Hall Ticket Number :										

R-20

Code: 20AC25T

I B.Tech. II Semester Supplementary Examinations March 2022

Communicative English

(Common to EEE and ECE)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		
a)	Why does the author ask his son to be courteous and polite to his classmates?	CO1	L2
b)	What are the types of water bodies and plant life that are discusse din the poem, "The Brook"?	CO1	L2
c)	Why do Girintza, Shultz and Vontief want to kill the prince?	CO1	L2
d)	What was the innovative approach of Mohammad Yunus to traditional approach?	CO1	L2
e)	What do you learn from the life story of Mrinalini Sarabhai?	CO1	L2

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2.	What does the author say about despising people in the lesson, 'On Conduct of Life'? What justification does he provide for his advice?	12M	CO1	L4
	OR			
3. a)	Change the following statements into questions. i. They have been working hard for their exams. ii. My father presented me a watch. iii. Barbara gave me chocolates. iv. They were waiting for an hour. v. She comes from the United States. vi. I can have a branded watch for my birthday.	6M	CO3	L4
b).	Identify the parts of speech of the underlined words in the following sentences. i. The sun shone through a gap in the dull grey clouds. ii. The service in the restaurant was really quick. *iii.* She was very impressed with her results.	6M	CO3	L4
	UNIT–II			
4.	What are the various words the poet uses to describe the sound of the brook? How does it contribute to the effect of the poem?	12M	CO1	L2
	OR			
5.	Develop the following hints into a meaningful paragraph: Where there is a will there's a way – resolution overcomes obstacles – half the battle – all walks of life – determination surest way to success – difficulties disappear – life of Napoleon – body and mind into goals – Alps stood in way of his armies – 'There shall be no Alps' – road was made – heights previously inaccessible – 'Impossible is a word only to be found in the dictionary of fools' – resolution a condition of a success – beware of mistaking undisciplined energy for firmness and self-command	12M	CO4	L3

UNIT–III

6.		What can you tell about the prince's character from the drama, "The Death Trap"? Use examples from the text to support your answer.	12M	CO1	L3
		OR			
7.	a)	Rearrange each group of jumbled sentences below so as to have well-written paragraphs. **i.** It must be viewed, as some new epidemic would be viewed, as common peril to be met by concerted action. **ii.** If we are to think wisely about the new problems raised by nuclear weapons, we must learn to view the whole matter in a quite different way. **iii.** These conflicts are so virulent and so passionate that they produce a wide spread inability to understand even very obvious matters. **iv.** It is a profound misfortune that the whole question of nuclear warfare has become entangled in the age-old conflicts of power politics.	7M	CO4	L4
	b)	Fill in blanks in the sentences below using appropriate form of the verb in brackets. i. Listen! Somebody_____ (knock) at the door. ii. The workers _____ (work) in the field since early morning. iii. The thief_____ (escape) before the police arrived. iv. I usually _____ (visit) Varanasi every year. v. The servant _____(clean) the table just now.	5M	CO4	L4

UNIT–IV

8.		Describe and discuss Mohammad Yunus's contribution for the upliftment of the economis status of the poor people.	12M	CO2	L4
		OR			
9.		Prepare an analytical essay on the topic, "Climate Change and its Impact"	12M	CO4	L4

UNIT–V

10.		Correct the following sentences and rewrite them. i. I am knowing all the grammar, but it's difficult to remember. ii. At the party, I met the boss of my father who is really very nice. iii. Where you did go last night? I looked everywhere for you. iv. I made a lot of stupids mistakes in the exam because I was in such a panic. v. My friend who works for Sony he is an engineer. vi. He likes read books and play the guitar during his leisure time. vii. Can you please sponsor the event to be organize on our campus in the next month? viii. People in France must to carry their identity cards at all times. ix. One of the clerk in the bank promised me to release personal loan as early as possible. x. I advised my children to prepared well for the online entrance test. xi. Seasonal fruits are said to being very good for our health. xii. It's very nice to have a little sleep after have lunch.	12M	CO3	L3
		OR			
11.		Narrate the inspiring story of Mrinalini Sarabhai and describe the left by her for future generation.	12M	CO3	L3

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC21T

I B.Tech. II Semester Supplementary Examinations March 2022

Differential Equations and Vector Calculus

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		CO	Blooms Level
a)	Find the particular integral of the equation $\frac{dy}{dt} + y = e^{2t} + t$.		CO1	L2
b)	Solve the Euler's equation $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} + 8y = 0$.		CO2	L3
c)	Form a partial differential equation by eliminating f , from $f(xy+z^2, x+y+z) = 0$		CO3	L2
d)	Find *div curl* $\vec{F}$ where $\vec{F} = x^2y\vec{i} + xz\vec{j} + 2yz\vec{k}$.		CO4	L3
e)	State Gauss's divergence theorem.		CO5	L3

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2.	Solve $(D-2)^2 y = x^2 \sin x + e^{2x} + 3.$	12M	CO1	
	OR			
3.	Solve the following equation by the method of variation of parameters $(D^2 - 2D)y = e^x \sin x.$	12M	CO1	
	UNIT–II			
4.	Solve $(x^2D^2 + xD + 1)y = \log x \sin(\log x).$	12M	CO2	
	OR			
5.	Solve $D^2x + y = \sin t$; $x + D^2y = \cos t$.	12M	CO2	
	UNIT–III			
6. a)	Solve $x^2p^2 + y^2q^2 = z^2$	6M	CO3	

b) Solve $(mz-ny)p+(nx-lz)q=ly-mx$ 6M CO3

OR

7. Solve by the method of separation of variables

$2xz_x-3yz_y=0$ 12M CO3

UNIT–IV

8. Find the directional derivative of

$¤(x,y,z)=x^2yz+4xz^2$

at (1, -2, -1) in the direction of $2\vec{i}-\vec{j}-2\vec{k}$. 12M CO4

OR

9. a) Show that the vector field given by

$\vec{A}=3x^2y\vec{i}+(x^3-2yz^2)\vec{j}+(3z^2-2y^2z)\vec{k}$ is irrotational but not solenoidal. Also find its scalar potential $¤(x,y,z)$ 12M CO4

UNIT–V

10. Verify Green's theorem for the scalar line integral of $\vec{F}=(x^2+y^2)\vec{i}-2xy\vec{j}$ around the rectangle formed by the lines $x=\pm a, y=b.$ 12M CO5

OR

11. Evaluate $\iint_s \vec{F}.\vec{n}dS$ where

$\vec{F}=\left(x+y^2\right)\vec{i}-(2x)\vec{j}+2yz\vec{k}$ and S is the surface of the plane $2x+y+2z=6$ in the first octant 12M CO5

*** End ***

Hall Ticket Number :										

R-20

Code: 20A222T

I B.Tech. II Semester Supplementary Examinations March 2022

Fundamentals of Electronic Devices and Circuits

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

1. Answer ALL the following short answer questions (5 X 2 = 10M)	CO	Blooms Level
a) Compare Half wave and Full wave rectifier in terms of I_{DC}, V_{DC}, I_{RMS} and efficiency	CO1	L2
b) What are the typical values of h-parameters of a transistor?	CO2	L3
c) List the types of biasing techniques	CO3	L1
d) Draw the symbols of Enhancement mode NMOSFET and PMOSFET	CO4	L1
e) Based on doping concentration differentiate PN junction diode, Zener diode and Tunnel diode.	CO5	L3

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2. a)	The reverse saturation current of Germanium p-n junction diode is 6μA. Calculate the diode current when diode is connected in forward bias at a forward voltage of 0.4V at room temperature.	6M	CO1	L3
b)	Interpret the operation of PN junction diode under forward and reverse bias conditions with characteristics.	6M	CO1	L2
	OR			
3. a)	Sketch the Full wave rectifier circuit and summarize its operation with applied sinusoidal signal as input.	6M	CO1	L2
b)	Discuss, how diode can be used as Clipper and Clamper with one example.	6M	CO1	L2
	UNIT–II			
4. a)	Define the current amplification factors α , β, γ of a transistor and derive the relations between α, β and γ.	6M	CO2	L1

	b)	Model a Collector to base bias circuit for the given specification V_{CC} = 15V, V_{CE} = 5V, V_{BE} = 0.7V, I_C = 5mA and β = 100.	6M	CO2	L3
		OR			
5.	a)	In a Fixed bias circuit, V_{CC}=9V, V_{BE}=0.6V, R_B = 100KΩ, R_C=0.5KΩ and β=50. Determine coordinate of Q-point	6M	CO2	L3
	b)	Summarize the operation of transistor using common Base configuration with its input and output characteristics	6M	CO2	L2
		UNIT–III			
6.	a)	Draw the single stage Common Emitter amplifier and describe its operation.	6M	CO3	L2
	b)	Distinguish CB, CE, and CC amplifiers in terms of its h-parameters.	6M	CO3	L2
		OR			
7.		For a CE amplifier circuit R_C =10KΩ, R_E=2KΩ, hie=2KΩ, hfe=60, hoe=10μmhos hre=1X10^{-4}. Assuming R_E is adequately bypassed by a capacitor C_E. Construct small signal equivalent model and Calculate A_I and A_V	12M	CO3	L3
		UNIT–IV			
8.	a)	Discuss the construction and operation of p channel JFET with neat sketch.	6M	CO4	L2
	b)	Summarize the operation of Depletion mode nMOSFET with its Drain and transfer characteristics	6M	CO4	L2
		OR			
9.	a)	Construct n channel JFET in Voltage divider bias technique and derive I_D, V_{GS} and V_{DS} relationships.	6M	CO4	L4
	b)	Distinguish BJT, FET and MOSFET.	6M	CO4	L2
		UNIT–V			
10.	a)	What is called SCR triggering, justify with its characteristics.	6M	CO5	L3
	b)	Explain the operation of LED with its circuit model.	6M	CO5	L2
		OR			
11.	a)	Compare photo diode and photo transistor.	6M	CO5	L2
	b)	Explain the operation and V-I Characteristics of Tunnel Diode.	6M	CO5	L2

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC23T

I B.Tech. II Semester Supplementary Examinations March 2022

Chemistry

(Common to EEE & ECE)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		
a)	What is a half-cell?	CO1	L1
b)	Summarize few merits of fuel cell	CO2	L2
c)	Predict the role of monomer in a polymer	CO3	L3
d)	Formulate the Beer-Lambert's law	CO4	L6
e)	Classify the types of molecular switches	CO5	L4

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	Blooms Level
		UNIT–I			
2.	a)	Write notes on origin of electrode potential	6M	CO1	L1
	b)	How electrode potential is measured	6M	CO1	L1
		OR			
3.		Derive Nernst Equation for the determination of single electrode	12M	CO1	L3
		UNIT–II			
4.		Illustrate the construction and functioning of Leclanche cell with a neat diagram and electrode reactions.	12M	CO2	L3
		OR			
5.		How fuel cells are classified and explain about the Hydrogen Oxygen fuel cell with electrode reactions	12M	CO2	L2
		UNIT–III			
6.		What are polymers? Explain the mechanism of addition polymerization	12M	CO3	L2
		OR			
7.	a)	Write notes on preparation and properties of urea-formaldehyde resin	6M	CO3	L2
	b)	What are conducting polymers? Write their applications	6M	CO3	L2
		UNIT–IV			
8.	a)	What is the principle involved in U.V /VIS spectroscopy?	6M	CO4	L2
	b)	Outline the concept of Thin Layer Chromatography	6M	CO4	L4
		OR			
9.		Explain the principle involved in potentiometry with a suitable example	12M	CO4	L3
		UNIT–V			
10.		What are artificial molecular machines? Give an example and explain about the role of molecular machines	12M	CO5	L4
		OR			
11.		Describe about Cyclodextrin-based switches and its functioning	12M	CO5	L2

*** End ***