18EC202

Hall Ticket Number:

I/IV B.Tech (Regular / Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 **Electronics and Communication Engineering**

Second Semester **Basic Instrumentation**

Time: Three Hours **Maximum:** 50 Marks

PART- A: Answer Question No.1 compulsorily. (1X10 = 10 Marks)

*PART-B: Answer **Any Four** Questions* (4X10=40 Marks)

PART-A

1. Answer all questions (1X10=10 Marks)
   a) Define Precision
   b) What happens if PMMC instrument is connected in AC Circuit?
   c) Define voltmeter sensitivity.
   d) What is the disadvantage of Maxwell's bridge?
   e) What is the purpose of Wagner ground connection?
   f) Define Q-factor.
   g) In a CRO, Which type of waveform is used to deflect the electron beam in the horizontal direction?
   h) In a CRO, What are graticules?
   i) What is the working principle of capacitive transducer?
   j) List various temperature scales.

PART-B

2. a) The expected value of voltage to be measured is 150V. However, the measurement gives a value of 149V. Calculate (i) absolute error (ii) percentage error (iii) Relative accuracy (iv) percentage accuracy (v) Error expressed as percentage of full scale reading if scale range is 0-200V 5M
   b) Two resistors have the following ratings: R1 = 36Ω ± 5% and R2 = 75Ω ± 5%. Calculate (i)the magnitude of error in each resistor (ii) the limiting error in ohms and in percent when the resistors are connected in series (iii) the limiting error in ohms and in percent when the resistors are connected in parallel 5M

3. a) A moving coil instrument gives a full scale deflection for a current of 20mA with a potential difference of 200mV across it. Calculate (i) shunt required to use it as an ammeter to get a range of 0-200A (ii) multiplier required to use it as a voltmeter of range 0-500V. 5M
   b) Design a shunt type ohmmeter using a PMMC movement. 5M

4. a) Draw the circuit of Wheatstone bridge and derive the bridge balance equation. 5M
   b) An ac bridge has in arm AB a pure capacitance of 0.2 μF; in arm BC, a pure resistance of 500Ω; in arm CD, a series combination of R = 50Ω and L = 0.1H. Arm DA consists of a capacitor C = 0.4 μF in series with a variable resistor Rs. ω = 5000 rad/s. (a) Find the value of Rs to obtain the bridge balance. (b)Can complete balance be obtained by the adjustment of Rs? If not, specify the position and value of an adjustable resistance to complete the balance 5M

5. a) Draw the block diagram of True RMS responding voltmeter and explain its operation. 5M
   b) Using Q-meter in the direct connection mode, compute the self capacitance of a coil when the following measurements are made. At frequency f1 = 2 MHz, the tuning capacitor is set at 450 pF. When the frequency is increased to 5 MHz, the tuning capacitor is tuned at 60 pF. 5M

P.T.O.

6. a) What is the working principle of a Cathode Ray Oscilloscope? and explain the same by using its block diagram. 6M
   b) What is the minimum distance, L, that will allow full deflection of 4cm at the oscilloscope screen with a deflection factor of 100 V/cm and with an acceleration potential of 2000V? 4M

7. a) Draw the block diagram of sampling oscilloscope and explain its operation. 5M
   b) Draw the block diagram of simple frequency counter and explain its operation. 5M

8. a) Classify transducers. Also give example for each type of transducer. 5M
   b) For a certain thermistor, β = 3140 K and the resistance at 27^0C is known to be 1050 Ω. The thermistor is used for temperature measurement and the resistance measured is as 2330 Ω. Find the measured temperature. 5M

9. a) Draw the schematic of LVDT and explain its working principle along with its characteristic. 5M
   b) Derive the expression for Gauge factor of a resistance wire strain gauge. 5M

18EC203

Hall Ticket Number:

I/IV B.Tech (Regular/Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Electronics and Communication Engineering**

Second Semester — **Programming with C++**

Time: Three Hours — **Maximum :** 50 Marks

Answer All Questions from Part - A. (1X10 = 10 Marks)

Answer any FOUR questions from PART-B. (4X10=40 Marks)

PART – A

1. Answer all questions (1X10=10 Marks)

a Mention importance of Namespace.

b What is dynamic binding?

C What is class?

D Define virtual function.

E When it is required to use inline function in place of normal function?

F What is the use of friend function?

G Define Destructor.

H Mention operators which cannot be overloaded?

I Classify inheritance in C++?

J What is an Abstract class?

PART – B

2.a	What are the major differences between Object Oriented Programming and Procedural Programming?	5M
2.b	Write a C++ program to find out the type of given character.	5M
3	Briefly explain object oriented programming features with respect to C++.	10M
4.a	Explain the difference in between call by value and call by address mechanism.	5M
4.b	Write a C++ program to demonstrate the usage of static data member and static member function?	5M
5.a	Writes a program by using function template to check whether the given number is perfect square or not.	5M
5.b	Construct a student class having the following data members. Name, Roll_No, Total_marks whose values are initialized to “XYZ”, 1100, 90 respectively.	5M
6.a	What is constructor? What are its features?	5M
6.b	Define operator overloading. Write a C++ program to overload + operator using friend function and class concept.	5M
7.	Explain about type of constructors with example programs.	10M
8.a	Explain about this pointer with an example.	5M
8.b	Explain briefly about pure virtual function with an example.	5M
9.	Explain different types of inheritance with suitable C++ program.	10M

18EC205

Hall Ticket Number:

I/IV B.Tech(Regular / Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Electronics & Communication Engineering**

Second Semester — **CIRCUIT THEORY**

Time: Three Hours — **Maximum:**50 Marks

Answer All Questions from Part - A. (10X1 = 10 Marks)

Answer ANY FOUR Questions from Part - B. (4X10=40 Marks)

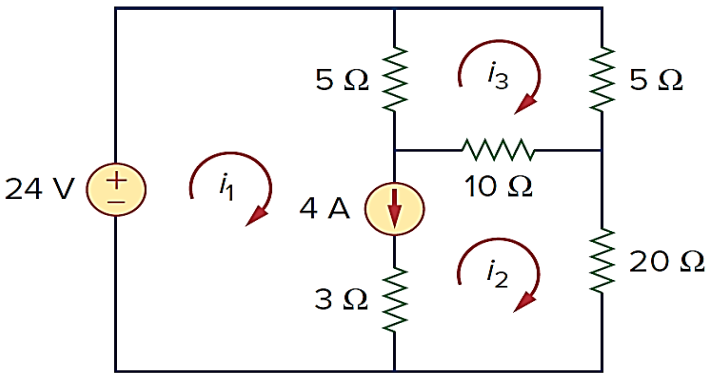
Part – A

1. Answer all questions (10X1=10 Marks)

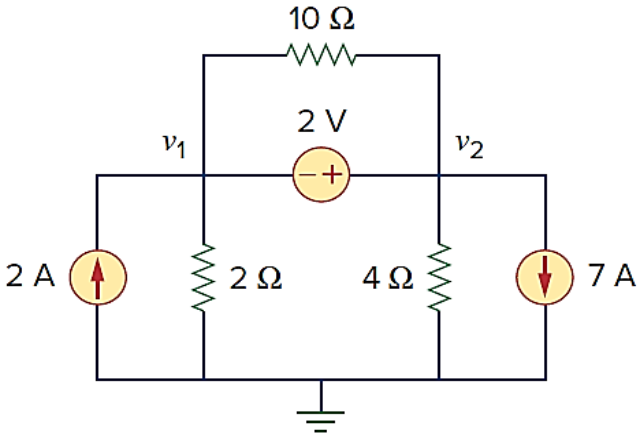
a)	Define electrical circuit.	CLO-1
b)	What are active and passive elements?	CLO-1
c)	State KCL.	CLO-1
d)	What do you mean by source transformation?	CLO-2
e)	State Thevenin's Theorem.	CLO-2
f)	What is the condition for maximum power transfer?	CLO-2
g)	Define natural response.	CLO-3
h)	What is the time constant of RC circuit?	CLO-3
i)	Define Resonance.	CLO-4
j)	Define magnitude scaling.	CLO-4

Part - B

2. Use mesh analysis to determine $i1$, $i2$, and $i3$ CLO-1 10M

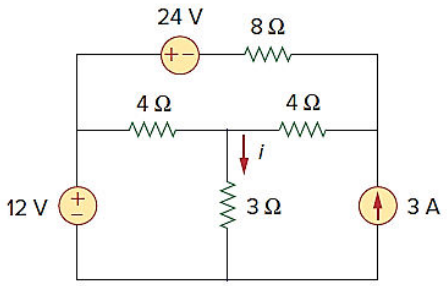


3. a) For the circuit shown , find the node voltages. CLO-1 10M

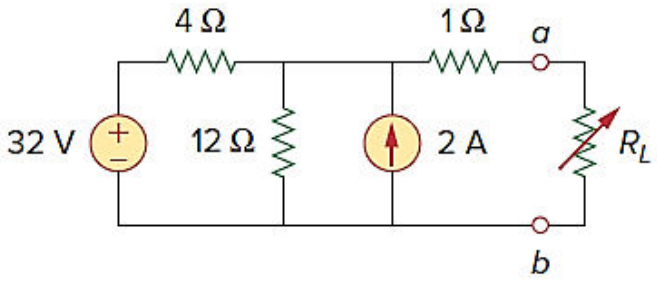


P.T.O.

4. Find i using the superposition theorem. CLO-2 10M

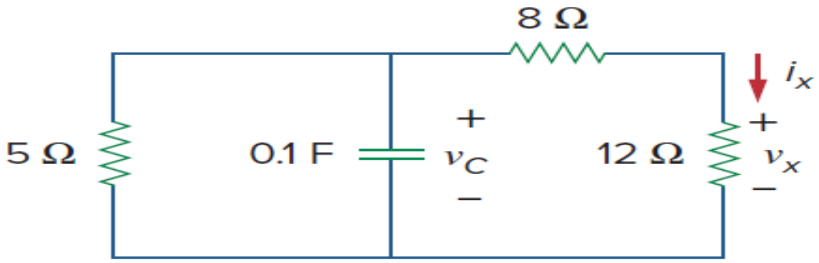


5. Find the Thevenin equivalent circuit of the circuit shown in Fig. tothe left of the terminals a-b. Then find the current through $RL = 36\ \Omega$. CLO-2 10M

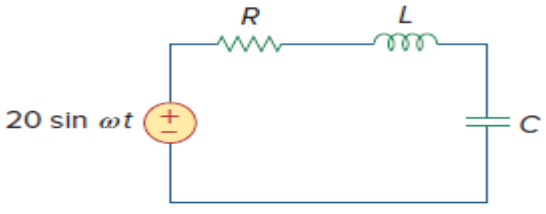


6. a) Derive the expression for voltage of source free RC circuit. CLO-3 10M

7. let $Vc(0) = 15$ V. Find Vc, Vx, and $i_x$for $t > 0$. CLO-3 10M



8. $R = 2\ \Omega$, $L = 1$ mH, and $C = 0.4\ \mu$F. (a) Findthe resonant frequency and the half-power frequencies.(b)Calculate thequality factor and bandwidth. CLO-4 10M



9. In the parallel RLC circuit let $R = 8$ kΩ, $L = 0.2$ mH, and$C = 8\ \mu$F.
(a) Calculate $\omega 0$, Q, and B.
(b) Find $\omega 1$ and $\omega 2$. CLO-4 10M

14CP206

Hall Ticket Number:

I/IV B.Tech (Regular / Supplementary – Repeat Exam) DEGREE EXAMINATION
January, 2021
Second Semester COMPUTER PROGRAMMING WITH C
Time: Three Hours Maximum: 60 Marks

Answer All Questions from Part - A. (1X12= 12 Marks)
Answer ANY FOUR questions from Part - B (4X12= 48 Marks)

Part - A

1. Answer all questions (1X12= 12 Marks)
   a) Write the syntax for Conditional Operator.
   b) What is Type casting?
   c) What are the symbols used in Flowchart?
   d) What is an array?
   e) What is the difference between 1-D and 2-D arrays?
   f) List out String handling functions.
   g) Differentiate auto and static storage classes.
   h) Where Recursion is used?
   i) What is void pointer?
   j) Differentiate Structure and Union.
   k) What is enumerated data type?
   l) Write syntax for opening and closing a file.

Part - B

2. a) Describe the various types of Operators in C language along with its priority. 8M
3. b) Write a program to find the largest of the three given numbers. 4M
4. a) Explain bitwise operators with examples. 8M
   b) Write a program to find whether the given number is even or odd. 4M
5. a) Explain various loop control statements in C. 6M
   b) Write a program to find whether a given number is prime or not. 6M
6. a) Explain different types of arrays with an example. 6M
   b) Write a program to reverse a string. 6M
7. a) Explain different Parameter passing mechanisms with examples. 8M
   b) Write a program to perform linear search using functions. 4M
8. a) Explain Dynamic memory allocation functions. 6M
   b) Write a program for arranging numbers in ascending order using functions. 6M
9. a) What are the different ways to access the members of structure elements in c? Give example for each case. 6M
   b) Write a program to compute addition and multiplication on complex numbers. 6M
10. a) Explain fseek() and ftell() with suitable examples. 6M
    b) Write a program to display no of vowels in a given text file. 6M

14CP206

Hall Ticket Number:

I/IV B.Tech DEGREE EXAMINATION

November 20

Second Semester **Problem Solving with Programming**

Scheme of Evaluation

Time: Three Hours **Maximum: 60 Marks**

Answer Question No.1 compulsorily. **(1X12= 12 Marks)**

Answer ONE question from each unit. **(4X12= 48 Marks)**

1. Answer all questions **(1X12= 12 Marks)**

a) Write the syntax for Conditional Operator.
syntax of Conditional Operator -1M

b) What is Type casting?
Type casting -1M

c) What are the symbols used in Flowchart?
Flowchart Symbols -1M

d) What is an array?
Array Definition -1M

e) What is the difference between 1-D and 2-D arrays?
difference between 1-D and 2-D arrays -1M

f) List out String handling functions.
String handling functions -1M

g) Differentiate auto and static storage classes.
auto and static storage classes. -1M

h) Where Recursion is used?
Recursion -1M

i) What is void pointer?
Void Pointer -1M

j) Differentiate Structure and Union.

Structure and Union difference -1M

k) What is enumerated data type?

enum data type -1M

l) Write syntax for opening and closing a file.

File opening & closing -1M

UNIT I

2. a) Describe the various types of Operators in C language along with its priority. 8M

Types of Operators -6M

Priority -2M

b) Write a program to find the largest of the three given numbers. 4M

Program -4M

(OR)

3. a) Explain bitwise operators with examples. 8M

Six bitwise operators -6M

b) Write a program to find whether the given number is even or odd. 4M

Program -4M

UNIT II

4. a) Explain various loop control statements in C. 6M

Three loops -6M

b) Write a program to find whether a given number is prime or not. 6M

Program -4M

(OR)

5. a) Explain different types of arrays with an example. 6M

1-D, 2-D & Multi Dimensional arrays -6M

b) Write a program to reverse a string. 6M

Program -6M

UNIT III

6. a) Explain different Parameter passing mechanisms with examples. 8M

call by value & call by reference -8M

b) Write a program to perform linear search using functions. 4M

Program -4M

(OR)

7. a) Explain Dynamic memory allocation functions. 6M

Dynamic memory allocation functions -6M

b) Write a program for arranging numbers in ascending order using functions. 6M

Program -6M

UNIT IV

8. a) What are the different ways to access the members of structure elements in c? Give example for each case. 6M

Ways to access the members of structure elements -4M

Example -2M

b) Write a programto compute addition and multiplication on complex numbers. 6M

Program -6M

(OR)

9. a) Explain fseek() and ftell() with suitable examples. 6M

fseek() - 4M

ftell() -2M

b) Write a program to display no of vowels in a given text file. 6M

Program -6M

Hall Ticket Number: **14MA201**

I/IV B.Tech (Supplementary) DEGREE EXAMINATION

January, 2021 **Common toall branches**

Second Semester **Engineering Mathematics -II**

Time: Three Hours **Maximum :** 60 Marks

Answer All Questions from Part - A. (1X12 = 12 Marks)

Answer ANY FOUR questions from Part - B. (4X12=48 Marks)

Part - A

1.Answer all questions (1X12=12 Marks)

a) Find the solution of dy/dx = 2xy.
b) Define orthogonal trajectories.
c) Find the integrating factor of dy/dx + xy = sin x..
d) What is the general solution of $(D^2-3D+2)y = 0$, where $D \equiv d/dx$.
e) Define Euler – Cauchy equation.
f) Write L-C-R circuit without e.m.f.
g) What is the Laplace transform of f(t) = Sin 2t.
h) Define unit step function.
i) State second shifting property of Laplace transforms.
j) Given $\overline{A} = x^2 y\,i - 2xz\,j + 2yz\,k$, find divergence of $\overline{A}$.
k) When a vector function is said to be irrotational.
l) State Stoke's theorem.

Part - B

2. a) Solve the differential equation $y' - y = e^{2x}$, $y(0) = 0$. (6M)
   b) Find the orthogonal trajectories of $y^2 = 4ax$. (6M)

3. a) Solve the differential equation $y' \sin 2y + x \cos 2y = 2x$. (6M)
   b) A thermometer, reading 10^oC, is brought into a room whose temperature is 23^oC. Two minutes later the thermometer reading is 18^oC. How long will it take until the reading shows 22.8^oC. (6M)

4. a) Solve the differential equation $x^2y'' - 4xy' + 6y = 0, y(1) = 1, y'(1) = 0$. (6M)

   b) Using the method of undetermined coefficients solve $y'' + 3y' + 2y = 30e^{2x}$ (6M)

5. a) Using the method of variation of parameters solve $y'' - 4y' + 4y = x^2e^x$. (6M)
   b) Find the current I(t) in an L-C-R circuit with R = 11 ohms, L= 0.1 Henry, $C = 10^{-2}$ Farad which is connected to a source of voltage E(t) = 100 sin 400t. Assume that the current and charge are zero when t = 0. (6M)

6. a) Find the Laplace transform of (i) t cos 2t (ii) $(e^{-at} - e^{-bt})/t$. (6M)

   b) Using Laplace transform technique solve $(D^2 - 2D + 1)y = e^t$, $y(0) = 2$, $y'(0) = -1$. (6M)

P.T.O

7. a) Find $L^{-1}\left(\frac{1}{s(s^2+\omega^2)}\right)$ (6M)

b) Using convolution theorem, find $L^{-1}\left(\frac{1}{(s^2+4)(s^2+9)}\right)$ (6M)

UNIT IV

8. a) Find a unit normal vector to the surface $z^2 = 4(x2 + y2)$ at the point P: (1, 0, 2) (6M)

b) Find the directional derivative of $f(x,y,z) = xy^2 + yz^3$ at the point (2,-1,1) in the direction of the vector I + 2J + 2K. (6M)

(OR)

9. a) If $\overline{F} = 3xy\,I - y^2 J$ evaluate $\int_C \overline{F}.d\overline{R}$, where C is the curve in the xy-plane $y = 2x^2$ from (0,0) to (1,2). (6M)

b) Apply Green's theorem to evaluate $\int_C [(xy + y^2)dx + x^2 dy]$, where C is bounded by $y = x$ and $y = x^2$. (6M)

18CY001

Hall Ticket Number:

I/IV B.Tech (Regular / Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 **CE/ME/EEE Branches**

Second Semester **Engineering Chemistry**

Time: Three Hours **Maximum :** 50 Marks

Answer ALL Question from PART-A .

*Answer **ANY FOUR** from PART-B.* (1X10=10 Marks)

(4X10=40 Marks)

PART-A

No.	Questions 1 (a to j)	Level	Cos
a	Define alkalinity of water	Remember	CO 1
b	Write any two examples for coagulants	Remember	CO 1
c	What is desalination	Analyze	CO 1
d	Define entropy	Analyze	CO 2
e	What is dry corrosion	Understand	CO 2
f	Write the units of calorific value	Apply	CO 3
g	What is meant by knocking	Understand	CO 3
h	Define octane number	Remember	CO 3
i	Write the uses of paracetamol	Understand	CO 4
j	What are biodegradable polymers? Give examples	Understand	CO 4

PART-B

No.			Level	COs	Marks
2	(a)	Explain determination of hardness of water by EDTA method	Understand	CO 1	6
	(b)	Write a note on scales	Understand & Apply	CO 1	4
3	(a)	Explain the determination of break point chlorination	Understand & Evaluate	CO 1	6
	(b)	Discuss the method of treatment of reverse osmosis	Apply	CO 1	4
4	(a)	Explain wet corrosion and its mechanism	Understand	CO 2	6
	(b)	Deduce Nernst equation for single electrode potential	Understand	CO 2	4
5	(a)	Explain corrosion controlled by cathodic protection method with neat diagram	Understand	CO 2	6
	(b)	Write short note on Electroplating of gold	Understand	CO 2	4
6	(a)	Discuss the construction and working of Bomb calorimeter	Remember &Apply	CO 3	6
	(b)	Write a short note on cetane number	Analyze	CO 3	4
7	(a)	Describe refining of petroleum and mention uses of various fractions	Understand &Apply	CO 3	6
	(b)	Write a short note on LPG	Understand	CO 3	4
8	(a)	Describe Markownikoff's andAnti-Markownikoff's rules	Understand	CO 4	6
	(b)	Describe the method of synthesis of "Aspirin"	Understand &Apply	CO 4	4
9	(a)	Distinguish between Thermoplastic and Thermosetting polymers	Analyze	CO 4	6
	(b)	Explain the preparation and applications of Bakelite	Apply	CO 4	4

Hall ticket Number: **18EL001**

I/IV B.Tech (Regular / Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 **ECE/ IT/ MECH**

Second Semester **Communicative English**

Time: Three Hours **Maximum :** 50 Marks

Answer ALL Questions from PART-A. (1X10 = 10 Marks)

*Answer **ANY FOUR** questions from PART-B.* (4X10=40 Marks)

Part - A

1. Correct and rewrite the following sentences 1*10=10M **M 10** **CO 2,3,4** **BL 3**

a. I have passed the examination two years ago.
b. They never fail who die in great cause.
c. The price of gold and silver have gone up.
d..The college starts by next week.
e. Any one is not greater than murthy.
f.. This year the Diwali falls on a Saturday.
g. Neither Leela nor her friend were to be found.
h. she told to me to do it.
i. There is plenty of jobs these days for qualified young men.
j. My friend returned back from Chennai.

Part - B

M 10 **CO 1,2,3** **BL 3**

[

2. a. Complete the paragraph using appropriate prepositions 5M

The first electronic computer was introduced towards the end of World War II .It had 1,500 vacuum tubes and was even heavier than Babbage's computer. The introduction---------the silicon based microchip------- the early 1950s changed the destiny of computers--------- ever. The first microchip computers were still very complex. They had more than 100,000 transistors and measured several meters----------Today's microchips are incredibly small and scientists are working------- making them even smaller.

b. Write the meaning of the root words given and write two examples using it 2M

i. Geo ii. Bio iii. Cord iv. Loco

c. Create a Mind Map on "Creative Intelligence". 3M

3. a. Fill in the blanks with right articles to make a meaningful paragraph 5M

I was still--------thief when I met Anil. And though only 15, I was --------- experienced and fairly successful hand. Anil was watching ------- wrestling match when I approached him. He was about 25 -------- tall, lean fellow and he looked easy-going, kind and simple enough for my purpose. I hadn't had much luck of late and thought I might be able to get into -------- young man's confidence.

b. Punctuate the given paragraph to make it meaningful 2M

if you look about you and consider the lives of others as well as your own if you think how few are born with honour and how many die without name or children how little beauty we see and how few friends we hear of how many diseases and how much poverty there is in the world you will fall down upon knees and instead of repining at one affliction will admire so many blessings which you have received from the hand of god

P.T.O.

c. Write a Paragraph on "women in cricket". **3M**

M	CO	BL
10	1,2,4	6

4. a. Select the verb form that best fits in the blank **5M**

i. Nobody _____ (know/knows) when he will arrive.
ii. We _____ (hope/hoped) that you would succeed.
iii. I _____ (can't/could not) imagine why she has behaved like that
iv. Can you _____ (tell/told/) me where he lives?
v. We _____ (will /would) like to visit the museum.

b. Choose the word closest in meaning to the underlined part from the given options **2M**

i. The parents are humiliated if their children behave badly when guests are present.
a) Glorious b) Respect c) Disgrace d) Famous
ii. I didn't have adequate time to prepare.
a) Favorable b) Clear c) Insufficient d) Enough
iii. It happened so suddenly that I didn't realize it was coming.
a) Understand b) Destroy c) Resolve d) Lament
iv. All your troubles will vanish away when he returns safely.
a) Hopeless b) Disappear c) Burden d) Appear

c.Develop the given hints and write a story based on them. Also suggest a title to the story **3M**

A bee – falls into a tank – a dove flies past – drops a large leaf into the water – the bee climbs on the leaf – flies away – a boy takes aim at the dove – the bee stings – the dove is saved.

5. a. Write an essay on 'Learning at home during lockdown' **5M**

b. Pick the closest antonym of the following words from the options given **2M**

i. Awkward:	a. Sharp	b. Graceful	c. Rude	d. Stumbling
ii. Conceal:	a. Secrete	b. Disguise	c. Mask	d. Reveal
iii. Scatter:	a. Dissolve	b. Disperse	c. Collect	d. Separate
iv. Blunt:	a. Frank	b. Sharp	c. Direct	d. Dull

c. Fill in the blanks with the modal that suits the best **3M**

i. I _____ (could/can) sing better when I was younger.
ii. You _____ (must/ought) work overtime to make up for it.
iii. All students _____ (should/would) submit their assignments by Friday.

M	CO	BL
10	1,2,4	3,6

6. a. Complete the sentences with suitable tense forms of the given verbs. **5M**

i. The delivery man _____ the parcel already. (delivery)
ii. This exercise is difficult. I _____ you to do it. (help)
iii. I _____ my grandparents since last summer. (not see)
iv. My father _____ to the bank. He'll be back soon. (go)
v. I usually _____ to the news in the car. (listen)

b. Choose the best one word substitute that is appropriate from the given choices. 5M

1. A speech delivered without any preparation
   A. Exemplary B. Extempore C. Temporary D. Contemporary
2. One who possesses many talents
   A. Versatile B. Gifted C. disciplinarian D. pedestrian
3. One who knows everything?
   A. Literate B. Scholar C. Omniscient D. Omnipotent
4. A child born after death of his father
   A. Orphan B. Bachelor C. Celibate D. Posthumous
5. Medical study of skin and its diseases.
   A. Orthopedics B. Dermatology C. Endocrinology D. Gynaecology

7. a. Rewrite the given sentences as directed 5M

i. William Blake wrote many outstanding poems. (Change voice of the sentence)
ii. Do you know the answer? (Change voice of the sentence)
iii. She said, "It's going to rain in a few minutes." (Write the sentence in other speech)
iv."Get me a glass of water," he said to her.(write the sentence in other speech)
v. She says, "Examinations will never be abolished."(Write the sentence in other speech)

b. Read the given passage and write the summary of it suggesting a suitable title. 5M

India has stood for freedom: Even before Independence we viewed our own struggle and difficulties on the larger canvas of global problems. If democracy is basically tolerance for others' opinions, the concept of co-existence is democracy on the international plane, for it embodies tolerance of other nations and systems. Similarly non-alignment gives depth to our independence and self-reliance for it enables us to retain our freedom of judgment and action on international issues in the light of our national interests. We avoid involvement in the conflicts and disputes of others and this helps to blunt conflict between power blocs. I should like to think that it has also helped world stability.

A country is an extended family. When income and resources are limited, one must budget to ensure that waste is avoided, resources husbanded, priorities established, education and other social needs catered to, special provision made for those who are weaker or smaller. Industry has to be balanced with agriculture; technology with culture; state ventures with private initiative; economic growth with social justice; the large with the small. Every section of society must be stimulated to creative activity. That is our planning. In no way is it totalitarian or coercive. Industrializing, modernizing arid transforming an ancient society of immense size, population and diversity is a daunting venture and inevitably, a gradual one. Otherwise there will be resentment. Transformation should not cause too much dislocation or suffering for the people nor should it jettison the basic spiritual and cultural values of our civilization.

India's planning experience sums up the successes and problems of our democratic development. The magnitude and significance of democracy's operation in India are not well understood, for it is often treated as an adventitious or borrowed growth. Why has democracy worked in India? Our national leadership was dedicated to it and we wanted it to work, but, also, because in our society there were elements and traditions which supported the growth of democracy. In our democratic system, there may be differences in many spheres but we rise above them. To achieve the objective of keeping the country united, we have to transcend political and party- based differences, which create dissensions. If we cannot remain united and the country does not remain strong, with whom shall we have differences? Against whom shall we fight? With whom shall we be friends? Brothers and sisters, if the country falls, nobody survives. When we were fighting for the freedom of our country, it did not mean only political freedom. It also meant social justice, equality and economic justice. Only one phase is over and another one is under way. We have to cover a long and difficult path. Whereas the enemies were visible during those days; now they are in disguise. Some of them are openly our enemies, but many become unintentional pawns of others.

M	CO	BL
10	2,3,4	2,6

8. a.Thesentences in the given questions, when properly sequenced, form a coherent paragraph. Identify and write the sequence of both the questions. 2x2.5=5M

I. A. But sometimes, the persons of opposite nature also come closer fall in each other's company by accident, chance or out of ignorance vitiating the above statement to some extent.

B. If a man moves in the company of good, gentle and noble people, he is usually adjudged to be a gentleman.

C. It is usual for a man to see company of those who possess tastes, tendencies and Temperaments like his own.
D.On the other side, if he keeps company with evil persons and bad characters, he is Considered to be a man of bad character.
E. Generally, the character and conduct of a person is gauged by the kinds of people he mixes and moves with.

II.

A. With the passage of time, vices become more apparent and virtues become objects of jealousy and envy, thereby causing contempt and hatred in the hearts of each other.
B. They become familiar with not only strengths but also weaknesses of each other's characters.
C. Generally people think that familiarity should breed love, mutual understanding and tolerance.
D. They expect that coming together of two persons should bring them closer and forge the bond of kinship between them.
E. But when two persons come closer, they come to know not only strengths but also weaknesses of each other's character.

b. Read the given passage and make notes on it in points, using abbreviations, wherever necessary. Also suggest a suitable title. 5M

Influenza or 'the flu' is an infection of the lungs and the surrounding areas. This infection of the respiratory tract is caused by the influenza virus. The virus usually spreads during the winter in temperate climates. When many people catch the flu at the same time, the situation is called a flu epidemic.

The proteins that coat the flu virus change constantly. As a result, new strains of the flu virus circulate every few years. In some countries, people at high risk are encouraged to get a flu vaccination every year. Some of the people at risk are those over 65 years, children with heart or lung conditions and health care workers.

People with flu infections feel as if they have a cold, but the signs and symptoms are usually more severe. Body areas other than the respiratory tract may be infected. Signs and symptoms include weakness, chills, fatigue, muscle aches, headache, fever, running nose and cough. The signs and symptoms could last for a week to ten days.

The influenza virus is spread largely through the air. A typical situation is where one person infected with the flu coughs or sneezes when in close proximity with another person. Droplets of the virus, suspended in the air, are breathed in by the other person. Once the virus lands on the lining of the nose, throat or other body areas related to breathing, it reproduces rapidly.

Usually the flu goes away with a rest, drinking plenty of fluids and taking mild pain medication. Health care providers may prescribe certain medication for people who are at high risk. When symptoms do not go away after seven to ten days, there is difficulty in breathing or persistent high temperatures, a health care provider should be consulted.

9. a. Rewrite the sentences as directed. 5M

i. In spite of his being ill, he continued to work. (Change it into compound sentence)
ii. You must apologize or else you will be punished. (Change it into Simple sentence)
iii. He was tired. He went to bed early. (Change it into complex sentence)
iv. A man who is generous will have many friends. (Change it into Simple sentence)
v. The reason for his arrest is still unknown. (Change it into complex sentence)

b. Differentiate the following confusing words and use them in your sentences. 5M

i. Wander-Wonder
ii. Envelop-Envelope
iii. Confident-Confidant
iv. Delightful-Delicious
v. Bought -Brought

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18MA002

Hall Ticket Number:

I/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION

January, 2021 **Common to all branches**

Second Semester

Numerical Methods and Advanced Calculus

Time: Three Hours **Maximum:** 50 Marks

Answer ALL Questions from PART-A. (1X10 = 10 Marks)
*Answer **ANY FOUR** questions from PART-B.* (4X10=40 Marks)

Part - A

1. Answer all questions (1X10=10 Marks)

a) Define an Algebraic equation. 1M

b) Decompose A=$\begin{bmatrix} 4 & 1 \\ 3 & -5 \end{bmatrix}$ as LU. Here L and U are lower and upper triangular matrices respectively. 1M

c) Write Lagrange's interpolation formula. 1M

d) State the Simpson's 1/3rd rule of integration. 1M

e) Write the general formula to find y_1 for the initial value problem $\frac{dy}{dx} = f(x, y),\ y(x_0) = y_0$ in Runge-Kutta method of 4th order. 1M

f) Evaluate the double integral $\int_0^1 \int_0^{1-x} dx\, dy$. 1M

g) Transform $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} dx\, dy$ into polar form. 1M

h) Is the vector field $3x^4y^2I + 4x^3z^2J + 3x^2y^2K$ solenoidal? 1M

i) Find a vector normal to the surface f(x,y,z)=xyz. 1M

j) State Gauss divergence theorem. 1M

Part - B

2. a) Find a root of the equation $x^3 - 2x - 5 = 0$ using the Bisection method. 5M

b) Solve $10x + y + z = 12,\ 2x + 10y + z = 13,\ 2x + 2y + 10z = 14$ by using Factorization method. 5M

3. a) Find by Newton's method, the real root of the equation $3x = \cos x + 1$ 5M

b) Solve the system of equations $27x + 6y - z = 85,\ 6x + 15y + 2z = 72,\ x + y + 54z = 110$ using Gauss-Seidel iteration method. Do five iterations. 5M

4. a) Find the cubic polynomial which takes the following values by using Newton's forward interpolation formula

x:	0	1	2	3
f(x):	1	2	1	10

5M

b) Given the values

x:	5	7	11	13	17
y:	150	392	1452	2366	5202

Evaluate f(9), using Newton's divided difference formula. 5M

P.T.O.

5. a) Find the value of y for x=0, using Picard's method for the initial value problem $\frac{dy}{dx} = y,\ y(0) = 1$. 5M

   b) Use the Trapezoidal rule to estimate the integral $\int_0^2 e^{x^2} dx$ taking 10 intervals. 5M

6. a) Evaluate $\iint_A xy\, dx\, dy$, where A is the domain bounded by x-axis, ordinate x=2a and the curve $x^2 = 4ay$. 5M

   b) Evaluate $\iint r^3\, dr\, d\theta$ over the area bounded between the circles $r = 2\sin\theta, r = 4\sin\theta$. 5M

7. a) Evaluate the triple integral $\int_0^a \int_0^x \int_0^{x+y} e^{x+y+z} dz\, dy\, dx$ 5M

   b) Find the volume bounded by the xy-plane, the cylinder $x^2 + y^2 = 1$and the plane $x + y + z = 3$ 5M

8. a) Find the directional derivative of $f(x, y, z) = xy^2 + yz^3$ at the point (2,-1,1) in the direction of the vector I+2J+2K. in what direction the directional derivative is maximum? 5M

   b) Using Stoke's theorem evaluate $\int_C \left[(x+y)dx + (2x-z)dy + (y+z)dz\right]$ where C is the boundary of the triangle with vertices (2,0,0), (0,3,0),(0,0,6). 5M

9 a) Verify Green's theorem for $\int_C \left[(xy + y^2)dx + x^2 dy\right]$ where C is bounded by $y = x$ and $y = x^2$. 10M