1	PO1	10Marks

3. Design a combinational circuit that converts four bit binary number into gray code

CO3	PO2	10Marks

Prepared by K H KRISHNA Asst. Prof,ECE.

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ELECTRONICS AND COMMUNICATION ENGINEERING

III-B.TECH -I-SEM- I-MID-EXAMINATIONS – JAN-2022

SUBJECT NAME:LINEAR IC APPLICATIONS

CODE: R1931023 **TIME: 2.30-4.00p.m.**

DATE: 20/01/2022 **DURATION:90min**

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. Explain the operation of function generator circuit?

CO 1	PO1	10Marks

2. Explain the operation of PLL and any two applications?

CO 2	PO1	10Marks

3. Explain weighted resistor DAC and R-2R ladder DAC?

CO 1	PO3	10Marks

Prepared by
V.SIRISHA
Asst. Prof.,
ECE.

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ELECTRONICS AND COMMUNICATION ENGINEERING

IV-B.TECH -I-SEM- I-MID-EXAMINATIONS – NOV – 2021.

SUBJ.CODE:R164104D **SUBJ.NAME: EMBEDDED SYSTEMS**

DATE: 27-11-2021 **TIME: 10.30AM-12.00PM** **DURATION: 90 Min**

ANSWER ALL THE QUESTIONS **TOTAL MARKS: 30 M.**

1) Explain the classification of embedded systems?

CO2	PO1	10 Marks

2) Explain about Timer and counting devices in Embedded Hardware?

CO1	PO1	10 Marks

3) What is the concept of Interrupt and explain its role in Embedded systems?

CO2	PO3	10 Marks

Prepared by K.H.KRISHNA, Asst . Prof. , ECE.

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ELECTRONICS AND COMMUNICATION ENGINEERING

III-B.TECH -II-SEM- I-MID-EXAMINATIONS – APRIL – 2022

ARTIFICIAL NEURAL NETWORKS

CODE: R1932041 **TIME:2:00PM-3:30 PM.**

DATE:19-04-2022 **DURATION:90 M**

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. Explain the working principle of single input and multiple input newrons And mention the applications of ANN

CO2	PO1	10 Marks

2. What is the role of synapse in biological newron and discuss the role of different activation functions in neural network?

CO1	PO3	10 Marks

3. Explain competitive and hebbian learning algorithms

CO2	PO1	10 Marks

Prepared by A VENKATESWARA RAO, Asst. Prof. , ECE.

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ELECTRONICS AND COMMUNICATION ENGINEERING

III-B.TECH -II-SEM- II-MID-EXAMINATIONS – MAY/JUNE – 2022

WWTD

CODE:R1932041 -WWTD **TIME:2:00PM-3:30 PM.**

DATE: 30-05-2022 **DURATION:90 M**

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. Explain The Concept Of Loop Antennas ?

CO1	PO1	10Marks

2. Write a Brief Notes On Travailing Wave Antenna ?

CO2	PO3	10Marks

3. Explain Tropospheric Wave Propagation ?

CO1	PO2	10Marks

Prepared by Sri M. Srinivasa Rao Asst. Prof. , ECE.

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ELECTRONICS AND COMMUNICATION ENGINEERING

IV-B.TECH -II-SEM- II-MID-EXAMINATIONS – MAY/JUNE- 2022.

SUBJ.CODE: R1642041 **SUBJ.NAME: CMC**

DATE: 30-05-2022 **TIME: 2:00PM-3:30PM** **DURATION: 90 Min**

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1) a) Explain the terms soft handoff, hard handoff, forced handoff, mobile assisted handoff, intersystem handoff?
   b) what is dropped call rate? Write their evaluation?

CO2	PO1	10 Marks

2) a) Explain GSM architecture in detail?
   b) Explain GSM channels?

CO1	PO3	10 Marks

3) Explain space diversity and umbrella pattern antennas?

CO3	PO2	10 Marks

Prepared by D.VIJAYA SRI,Asst . Prof. , ECE.

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COMPUTER SCIENCE AND ENGINEERING

II-B.TECH -I-SEM- I-MID-EXAMINATIONS – JAN – 2022

DATABASE MANAGEMENT SYSTEMS

CODE: R2021121 **TIME:2:00PM-3:30PM**

DATE: 08/01/22 **DURATION:90M**

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. Define DBMS.Write ANY 3 characteristics and 3 advantages in DBMS. And what is SCHEMA and Explain client server architecture in DBMS.

PO3	CO2	10 Marks

2. Explain DML operations in detail. Explain SQL functions in detail.

PO2	CO1	10 Marks

3. What is ER model. Draw and Explain Hospital ER model and explain the following

a) Inheritance b) Generalization c) Joins d) Nested query.

PO8	CO5	10 Marks

Name of the paper-setter: M.MADHU BABU	Department of the Paper-setter: CSE
Date: 08/01/22	Signature of the paper-setter:

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DEPT OF COMPUTER SCIENCE AND ENGINEERING (AI&DS)

II-B.TECH –II-SEM- I-MID-EXAMINATIONS – APR – 2022

DATA WAREHOUSING AND MINING

CODE: R2022422
DATE: 28/04/22

TIME:2:00PM-3:30PM
DURATION:90M

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. Define Data warehousing and Draw and Explain Data Warehousing Architecture and write any 5 Advantages of Data Warehousing.

PO1	CO4	10 Marks

2. What is Knowledge Discovery Delivery write detailed notes on it and define data mining and write any 5 Appilications of Data Mining.

PO4	CO1	10 Marks

3. Explain Data Preprocessing in detail and what is Decision Tree. Explain in detail.

PO5	CO3	10 Marks

Name of the paper-setter: M.MADHU BABU	Department of the Paper-setter: CSE
Date: 28/04/22	Signature of the paper-setter:

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COMPUTER SCIENCE AND ENGINEERING

II-B.TECH -II-SEM- I-MID-EXAMINATIONS – APRIL– 2022

FORMAL LANGUAGES AND AUTOMATA THEORY

CODE:R2022053
DATE:27/04/22

TIME:2:00PM-3:30PM
DURATION:90M

ANSWER ALL THE QUESTIONS

TOTAL MARKS:30 M.

1. A. Design Melay machine for 2's Complement.

PO3	CO3	5 Marks

B. Construct a Deterministic Finite State Automata equivalent to the NFA given below

M={(q0,q1), {a,b,c} ,δ, q0, { q1}} where δ is defined by the following transition table.

δ	a	b	c
q_0	(q_0,q_1)	(q_1)	null
q_1	null	(q_0,q_1)	(q_1)

PO3	CO3	5 Marks

2. A. Explain classification of Grammar (Chomsky hierarchical theorem)

PO2	CO4	5 Marks

B. Design a FA from given regular expression 10 + (0 + 11)0* 1.

PO3	CO3	5 Marks

3. A. Define Context Free Grammar. State and Explain the closure properties of CFG.

PO2	CO2	5 Marks

B. Explain pumping lemma for context free grammar.

PO5	CO2	5 Marks

Name of the paper-setter: SWETHA ROUTHU	Department of the Paper-setter: CSE
Date: 27-04-2022	Signature of the paper-setter:

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COMPUTER SCIENCE AND ENGINEERING

III-B.TECH -I-SEM- I-MID-EXAMINATIONS – NOV – 2021

COMPILER DESIGN

CODE:R1931053
DATE:24/11/2021

TIME:2:00PM-3:30PM
DURATION:90M

ANSWER ALL THE QUESTIONS **TOTAL MARKS:30 M.**

1. A. How to specify the tokens? Differentiate token, lexeme and pattern with suitable examples.

PO5	CO1	5 Marks

B. Generate object code for x1=x2*x3/15 through different phases of compiler.

PO3	CO1	5 Marks

2. A. What is mean by left recursion? How to eliminate left recursion for the following grammar: E->E+T/T, T->T*F/F,F->(E)/id.

PO3	CO2	5 Marks

B. Construct set of LR(1) items for a grammar given below S'->S S->CC C->eC/d.

PO3	CO2	5 Marks

3. A. What is a three address code? What are its types? How it is implemented?

PO5	CO3	5 Marks

B. Give the SDT scheme for desk calculator.

PO5	CO3	5 Marks

Name of the paper-setter: SWETHA ROUTHU	Department of the Paper-setter: CSE
Date: 24-11-2021	Signature of the paper-setter:

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I-B.TECH I-SEM I-MID EXAMINATIONS – 2021

Subject Code: R201103 Subject name: Engineering physics

Date :

Common For CIVIL&MECH

Duration : 90 min

ANSWER ALL QUESTIONS TOTAL MARKS : 30

1(a) Explain the phenomenon of double refraction. ?

PO1	*CO1*	*4 marks*

(b) What is quarter wave plate? Derive an expression for its thickness

PO1	*CO1*	*6 marks*

(OR)

(c) Explain the formation of Newton's rings & obtain an expression for the diameter of the bright and dark rings.

PO1	*CO1*	*10marks*

2 2.Exp

the construction and working of He-Ne laser with the help of neat energy level diagram.

PO1	*CO1*	*10marks*

3.(a) Write notes on piezoelectricity

PO1	*CO1*	*4marks*

(OR)

(b)Explain about electronic polarization.

PO1	*CO1*	*4marks*

(c) Derive Clausius-Mosotti relation in dielectrics

PO1	*CO1*	*6 marks*

Name of the paper-setter: K.Rupavathi Asst. Prof in Physics	Department of the Paper-setter: H&BS
Date SPOC, IQAC	Signature of the paper-setter: K. Rupavathi

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I-B.TECH I-SEM I-MID EXAMINATIONS – 2021

Subject Code: R201115 **Subject name: Applied Chemistry**

Date :

Common For AI&DS,ECE

Duration : 90 min
TOTAL MARKS : 30

ANSWER ALL QUESTIONS

1. A Explain about Bakelite and poly urethanes?

PO1	*CO1*	*7 marks*

(B) Explain about Conducting polymers

PO1	*CO1*	*3 marks*

2 A Electrochemical series. write examples?(7m)

PO1	*CO1*	*7 marks*

B what is vulcanization and hoe does it improve the properties of rubber(3m)

PO1	*CO1*	*3marks*

3. A the mechanism of wet or electrochemical corrosion

PO1	*CO1*	*8marks*

B define electrode potential(2m)

PO1	*CO1*	*2 marks*

Name of the paper-setter:j.s.sailaja Asst. Prof in chemistry	**Department of the Paper-setter:** H&BS
Date	**Signature of the paper-setter:** Sailaja

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DEPARTMENT OF MBA

Name of the Subject: FINANCIAL MANAGEMENT
Subject Code: MB1921
Name of the Faculty: A.LAKSHMIPRIYANKA

Max Marks: 30M
Duration: 10A.M-12A.M
Date of Exam : 12-09-2022

Answer all questions

(Q1) A firm whose cost of capital is 10% is considering two projects X,Y the details of which are:

Particulars	Project X	Project y
Investment	200000	200000
Cash inflows		
1	40000	90000
2	60000	80000
3	80000	60000
4	100000	20000
5	120000	16000

Compute at 10% net present value. Calculate NPV? Find which project is the best one?[5M]

(Q2) What is working capital? Determine factors of working capital? [5M]

(Q3) Describe inventory management techniques [5M]

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DEPARTMENT OF MBA 1ST YEAR 1ST SEMESTER-MID 1
ACCOUNTING FOR MANAGERS

Code: MB1913
Date: 23.02.2022

Duration: 90 Min
Marks: 15 M

Answer all questions

1. What is accounting? Explain Generally Accepted Accounting Principles? [5M]
2. From following Balance sheet prepare schedule of change in working capital and prepare Funds Flow statement. [5M]

Liabilities	Mar 2019	Mar 2020	Assets	Mar 2019	Mar 2020
Share capital	2,00,000	2,50,000	Cash	30,000	47,000
Creditors	70,000	45,000	Debtors	1,20,000	1,15,000
Retained earnings	10,000	23,000	Land	50,000	66,000
			Stock	80,000	90,000
Total	**2,80,000**	**3,18,000**	**Total**	**2,80,000**	**3,18,000**

3. What is Costing? Explain different types of costs? [5M]

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FLUID MECHANICS AND HYDRAULICS MACHINERY

LAB VIVA QUESTIONS

1) Define density?
2) What is a venturimeter?
3) What is meant by Head?
4) What is a notch?
5) Define a pump?
6) Define centrifugal pump?
7) Define reciprocating pump?
8) What is impact of jet means?
9) What is a turbine?
10) What is tangential flow turbine?
11) What is radial flow turbine?
12) State Newton's law of viscosity?
13) What are the devices used for pressure measurement?
14) State continuity equation?
15) What are the methods of describing fluid motion?
16) Where the notches are used?
17) What is a weir?
18) What do you understand by the term major loss in pipes?
19) What do you understand by the term minor loss in pipes?
20) Define the term hydraulic gradient?
21) Define the term total energy line
22) What is a draft tube?
23) Define co-efficient of velocity of jet?
24) Define slip.

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25) Differentiate between real fluids and ideal fluids?

26) Define viscosity?

27) Define co-efficient of contraction of orifice meter?

28) Define co-efficient of discharge of orifice meter?

29) What is vena-contracta?

30) How Cavitation can be eliminated by Pump?

31) Which Pump is more Efficient Centrifugal Pump or Reciprocating Pump?

32) Why Centrifugal Pump is not called as a Positive Displacement Type of Pump?

33) Differentiate between the Uniform Flow and Non-Uniform Flow?

34) What is Coefficient of contraction?

35) What is a radial-flow turbine?

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SURVEY FIELD WORK

LAB VIVA QUESTIONS

1) What is the principal of Surveying?
2) What is the principal of chaining?
3) What is the height of a ranging rod and what is its diameter?
4) What is the purpose of a level?
5) What is the fundamental difference between plane surveying and geodetic surveying?
6) How is a chain folded and unfolded?
7) How to set Perpendicular Offsets?
8) What is the least count of a Theodolite?
9) What are the sources of local attraction in Surveying?
10) What is the principle of chain surveying?
11) What should be the maximum length of the offset
12) What is Leveling?
13) What are the Methods of Surveying?
14) What is traversing?
15) What are Corrections?
16) What is Whole Circle Bearing? (WCB)
17) What is Reduced Bearing (RB)
18) What is Orientation?
19) Methods of Plane Tabling?
20) What is Reduced Level?
21) What is Foresight Reading (FS)
22) Instruments used in Leveling?
23) What are Methods of Calculation of Reduced Level?
24) What is Contour Map?
25) How to adjust Closing Error?
26) What is Line of Collimation?
27) What is a Contour Line?
28) What is a Contour Interval?
29) How to adjust closing error?
30) What is bench mark?
31) Explain rise and fall method?
32) What is a level staff?
33) What is total station?

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Department of Electrical and Electronics Engineering

ELECTRICAL MACHINES-1 LAB (DC MACHINES AND TRANSFOMRERS LAB)

VIVA-VOCE QUESTION AND ANSWERS

1. **What range of speed can you get with the field control method of speed control of d.c. shunt motor?**

   Speed higher than rated speed can be obtained by using this method.

2. **What range of speed can you get with the armature control method of speed control of d.c. shunt motor?**

   Speed lower than the rated speed can be obtained by the armature control method.

3. **When DC Generator fails to build up the voltage, what are the reasons?**

   No residual magnetism, reversal of field connections and the resistance in the load circuit may be greater than critical resistance

4. **What are the different losses in dc machine?**

- Armature and field copper loss
- Iron and magnetic losses (hysteresis and eddy current loss)
- Mechanical losses
- Stray-load losses

5. **Drawbacks of Brake test?**

   This test is performed with small motors only
   Internal losses cannot be determined

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6. **What is the most important precaution in anyexperiment with d.c. shunt motor?**
   Before switching on d.c. supply, a sufficient resistance should be putin series with thearmature of the d.c. shunt motor.
7. **What will happen if the d.c. shunt motor openedaccidentally running on no-load has its shunt field winding?**
   The field will be reduced to only to the value of residual flux.The speed will be very high. The parts of motor may even fly apart.
8. **What is the most essential condition for the voltagebuild up for a d.c. shunt generator?**
   There should be a residual magnetism in the poles of the DC shunt generator.
9. **Which material is used for the core of a transformer and why?**
   Laminations of specially alloyed silicon steel (silicon content 4–5 per cent) are used due to its high electrical resistance, high permeability, non- ageing characteristics and minimum iron loss.
10. **What is stacking factor? What is its approximate value?**
    Stacking factor is the ratio of iron content in the laminated varnished Core by volume. Its value is about 90 per cent, that is, 10 per cent volume Is occupied by varnish and air.
11. **What is the emf equation of a transformer?**
    $E_{rms} = 4.44$ Fm fN V
    Where,
    F_m = maximum value of the flux linkage with both the windings,
    f = frequency of the supply,
    N = number of turns.
12. **Why are LT windings placed near the core?**
    LT windings are placed near the core to reduce the total dielectric Strength of the insulating materials provided on the winding.
13. **How is magnetic leakage reduced?**
    Magnetic leakage is reduced to a minimum by sectionalizing and interleaving the primary and secondary windings.
14. **What are the types of windings according to the construction?**
    According to the construction, the types of windings are:
    1. Sandwich type and
    2. Cylindrical type

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15. What is turn ratio of a transformer?

The ratio of the number of turns in the primary to the number of turns in the secondary windings is called the turn ratio or the ratio of transformation of the transformer, which is indicated by a constant

16. The required thickness of lamination in a transformer decreases when

the applied voltage increases

17. Oil in transformers is used to

Cool the windings

18. What do you mean by distribution transformers?

When transformers are used for distributing the energy from Transmission lines as well as net-works for local consumption and the secondaries are directly connected to the consumer's load, they are called distribution transformers.

19. What do you mean by power transformer?

Transformers that are used on transmission lines for the transmission and distribution of relatively large quantities of energy are called power transformers

20. What is called limb of a transformer?

The vertical portion of the iron core where the windings are placed is called limb of a transformer

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II-B.TECH II-SEM MECHANICAL ENGINEERING

Subject Name: THEORY OF MACHINES LAB
Subject code:-R2022037
Name of the faculty:-S.PRASANTH

LAB VIVA QUESTIONS

1. What is meant by mechanism?
   a system of parts working together in a machine: a piece of machinery.
2. Define Machine.
   A machine is a device which receives energy in some available form and utilizes it to some particular type of work.
3. Define Dynamics of Machines.
   It deals with the study of forces acting on the parts of machines.
4. What is meant by slider crank mechanism?
   The Slider-crank mechanism is used to transform rotational motion into translational motion by means of a rotating driving beam, a connection rod and a sliding body.
5. What is your aim of the experiment?
   To find out the slider velocity and angular velocity of the experiment.
6. Applications of slider crank mechanism?
   Almost all reciprocating engines use cranks (with connecting rods) to transform the back-and-forth motion of the pistons into rotary motion. The cranks are incorporated into a crankshaft.
   - Mechanical pencil sharpener
   - Fishing reel and other reels for cables, wires, ropes, etc.
   - Manually operated car window.
7. What is meant by velocity?
   The speed of something in a given direction.
8. What is meant by angular acceleration?
   Angular acceleration, also called rotational **acceleration**, is a quantitative expression of the change in **angular** velocity that a spinning object undergoes per unit time. It is a vector quantity, consisting of a magnitude component and either of two defined directions or senses.
9. What is meant by beam?
   Beams are generally horizontal structural members which transfer loads horizontally along their length to the supports where the loads are usually resolved into vertical forces. **Beams** are used for resisting vertical loads, shear forces and bending moments
10. What are the types of beam?
    a. Simply Supported Beam
    b. Fixed Beam
    c. Cantilever Beam
    d. Continuously Supported Beam
11. What are the types of Loading?

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a. Point load
b. Uniformly distributed load
c. Uniformly varying load

12. What Is the aim of experiment?

To find the natural efficiency of the beam.

13. What is meant by natural frequency?

the frequency at which a system oscillates when not subjected to a continuous or repeated external force.

14. What is meant by frequency?

It is defined as the number of cycles per second.

15. What is the unit of frequency?

The **SI unit** of frequency is the **hertz** (Hz), named after the German physicist Heinrich **Hertz**. One **hertz** means that an event repeats once per second. A previous name for this unit was cycles per second (cps). The **SI unit** for period is the second.

16. What is the use of cam?

A **cam** is a rotating or sliding piece in a mechanical linkage **used** especially in transforming rotary motion into linear motion or vice versa.

17. What is meant by camp jump phenomenon?

Follower looses contact with cam surface when cam rotates beyond particular speed due to inertia forces

18. What are types of cam?

a. Wedge or flat cams
b. Radial or Disc Cams
c. Spiral cams
d. Cylindrical cams
e. Conjugate cams
f. Globoidal Cams
g. Spherical cams

19. What are the types of follower available?

a. (a) Knife edge follower
b. (b) Roller follower
c. (c) Flat faced follower
d. (d) Spherical follower

20. What is the aim of this experiment?

jump-speed characteristics of the cam & follower mechanism.

21. What is meant by governor?

Governors are also known as speed limiters; they are used in different places like engines to measure and regulate the speed of an engine.

22. What are types of governors?

a. Watt governor

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b. Porter governor
c. Proell governor
d. Hartnell governor

23. What is meant by stiffness of spring?

For an elastic body with a single degree of freedom (DOF) (for example, stretching or compression of a rod), the **stiffness** is **defined** as k = F δ {\displaystyle k={\frac {F}{\delta }}} ... δ is the displacement produced by the force along the same degree of freedom (for instance, the change in length of a stretched **spring**).

24. What is meant by sensitivity of governor?

Sensitivity is **defined**as the ratio of the **mean** speed to the speed range of the **governor** over its limits of operation.

25. What are classification of governors?

Generally Governors can be classified as either **Centrifugal** or**Inertia**.

26. What is meant by centrifugal governor?

The effort of the governor is obtained from the change in centrifugal force on (usually) two rotating masses known as **Balls**, when an increase or decrease in governor speed occurs.

27. What is meant by inertia governors?

Inertia Governors work on a different principle. The governor balls are arranged so that the inertia forces caused by angular acceleration or retardation of the governor shaft tend to alter their positions. The amount of the displacement of the balls is controlled by springs and the governor mechanism to alter the supply of energy to the engine.

28. What is meant by gyroscope?

a device consisting of a wheel or disc mounted so that it can spin rapidly about an axis which is itself free to alter in direction. The orientation of the axis is not affected by tilting of the mounting, so gyroscopes can be used to provide stability or maintain a reference direction in navigation systems, automatic pilots, and stabilizers.

29. What is meant by gyroscope couple?

Gyroscopic Couple. If a uniform disc of polar moment of inertia is rotated about its axis with an angular velocity, its Angular Momentum is a vector and can be represented in diagram (c) by the lineup which is drawn in the direction of the axis of rotation.

30. What is the use of gyroscope couple?

Gyroscopes can be very perplexing objects because they move in peculiar ways and even seem to defy gravity. These special properties make gyroscopes extremely important in everything from your bicycle to the advanced navigation system on the space shuttle. A typical airplane uses about a dozen gyroscopes in everything from its compass to its autopilot. The Russian Mir space station used 11 gyroscopes to keep its orientation to the sun, and the Hubble Space Telescope has a batch of navigational gyros as well.

31. What is meant by centrifugal force?

a force, arising from the body's inertia, which appears to act on a body moving in a circular path and is directed away from the centre around which the body is moving.

32. What is meant by moment of inertia?

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a quantity expressing a body's tendency to resist angular acceleration, which is the sum of the products of the mass of each particle in the body with the square of its distance from the axis of rotation.

33. What is meant by whirling of shaft?

Whirling speed is also called as Critical speed of a **shaft**. It is **defined** as the speed at which a rotating **shaft** will tend to vibrate violently in the transverse direction if the **shaft** rotates in horizontal direction. In other words, the **whirling** or critical speed is the speed at which resonance occurs.

34. What is meant by flywheel?

A **flywheel** is a rotating mechanical device that is **used** to store rotational energy. **Flywheels** have an inertia called the moment of inertia and thus resist changes in rotational speed. The amount of energy stored in a **flywheel** is proportional to the square of its rotational speed.

35. What do you mean by inertia?

The property of matter offering resistance to any change of its state of rest or of uniform motion in a straight line is known as inertia.

36. What is meant by axisymmetric?

symmetrical about an axis.

37. What is meant by degree of freedom?

In statistics, the number of *degrees of freedom* is the number of values in the final calculation of a statistic that are free to vary. The number of independent ways by which a dynamic system can move, without violating any constraint imposed on it, is called number of *degrees of freedom*.

38. What is meant by gear?

a toothed wheel that works with others to alter the relation between the speed of a driving mechanism (such as the engine of a vehicle) and the speed of the driven parts (the wheels).

39. What is meant by gear ratio?

The **Gear Ratio** is **defined** as the input speed relative to the output speed.

40. What is meant by gear train?

a system of gears which transmits motion from one shaft to another.

41. What is meant by radius of gyration?

the distance from an axis at which the mass of a body may be assumed to be concentrated and at which the moment of inertia will be equal to the moment of inertia of the actual mass about the axis, equal to the square root of the quotient of the moment of inertia and the mass.

42. What is meant by balancing of rotating mass?

The **balancing of rotating bodies** is important to avoid vibration. In heavy industrial machines such as gas turbines and electric generators, vibration can cause catastrophic failure, as well as noise and discomfort. In the case of a narrow wheel, balancing simply involves moving the centre of gravity to the centre of rotation. For a system to be in complete balance both force and couple polygons should be closed.

43. What is meant by mechanism?

When one of the links of a kinematics chain is fixed, the chain is known as mechanism. It may be used for transmitting or transforming motion e.g. engine indicators, typewriter etc.

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VOCE QUESITIONS AND ANSWERS :

EXPERIMENT NAME: V-I CHARACTERISTICS OF PN DIODE

1. What is the difference between Electronics and Electrical?

Ans: Electronics is the science which deals with the currents in semiconductor materials. Vacuum tubes. Where electrical deals with the currents in conductors.

2. What are types of materials?

Ans: Conductors (Energy gap is zero)
semiconductors (Energy gap is narrower) (si 1.1ev,ge 0.7ev)
Insulators (energy gap is widest).

3. What are the Semiconductor and conductors?

Ans: Semiconductor which has 4 electrons in its valance band, and conductors has more than 4 electrons its valance band (best conductors: Ag,Al,Cu)

4. Difference b/w intrinsic and extrinsic Semiconductors?

Ans: Intrinsic semiconductors are pure semiconductors, Extrinsic are impure, i.e.by adding impurities (tri, pentavalent) Extrinsic semiconductors formed (P, N Type).

5. Why silicon is more preferred than germanium?

Ans: For Si break Down voltage Is more than Ge, reverse saturation current Is less in Si, Si is cheap (raw material Is sand).

6. What are the types in Extrinsic semiconductors and how they formed?

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Ans: P-Type and N-Type

by adding trivalentimpurities (arsenic, antimony, phosphorus) P-Type semiconductors created.

by adding pentavalent impurities (aluminum, boron) N-Type semiconductors created.

7. What is Doping?

Ans: The processes of adding impurities.

8. How the PN Junction will be formed?

Ans: In a piece of semiconductor material, if one half is doped by P type impurity and the other half is doped by N type impurity

9. What is Barrier Potential (cut in voltage)?

Ans: The forward voltage at which the current through the junction starts increasing rapidly

10. What is Forward bias and Reverse bias?

Ans: In diode's anode(P) voltage is more than cathode(N) voltage its forward bias, if anode voltage is less than cathode voltage its reverse bias.

11. What are Diffusion and Drift currents?

Ans: Drift current depends on the electric field applied, if there is no electric field there is no drift current. Diffusion current occurs even though there is not an electric field applied to the semiconductor.

12. What is mean by 1N4007?

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Ans: 1N – single junction

400x-is indicates the voltage, current and power

4007 reverse voltage from 50v to 1000v, max forward current is 1A

13. Difference b/w PN, Zener Diode?

Ans: PN is lightly doped, Zener heavily doped

14. Define PIV(Peak inverse voltage)?

Ans: It is the maximum reverse voltage that can be applied to the Diode, if the voltage across the junction exceeds PIV, under reverse bias condition, the junction gets damaged.

15. Define Reverse saturation current?

Ans: It is the current due to the diffusive flow of minority electrons from p- side to N- side, and minority holes from N- side to P- side.

16. How do we test a diode using a multimeter?

Ans: Connect anode of diode to + terminal of multimeter and cathode to Negative terminal if voltage is 0.3 to 0.7 then diode is good.

17. Explain the capacitive effects in a junction.

Ans: Diffusion capacitance occurs in Forward bias, Transition capacitance exist in Reverse Bias.

18. What is mean by Break down, difference b/w avalanche Break down and Zener Break down?

Ans: Avalanche breakdown occurs in PN diode due to impact ionization of electron-hole pair, zener break down occurs in Zener diode due to electron hole pair break due to reverse bias voltage.

19. How PN junction diode does acts as a switch?

Ans: Apply voltage in one direction; it acts like an open circuit. Reverse the polarity of the voltage and it acts like a short circuit.

20. What is mean by static and dynamic resistances?

Ans: Static resistance is the ratio of V,I at operating (Q) point, dynamic resistance is inverse to the slope of the forward bias characteristics curve at operating point

EXPERIMENT NAME: HALF WAVE RECTIFIER

1. **What is the difference b/w AC and DC supply, what are the advantages of each?**
   Ans: Ac supply is sinusoidal function of t, but Dc supply is constant for every time, dc can be storable but not Ac, Ac can transfer for a long distance but not DC.

2. **What is meant by regulation? Why is it required?**
   Ans: It is a measure change in the magnitude between the sending and receiving end of a component.

3. **How to convert AC to DC?**
   Ans: Step down Transformer – Rectifier – Filter – Regulator

4. **What is a half wave rectifier?**
   Ans: In a half wave rectifier only one half cycle of ac voltage is taking. The circuit is given. Here only one diode is using. During the positive half cycle of ac voltage the diode conducts. So current flows through load. During the negative half cycle, the diode is reverse biased .So no current flows

through the diode. This type of rectification needs only one diode. But the efficiency is not so good as that of full wave rectifier.

5. What is transformer and types?

Ans: Transformer works based on Induction Principle, when Two coils are placed nearly then voltage transfer exist.

Types: Step down, step up Transformer

6. What is a Rectifier?

Ans: A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), which flows in only one direction. The process is known as rectification.

7. What is filter, regulators?

Ans: Filter coverts the pulsating DC to Fluctuating DC.

Regulator convers fluctuating DC to exact DC.

8. What is a ripple Factor?

Ans: Ripple factor can be defined as the variation of the amplitude of DC (Direct current) due to improper filtering of AC power supply, it can be measured by RF = Vrms /Vdc.

9. What is Efficiency?

Ans: Rectifier efficiency is the ratio of the DC output power to the AC input power.

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10. What is PIV?

Ans: The peak inverse voltage is either the specified maximum voltage that a diode rectifier can block, or, alternatively, the maximum that a rectifier needs to block in a given application.

11. What is the importance of PIV?

Ans: If the applied voltage in reverse biased condition exceeds PIV rating of the diode, then the diode may damaged.

12. Define transformer utilization factor, peak factors?

Ans: TUF = dc power delivered to load/ac rating of transformer secondary

Peak factor = peak value/ rms value

13. Define average value, RMS value, what is the significance of each?

Ans: Average is defined as sum per count, i.e mean or area of one cycle per time period

RMS is Root of Mean (average) of squares.

If data contains both +&-signs then average value cannot give perfect idea about it, then Rms value gives idea about data.

14. Explain the importance of ripple and regulation in the case of a rectifier.

Ans: Ripple factor gives the idea about fluctuations in signal, if it is less means ripples are less for DC ripple factor is Zero.

Regulation gives idea about the variation of DC output voltage as a function of DC load current.

$$\% \text{ regulation} = (V_{NL}-V_{FL})/V_{FL} \times 100\%$$

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15. What are the different filters used in AC to DC converters? Which is best and why?

Ans: L, C, LC (L-section), π-section, RC filters. Best one is L-section because ripple factor is independent of load.

16. Define line regulation and load regulation?

Ans: Line regulation= change in output voltage/ change in input voltage

Load regulation= (no load voltage- full load voltage)/ no load voltage

17. Define knee voltage?

Ans: It is the minimum amount of voltage which is required to operate Diode.

18. Define knee current?

Ans: It is the minimum current through Zener diode in reverse bias.

19. Define why diodes are not operated in the breakdown region in rectifiers?

Ans: In breakdown region, a diode has a risk of getting damaged or burnt because the magnitude of current flowing through it increases in an uncontrollable manner.

20. Define why series inductor and L-section filters cannot be used with half-wave rectifiers?

Ans: Series inductor and L-section filters cannot be used with half-wave rectifiers because operation of series inductor depends upon the current through it and needs a minimum current to flow at all times.

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Department of Computer Science and Engineering

Database Management Systems

Lab Viva Question & Answers

1. What is DBMS?

Software that manages data

Allows user to DEFINE datatypes and constraints, CONSTRUCT (store) data and MAINPULATE data through queries.

Hierarchical, Network, RDBMS, OODBMS NOSQL

2. Advantages of DBMS

Redundancy of data avoided.

Restricted and protected access to data.

Permanent/Persistent storage for program objects.

Back up recovery services.

Efficient query processing.

Storage structure and indices for efficient query processing and retrieval.

3. What is DML?

Data Manipulation Language. High level non procedural language (SQL).

Can be embedded into programming languages. CRUD operations to create, read, update, and delete data

4. Commands of DML

INSERT, SELECT, UPDATE and Delete commands.

SELECT, INSERT, UPDATE, DELETE, MERGE in SQL

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5. What is primary key?

If a relation has many candidate keys, one is chosen arbitrarily to be the primary key.

Primary key attributes are underlined. PK used to identify tuple uniquely.

6. What are the types of databases?

Structured, Unstructured, semi-structured.

7. Types of abstraction

Internal Level or Physical Level- Physical storage structure of the database

Conceptual or Logical Level- Describes the Database structure of the whole database

8. What is a candidate key?

A relational schema may have > 1 key. Each of these keys is called candidate key.

9. What is the use of DBMS?

optimize and manage the storage and retrieval of data from databases

Business, Social network, Science and research, Finance, Airline…

10. What are the types of relationships?

1:1 One-to-one relationship.

1:N One-to-many relationship.

M:N Many-to-many relationship.

11. What is a relation schema?

Description of a relation.

consists of the relation's name, set of attributes/field names/column names.

set of relational tables and associated items that are related to one another.

12. What is drop?

Delete a whole database or just a table.The DROP statement destroys the objects

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13. What is an entity?

Basic concept of ER Model.

Refers to each specific object in the mini world.

Physical or conceptual.

Entities have attributes. Weak or Strong entity.

14. What is entity set?

Collection of similar entities. (Same type: either strong or weak)

15. What is weak entity set?

An entity set that does not have a primary key.

does not contain sufficient attributes to uniquely identify its entities

16. Types of inner and outer join (explain too)?

Inner Join- Natural Join and EQUI Join

Outer Join- full outer join, left outer, right outer join

17. Difference between primary and unique key?

Unique key is same as that of PK except PK will not accept NULL values whereas Unique key can accept NULL values

18. What is normalization?

Reducing Null entries. Can't achieve through ER Diagram.

19. What is view?

A view is the result set of a stored query on the data.

hide the complexity that exists in a multiple table join.

20. What is DCL?

Data control language (DCL) Similar to a computer programming language used to control access to data stored in a database (Authorization). (SQL).

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Department of Computer Science and Engineering

Data Warehousing and Data Mining

Lab Viva Question & Answers

1) What is a data warehouse?

A data warehouse is a huge store of data accumulated from a broad range of sources within an organization and used to guide business decisions.

2) What is a dimensional table?

Dimensional tables include textual attributes of measurement saved in the fact tables. A dimensional table is a group of hierarchies, categories, and logic which can be used for the customer to traverse in hierarchy nodes.

3) What is a fact table?

The fact table includes the measurement of the business process. Fact table includes the foreign keys for the dimension tables.

Example: If we are business phase is "paper production," "normal production of paper by one device, "or "weekly production of paper" will be treated as a measurement of the business process.

4) What are the different methods of loading dimension tables?

There are two different methods to load data in dimension tables:

Conventional (slow): All the constraints and keys are validated against the information before, it is loaded, and this method data integrity is maintained.

5) Describe the foreign key columns in fact tables and dimension tables?

Foreign keys of dimension tables are the primary key of entity tables.

Foreign keys of fact tables are the primary key of dimension tables.

6) What is Data Mining?

Data mining is the phase of analysing data from several perspectives and summarizing it into useful data.

7) What is Business Intelligence?

Business Intelligence defines the technologies, functions, and systems for the collection, integration, analysis, and demonstration of business data and sometimes to the data itself. The purpose of business intelligence is to provide better business decision making. Thus, BI is also defined as a decision support system (DSS).

8) What is OLTP?

OLTP stands for online transaction processing. This system is a function that modifies data the instance it receives and has a huge number of concurrent users.

9) What is OLAP?

OLAP stands for online analytical processing. This system is a function that collects, manages, processes, and presents multidimensional data for analysis and management process.

10) What is BUS Schema?

BUS schema is collected from a master suite of confirmed size and a standardized description of facts.

11) What is ODS?

ODS stands for Operational data store. A database architecture that is a repository for near real-time operational records rather than long term trend data. The ODS may further become the enterprise shared an operational database, allowing operational functions that are being re-engineered to use the ODS as there operational databases.

12) What is ETL?

ETL stands for extraction, transformation, and loading process. ETL is software that allows the business to develop their disparate records while moving it from place to place, and it doesn't really matter that data is in several forms or formats. The data can come from any source. ETL is powerful enough to manage such data disparities.

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13) What is VLDB?

VLDB stands for a Very large database. A one terabyte database would generally be considered to be a VLDB. Typically, there are decision support applications or transaction processing applications serving a huge number of users.

14) What is real-time data warehousing?

Data warehousing capture business event data. Real-time data warehousing capture business event data as it occurs. As soon as the business event is complete, and there is data about it, the completed event data flows into the data warehouse and becomes feasible instantly.

15) What are conformed dimensions?

Conformed dimension defines the exact same thing with every possible fact table to which they are joined. They are simple to the cubes.

16) What are non-additive facts?

Non-additive facts are the facts that cannot be examined for any of the dimensions present in the fact table. They are not treated as useless. If there is a transformation in dimensions, the same facts can be useful.

17) What is Star Schema?

Star schema is a type of organizing the tables such that we can fetch the result from the database instantly in the warehouse environment.

18) What is a Snowflake Schema?

Any dimension with extended dimensions is called snowflake schema, the dimension may be interlinked or may have one too many relationships with other tables. This schema is normalized and outcome in complex join and very complex queries as well as slower results.

19) What is a surrogate key?

A surrogate key is a substitution for the essential primary key. It is just a unique identifier or statistic for each row that can be used for the primary key to the table.

20) What is a junk dimension?

A number of very small dimension may be lumped together to form a single dimension, a junk dimension is the attributes are not closely related. Grouping of random flags and text attributes in dimensions and changing them to a separate subdimension is called the junk dimension.

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Applied Chemistry Lab viva Questionos

1. **Which type of titration it is? Ans:** Complexometeric titration
2. **What is the indicator used in this experiment? Ans:** FSBF
3. **Expand FSBF? Ans:** Fast sulphon black-F

4. **What is the actual color of FSBF indicator? Ans:** Bright green
5. **What is a chelating agent?**
6. **What is the role of buffer solution? Ans:** To maintain pH 9 – 10.

7. **What is the name of the buffer used in EDTA titration?**
8. **What are complexometric titrations?**
9. **What is EDTA? Ans:** EDTA is Ethylene Diamine Tetra Acetic Acid.

10. **Draw the structure of EDTA?**
11. **What are the constituents of the ammonia buffer?**
12. **What type of titrations are EDTA titrations? Ans:** Complexometric titrations
13. **What does it mean ppm? Ans:** Parts per million. 1ppm = 1 mg/lit

14. **Write down the chemical reaction which taking place during the titration.**
15. **What is the color of Cu-EDTA complex? Ans:** colorless
16. **What is the color of copper solution? Ans:** Pale blue
17. **What is the color of complex [Cu-FSBF]? Ans:** Pale blue
18. **What is the color change at end point? Ans:** pale blue color to dark green

19. **Why sodium salt of EDTA (Na_2-EDTA) is used but not EDTA?**
20. **Why ammonia buffer is used?**
21. **Name the most widely used indicator in EDTA titrations. How does it act?**
22. **What is an acidic buffer? Give an example.**
23. **What is a basic buffer? Give an example.**

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Probable viva-voce questions

1. What is an alkalinity? Ans: It is an ability of water to neutralize with the acids

2. What causes water to become alkaline?
Ans: Alkalinity of water is due to presence of OH^-, HCO_3^-, CO_3^{2-},($OH^- + CO_3^{2-}$) and ($HCO_3^- + CO_3^{2-}$)
3. What are the indicators used to determine the alkalinity of water? Ans: Phenolphthalein and methyl orange

4. Why two indicators are used in determining alkalinity of water?
Ans: It is because of different pH of water due to different ions causing alkalinity. The two indicators give end point at different PH i.e. phenolphthalein at pH at 8.3 and methyl orange 3.1 to 4.4.
5. How much alkalinity is permissible for drinking water? Ans: It should be less than 100 ppm.
6. On which factors, the use of acid indicator in a titration depends? Ans: It depends upon the pH of the solution.
7. If phenolphthalein end point is zero, then what it indicates? Ans: It indicates the absence of both OH- and carbonate alkalinity.

8. If phenolphthalein end point is equal to methyl orange end point, then what it indicates?
9. If phenolphthalein end point is equal to half of methyl orange end point, then what it indicates?
10. If phenolphthalein end point is more than half of methyl orange end point, then what it indicates?
11. If phenolphthalein end point is less than half of methyl orange end point, then what it indicates?
12. Alkalinity of water is expressed in terms of which equivalents and why?
13. What are the ions determined by phenolphthalein? Hydroxide ion and half of carbonate ion
14. What is the role of methyl orange indicator in determining alkalinity? Ans: Total alkalinity is determined by using methyl orange.

15. What is your observation when P=0, P= ½ M, P< ½ M, P> ½ M, P=M?

1. Write the structure of potassium permanganate?
2. What is meant by oxidation?

Ans: Loss of electrons or loss of hydrogen or gain of oxygen from species.
3. What is an oxidising agent?
Ans: A substance which oxidises the other substance and undergoes self reduction itself is called oxidising agent. **Eg:** $KMnO_4$, $K_2Cr_2O_7$
4. What is meant by reduction?
Ans: Gain of electrons or gain of hydrogen or loss of oxygen rom species is called reduction.
5. What is an reducing agent?
Ans: A substance which reeduce the other substance and undergoes self oxidation itself is called reducing agent. **Eg:** Metals, metal oxides, H_2S, $LiAlH_4$, $NaBH_4$
5. What is redox reaction?
Ans: A reaction involving both oxidation and reduction is called redox reaction
6. Why no indicator is required in permanganate titration? Ans: Because MnO_4^- act as self-indicator
7. What type of titrations are permagnate titrations? Ans: Permanganate titrations are redox type titrations

8. Why do you heat the reaction mixture during the course of titration?
Ans: As the reaction between $KMnO_4$ and oxalic acid is slow, to ensure the completion of the reaction, the contents are heated.
9. What happens when heated to high temperatures? Ans: At high temperatures, oxalic acid decomposes to CO_2
10. What is an oxidizing agent in this experiment? Ans: Potassium permanganate

11. What is a reducing agent in this experiment? Ans: Oxalic acid.
12. Why do you add H_2SO_4 to the reaction mixture? Ans: Reaction takes place in acidic medium only

13. Why do you add H_2SO_4, why not other acids like HCl, HNO_3?
Ans: HNO_3 is not used as it is itself an oxidizing agent and HCl is usually avoided because it reacts with $KMnO_4$ to produce Cl_2 which is also an oxidizing agent in aqueous medium.
14. What is the ambient temperature for this experiment? Ans: Approximately 50-60°c

15. What is the change in oxidation state of manganese? Ans: Mn^{+7} to Mn^{+2}
16. What is the change in oxidation state of carbon? Ans: +3 to +4
17. What is the equivalent weight of $KMnO_4$? Ans: Eq.Wt = 49.6

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18. Write down the chemical reaction which taking place during the titration.
19. Why is $KMnO_4$ solution not filtered through filter paper?
20. Why KMnO4 solution is kept in dark or coloured bottle. Ans: Because in presence of sunlight, KMnO4 disintegrates.

1. Write the structure of potassium dichromate?
2. What is meant by oxidation?
3. What is an oxidising agent?
4. What is meant by reduction?
5. What is an reducing agent?
5. What is redox reaction?
6. What is an oxidizing agent in this experiment? Ans: K2Cr2O7
7. What is a reducing agent in this experiment? Ans: ferrous iron
8. What is the indicator used in this experiment? Ans: Diphenylamine.
9. Why acid mixture is added before the starting of titration process? Ans:
10. What is the equivalent weight of potassium dichromate? Ans:
11. What is the oxidation number of Cr in potassium dichromate? Ans: +6
12. What is the color change at end point? Ans: pale yellow to blue

1. What is hypo? Ans: Sodium thiosulphate is called as hypo [$Na_2S_2O_3.5H_2O$]
2. Why should the reaction mixture be kept in dark?
Ans: In order to prevent the unwanted side reaction i.e light accelerate the oxidation of iodide ions to iodine by atmospheric oxygen.
3. Why starch indicator is added at the end of titration?
Ans: Because the concentration of iodine is very high in the beginning, is strongly absorbed by colloidal starch particles and not released even at the end point and make the detection of end point difficult.
4. Which indicator is used in iodometric titrations?
Ans: Freshly prepared 1% starch solution is used as indicator.
5. What type of titration it is? Ans: Iodometric titration

6. What is an absorption indicator? Give one example.
7. Write down the chemical reaction which taking place during the titration.
8. Why hypo is commonly used as a reducing agent in iodine titrations?

Ans: Hypo is preferred to other reducing agents in iodometry because it is a primary standard.
9. Which indicator is used in iodine titrations and what is color change at the end point?
Ans: Freshly prepared starch solution is used as an indicator. Starch gives blue color with iodine. Just disappearance of blue color is the end point of these titrations.
10. What are Iodine titrations?
Ans: The redox titrations using iodine directly or indirectly as an oxidizing agent are called iodine titration.
11. Why KI is added in excess to reaction mixture?
Ans: Because iodine is slowly released during the reaction due to reversible reaction.
$KI + I_2 \leftrightarrow K[I_3]$ $I^- + I_2 \leftrightarrow [I_3]^-$
12. Why you kept the reaction mixture is in dark for few miniutes?
Ans: Because the light accelerates the oxidation of iodine ions to iodine by atmospheric oxygen.
13. What is the equivalent weight of copper? Ans: 63.5
1. What is hardness of water?
Ans: Hardness is defined as the characteristics which prevents the lathering of soap.
2. How hardness is expressed?
Ans: Hardness is expressed in terms of $CaCO_3$ equivalent.
3. Why hardness is expressed in terms of $CaCO_3$ equivalent?
Ans: It is due to two reasons: (i) Mol. wt. of $CaCO_3$ being100 make calculation easier. (ii) It is the most insoluble compound precipitated out in water treatment.
4. How water becomes hard?
Ans: Water becomes hard due to its action on rock and minerals. This may involve hydrolysis, dissolution, disintegration, oxidation etc. of minerals by water.
5. What are various units of hardness?
Ans: Hardness of water can be expressed in following units:
(I) Parts per million (ppm) (II) Milligram per litre (mg/lt) (III) Degree Clarke(°C)
(IV) Degree French(°F)
6. Name some methods for removing permanent hardness of water.
Ans: There is (i) lime–soda (L-S) method (ii) zeolite method (iii) ion –exchange resin method

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7. Which of the above methods is best for removing permament hardness? Ans: Ion –exchange resin method is best as it gives water for almost zero hardness.

8. Give few disadvantages of using hard water. Ans: Some of the advantages of using hard water is:

(i) It takes more time and consumes more soap for washing clothes.

(ii) Use of hard water results into scale and sludge formation inside boilers

(iii) It takes more time for cooking with hard water.

9. Why does hard water not lather with soap.

Ans: Ca^{+2} and mg^{+2}ions of hard water from insoluble soaps on treating hard water with soap 2RCOONa (soap) + M^{+2}(from hard water)→$(RCOO)_2$ M +2Na +(metallic soap ,white ppt or scum) Lather is only formed when all hardness causing metal ions are removed from water. So more soap is consumed.

10. What is a chelating agent?

Ans: It is a poly dentate ligand which coordinates with metal ions to form a stable ring complex The complex so formed is called a chelate . eg. EDTA is a chelating hexadentate ligand.

11. What is temporary hardness? how it can be removed?

Ans: Hardness of water due to presence of carbonates and bicarbonates of Calcium and magnesium is called temporary hardness. It can be removed by simple boiling of water.

12. What is permanent hardness?

Ans: Hardness of water due to presence of chlorides, sulphates and nitrates of calcium and magnesium is called permanent hardness.

13. What is the other name for temporary and permanent hardness?

Carbonate and non – carbonate hardness.

14. What is the role of buffer solution? Ans: To maintain pH 9 – 10.

15. What is the name of the buffer used in EDTA titration? Ans: Ammonium chloride - Ammonium hydroxide.

16. Why hardness is expressed in equivalents of calcium carbonate?

Ans: Calcium carbonate is most insoluble salt and its molecular weight and equivalent weights are 100 and 50 respectively.

17. What is hard water and soft water?

Ans: Water which readily forms lather with soap is called soft water and which does not produce lather is known as hard water. 30

23. What are the constituents of the ammonia buffer?

Ans: A mixture of ammonium chloride and ammonium hydroxide

24. What type of titrations are EDTA titrations? Ans: Complexometric titrations

25. What does it mean ppm? Ans: Parts per million. 1ppm = 1 mg/lit

26. What are the types of hardness?

Ans: Hardness is of two types 1. Temporary hardness - it is due to bicarbonates of Ca &Mg. Temporary hardness can be easily removed by boiling the water sample

2. Permanent hardness-it is due to chlorides, sulphates and nitrate of Ca and Mg. Total hardness = permanent hardness+ temporary hardness

27. Write down the chemical reaction which taking place during the titration.

28. What is carbonate hardness? Ans: temporary hardness

29. What is non carbonate hardness? Ans: permanent hardness

30. What are the major problems of hardness in water?

31. Name the methods to estimate the hardness of water. Ans: EDTA method, soap titration method

32. What is the color of EBT indicator? Ans: Blue

33. What is the color of Ca/Mg-EDTA complex? Ans: colorless

34. What is the color change at end point?

35. Why sodium salt of EDTA (Na_2-EDTA) is used but not EDTA?

Ans: EDTA is least soluble in water. Hence its disodium salt is used for preparing solution

36. Why ammonia buffer is used? Ans: The pH is to be maintained between 9 – 10. **37.Name the most widely used indicator in EDTA titrations. How does it act? 38.What is an acidic buffer? Give an example.**

Ans: It is solution of a mixture of weak acid and salt of weak acid with a strong base. (Ex. CH_3COOH+CH_3COONa)

39. What is a basic buffer? Give an example.

Ans: It is the solution of a mixture of a weak base and a salt of this weak base with a strong acid (Ex. NH_4OH + NH_4Cl).

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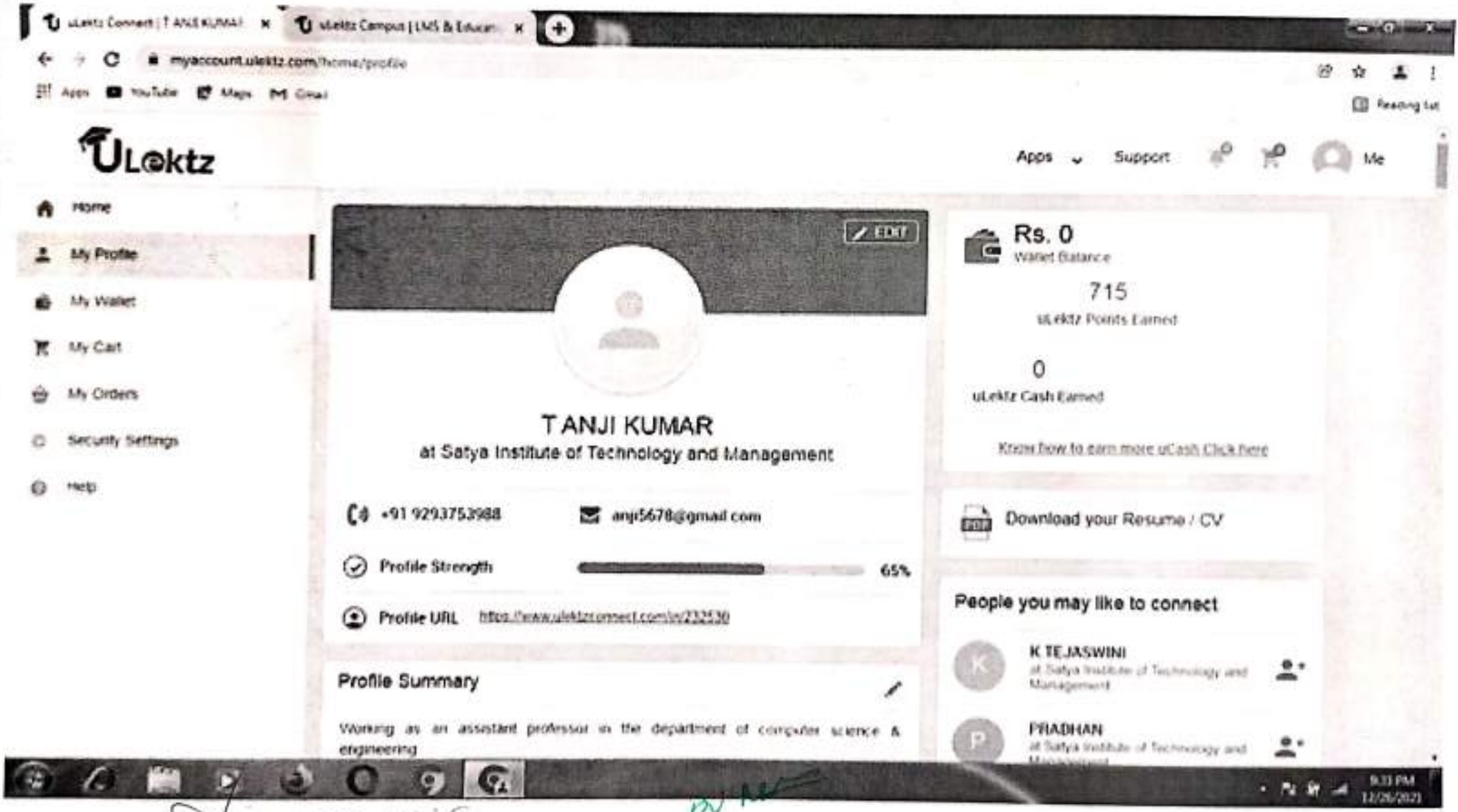

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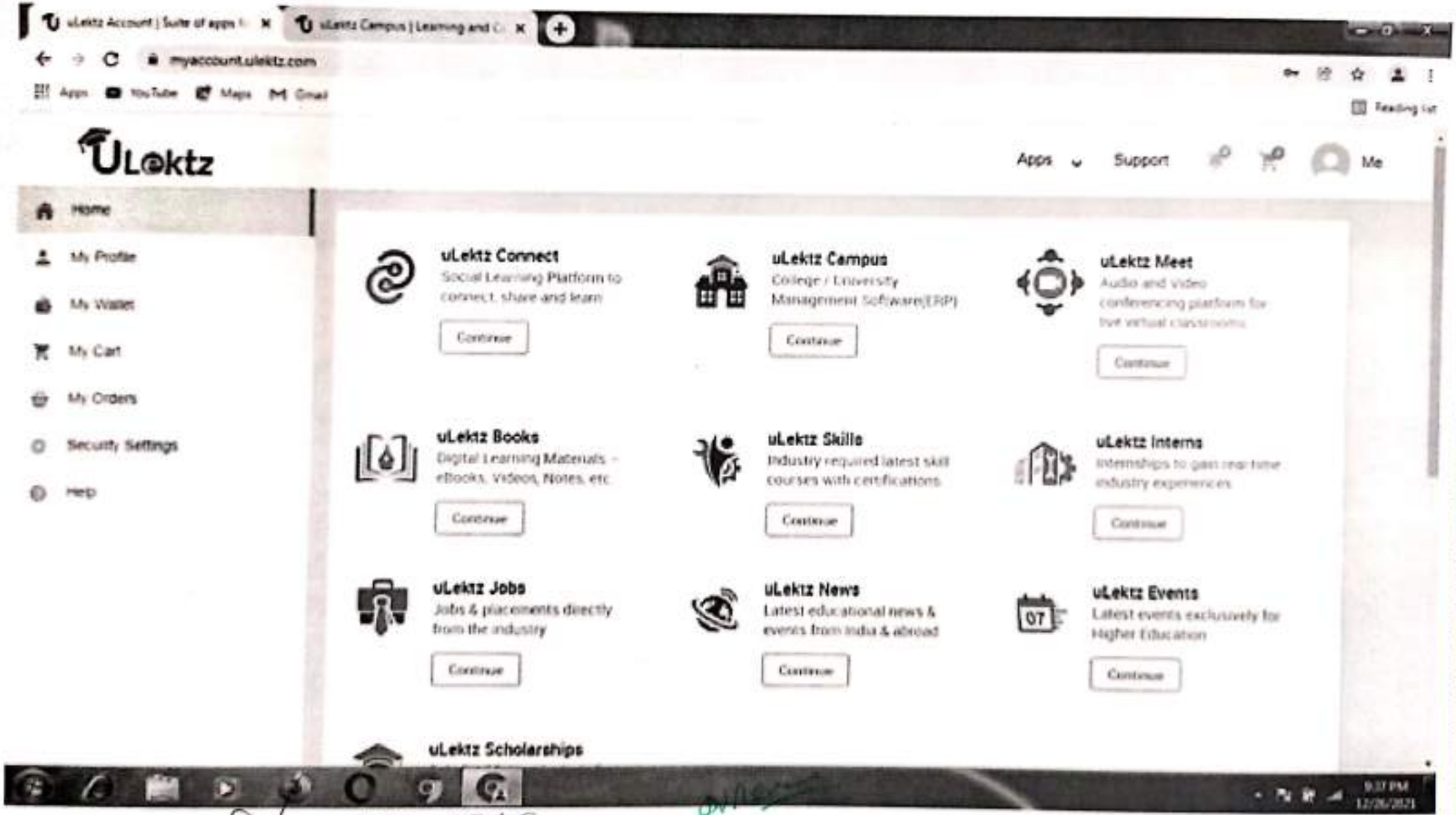

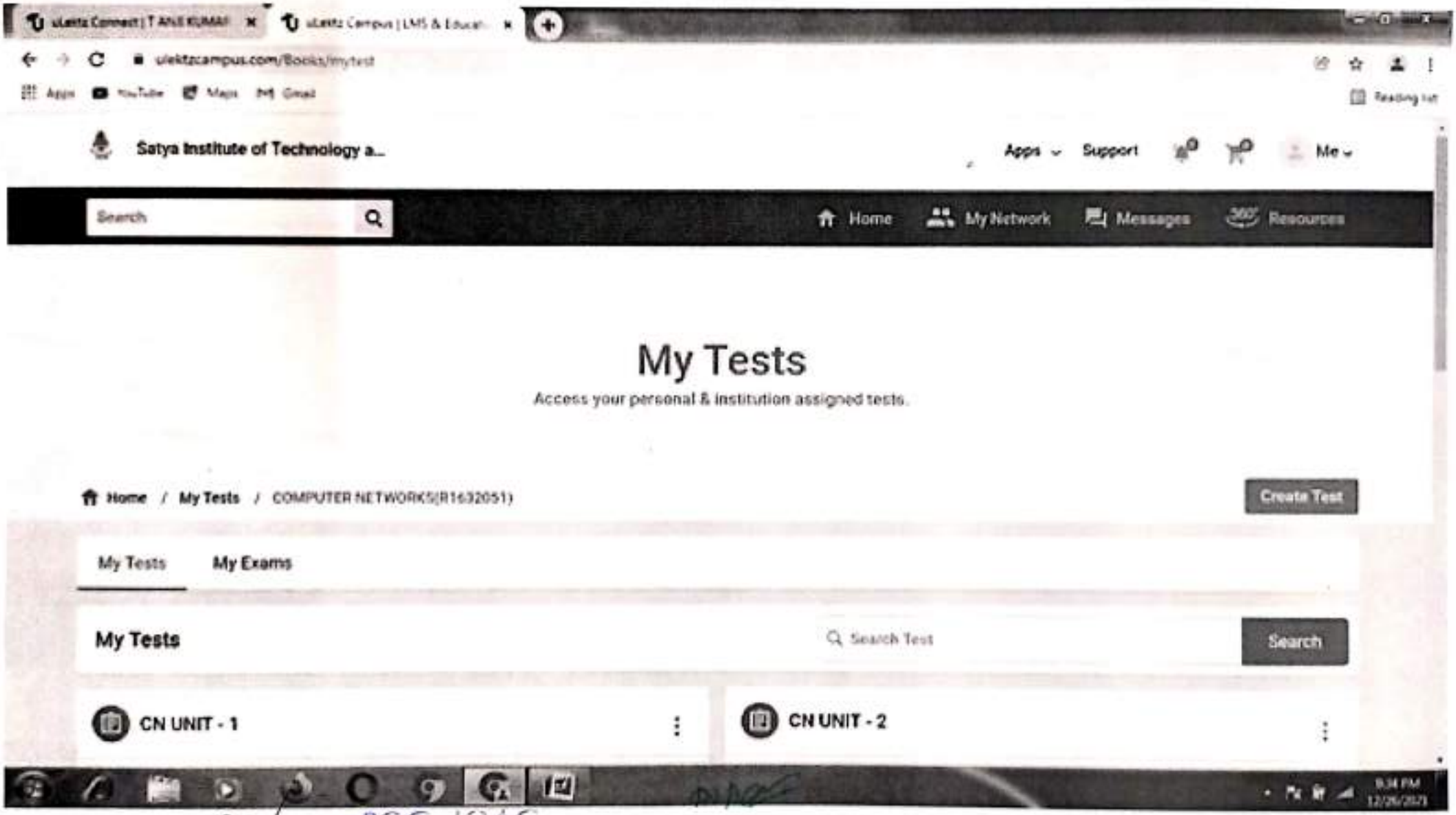

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CN UNIT - 1

Minutes: 10 | Total Questions: 10 | Total Marks: 10

MCQS

1. The number of layers in Internet protocol stack

1 Marks | 0 Negative marks

- (a) 5
- (b) 7
- (c) 6
- (d) None of the mentioned

2. The number of layers in ISO OSI reference model

1 Marks | 0 Negative marks

- (a) 5
- (b) 7

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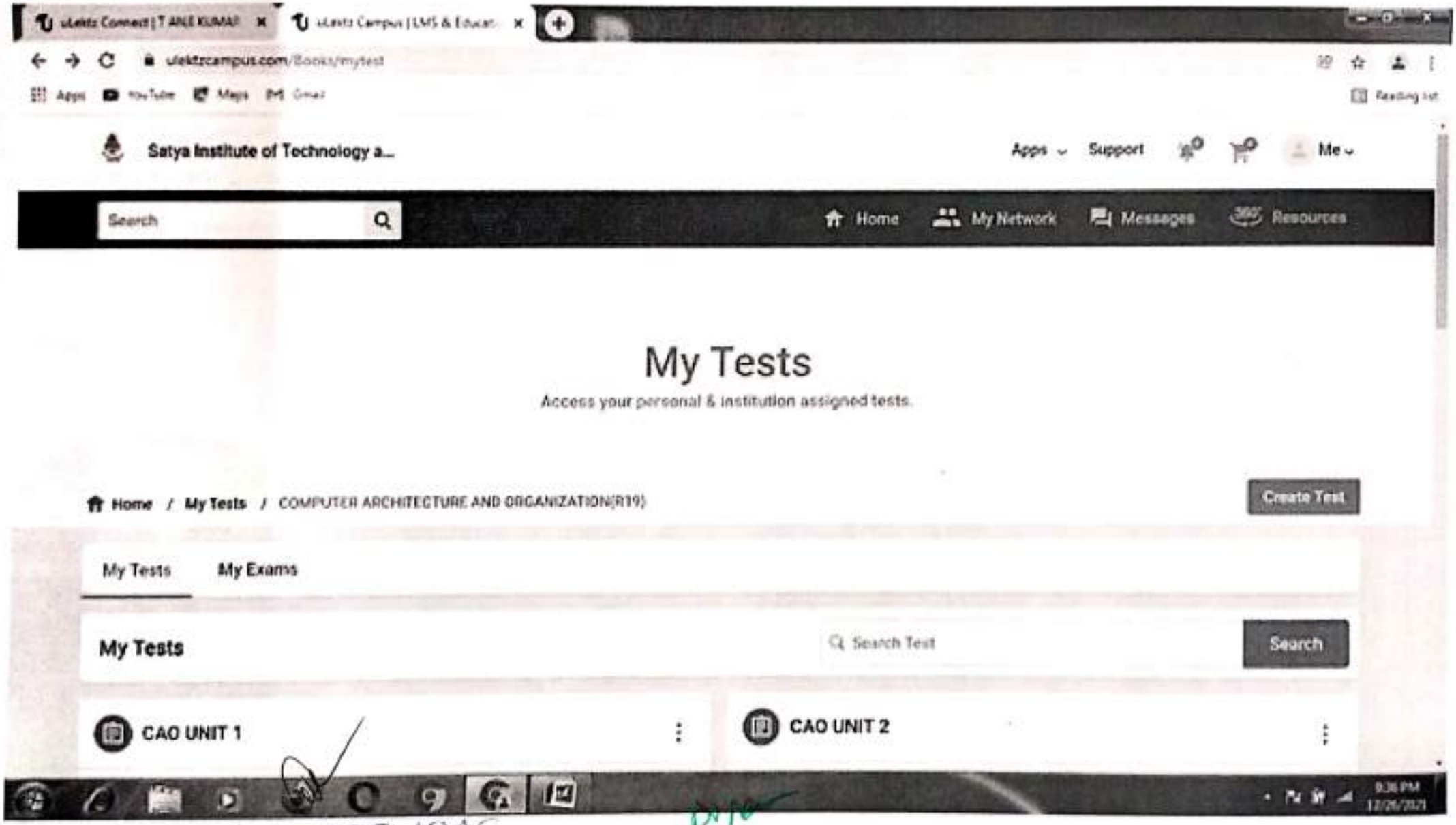

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Minutes: 10 | Total Questions: 10 | Total Marks: 10

MCQS

1. The ALU makes use of ______ to store the intermediate results. — 1 Marks | 0 Negative marks

   (a) Accumulators
   (b) Registers
   (c) Heap
   (d) Stack

2. The control unit controls other units by generating ____ — 1 Marks | 0 Negative marks

   (a) Control signals
   (b) Timing signals

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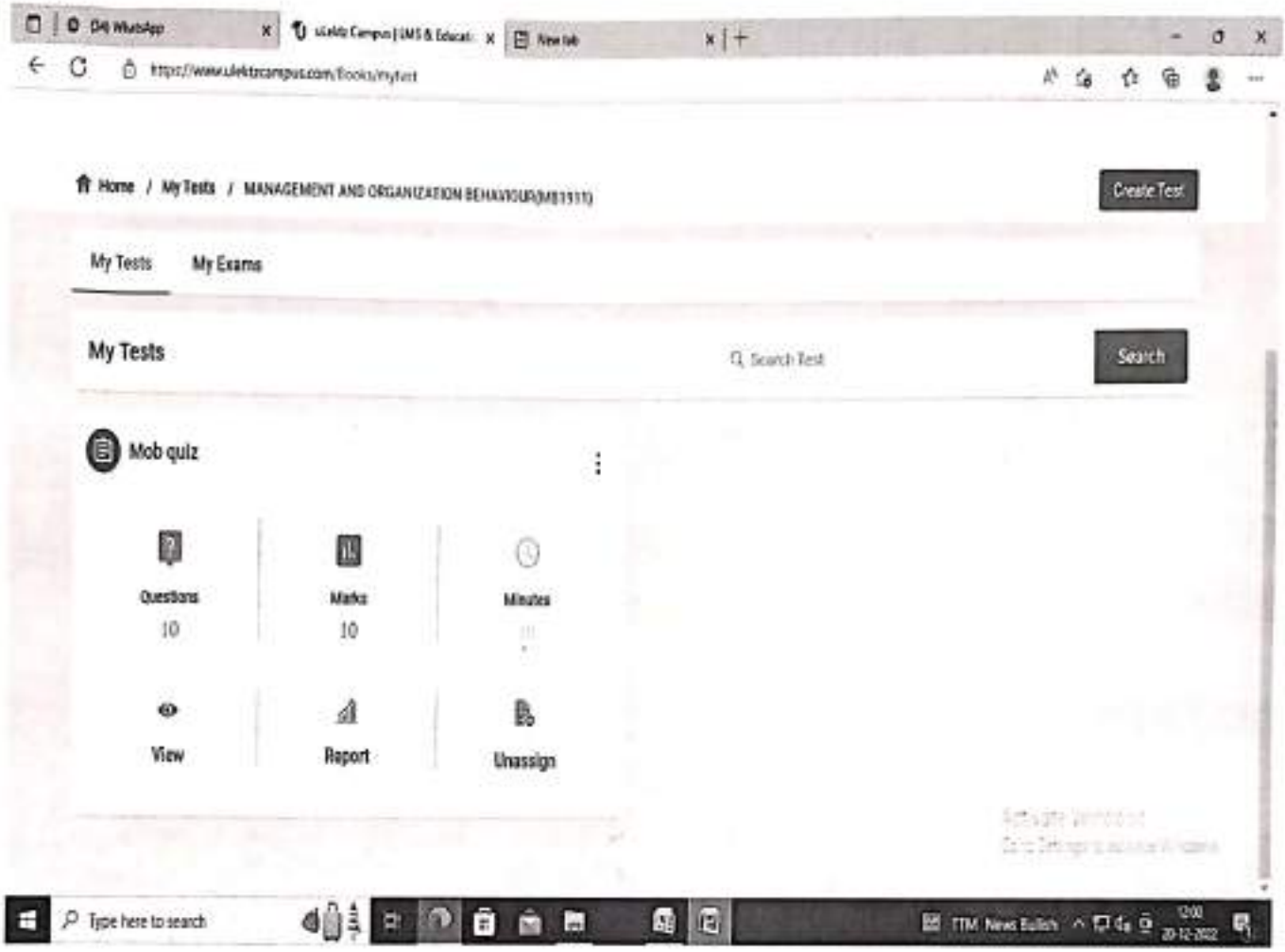

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