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First/Second Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

Applied Chemistry for CSE Stream

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

3. VTU Formula Hand Book is permitted.

Module – 1			M	L	C
Q.1	a.	What are electrochemical sensors? Explain the application in the measurement of dissolved oxygen.	7	L2	CO2
	b.	What are quantum dot sensitized solar cells? Explain the working principle and applications.	7	L2	CO2
	c.	Define Battery. Give the classification of batteries with example.	6	L1	CO1
OR					
Q.2	a.	Explain the construction and working of Li-ion battery and mention any two advantages.	7	L2	CO1
	b.	Explain the principle, working and application of conductometric sensors.	7	L2	CO1
	c.	What are transducers and explain about disposable sensors?	6	L2	CO2
Module – 2					
Q.3	a.	Explain the types of organic memory devices by taking p-type and n-type semiconducting material.	7	L2	CO1
	b.	What are Liquid Crystals? Explain the classification of liquid crystals. Mention any two properties of liquid crystals.	7	L2	CO1
	c.	Define optoelectronic devices. Mention any four properties and application of OLED.	6	L1	CO1
OR					
Q.4	a.	What are memory devices? Explain the classification of electronic memory devices with example.	7	L2	CO1
	b.	Discuss the working mechanism of liquid crystals in display system.	7	L2	CO1
	c.	Discuss the use of polyimide polymeric material for organic memory device.	6	L2	CO4

Module – 3

Q.5	a.	Define metallic corrosion. Describe the electrochemical theory of corrosion taking iron as an example.	7	L2	CO4
	b.	What are reference electrode? Explain the construction and working of calomel electrode. Mention its two applications.	7	L2	CO4
	c.	Explain the principle, instrumentation and working of conductometry using estimation of weak acid using strong base as an example.	6	L2	CO3

OR

Q.6	a.	Explain the corrosion control by anodization of aluminium and sacrificial anodic method for iron.	7	L2	CO1
	b.	Explain the construction and working of glass electrode.	7	L2	CO3
	c.	What is Galvanization? Explain the differential aeration corrosion by taking water line corrosion as example.	6	L1 L2	CO1

Module – 4

Q.7	a.	Explain the preparation, properties and application of Kevlar.	7	L2	CO3
	b.	What is green fuel? Explain the construction and working of photovoltaic cell.	7	L1 L2	CO1
	c.	Explain the synthesis and oxidative doping process of polyacetylene.	6	L2	CO4

OR

Q.8	a.	Define number average and weight average molecular weight of polymer. A polymer of polypropylene is found to have the composition $\left[\text{CH}_2 - \overset{\text{CH}_3}{\underset{ }{\text{CH}}} \right]_{300}, \quad \left[\text{CH}_2 - \overset{\text{CH}_3}{\underset{ }{\text{CH}}} \right]_{400} \quad \text{and} \quad \left[\text{CH}_2 - \overset{\text{CH}_3}{\underset{ }{\text{CH}}} \right]_{500}$ with 20%, 30% and 50% respectively in a polymer material. Calculate the number and weight average molecular mass of the polymer.	7	L2	CO5
	b.	What are conducting polymer? Explain the reductive doping of polyacetylene. Mention the two application of conducting polymer.	7	L1 L2	CO2
	c.	What is Green Hydrogen? Explain the proton exchange membrane electrolysis. Mention its advantage.	6	L1 L2	CO4

Module – 5

Q.9	a.	Discuss the role of following in recovery of metals from E-waste i) Pyrometallurgy ii) Hydrometallurgy	7	L2	CO2
	b.	Mention the sources of E-waste, explain the need of E-waste management.	7	L1	CO1
	c.	Explain the direct recycling of E-waste.	6	L2	CO2

OR

Q.10	a.	Explain the adverse effects of toxic materials used in manufacturing electrical and electronic products.	7	L2	CO2
	b.	What is E-waste? Explain the advantages of recycling and recovery of E-wastes.	7	L1 L2	CO2
	c.	Explain the extraction of gold from E-wastes. Mention the advantages.	6	L2	CO2

CBCS SCHEME

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BESCK104E

First Semester B.E/B.Tech. Degree Examination, Dec.2025/Jan.2026

Introduction to C Programming

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
1	a.	What is a Computer? With a neat diagram of computer architecture explain its components.	8	L2	CO1
	b.	Explain the different types of computers.	6	L2	CO1
	c.	How primary memory is different from secondary memory? Explain.	6	L2	CO1
OR					
2	a.	Write the basic structure of 'C' program. Explain each section briefly with suitable example.	8	L2	CO2
	b.	Explain the basic data types in 'C' with their keyword, size and range of values.	6	L2	CO2
	c.	With the help of example and syntax, explain formatted input/output functions of 'C' language.	6	L2	CO2
Module – 2					
3	a.	Develop a 'C' program to compute the roots of a quadratic equation by accepting the co-efficients and print the appropriate message along with the values.	8	L3	CO2
	b.	Define branching statements. Explain any two branching statements with syntax and suitable example.	6	L2	CO2
	c.	Define Operator. Explain any five operators with example.	6	L2	CO2
OR					
4	a.	Differentiate between while, do-while and for loops. Explain with syntax and examples.	8	L2	CO2
	b.	Demonstrate the working of break and continue statement with a suitable example.	6	L2	CO2
	c.	Develop a 'C' program to generate Fibonacci series 0, 1, 1, 2, 3, 5, 8, 13, - - - .	6	L3	CO2

Module – 3

5	a.	What is an Array? How arrays are declared and initialized with example.	8	L2	CO3
	b.	Develop a 'C' function that can be called to find largest element of an integer array of size 'n'.	6	L3	CO3
	c.	Develop a 'C' program to search an element using binary search technique.	6	L3	CO3

OR

6	a.	Develop a 'C' program to find transpose of a matrix.	10	L3	CO3
	b.	Develop a 'C' program to multiply two-matrices by assuming their multiplication compatibility.	10	L3	CO3

Module – 4

7	a.	Define String. Explain any 4 string manipulation function with suitable example.	10	L2	CO3
	b.	Develop a 'C' program to concatenate 2 strings without using built-in function.	10	L3	CO3

OR

8	a.	What is a function? Explain different types of function for handling strings.	8	L2	CO4
	b.	Differentiate between call by value and call by reference using suitable examples.	6	L2	CO4
	c.	What is Recursion? Develop a 'C' program to compute factorial of a given number using recursion.	6	L3	CO4

Module – 5

9	a.	How structure can be defined within a structure (Nested structure)? Explain with example.	6	L2	CO5
	b.	What is Union data structure? Explain the difference between structure and union.	6	L2	CO5
	c.	Implement structure to read, write and compute average—marks of the students, list the students scoring above and below the average marks for a class of N students.	8	L3	CO5

OR

10	a.	What is a Pointer? How to declare and initialize pointer? Discuss pointer arithmetic with suitable 'C' code.	10	L2	CO5
	b.	Develop a 'C' program to find sum, mean and standard deviation of array elements using pointers.	10	L3	CO5

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Introduction to Cyber Security

Time: 3 hrs.

Max. Marks: 100

**Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.**

Module – 1			M	L	C
Q.1	a.	What is Cybercrime? How do we classify cyber crimes? Explain each one briefly.	12	L2	CO1
	b.	Write a note on : i) E – mail spoofing iii) Password sniffing ii) Spamming iv) Hacking.	8	L2	CO1
OR					
Q.2	a.	How do you think cyber crime has relevance in the Extended Enterprise context? Explain.	12	L2	CO1
	b.	Write a note on : i) Indian Legal perspective on cyber crime ii) Computer Network Intrusion.	8	L2	CO1
Module – 2					
Q.3	a.	With an example, explain passive and active attacks.	8	L2	CO2
	b.	What is Social Engineering? List and explain the classification of Social Engineering.	12	L2	CO2
OR					
Q.4	a.	What is Cyber stalking? Explain types of stalkers. How stalking works?	10	L2	CO2
	b.	Explain how Botnets can be used as a fuel to cyber crime.	10	L3	CO2
Module – 3					
Q.5	a.	What is Phishing? List and explain different ways of phishers work.	8	L2	CO4
	b.	Write the difference between proxy servers and an anonymizer.	4	L3	CO3
	c.	List and explain the different types of viruses.	8	L2	CO3
OR					
Q.6	a.	What are DOS attacks? Explain the classification of DOS attacks. And what are the tools used to launch DOS attacks?	10	L3	CO3
	b.	List and explain traditional techniques of attacks on wireless networks.	10	L3	CO3

Module – 4					
Q.7	a.	What is Whaling? Explain the difference between Whaling and Spear phishing.	10	L2	CO4
	b.	With an example , explain the identity theft. And what are the different types of ID theft?	10	L3	CO4
OR					
Q.8	a.	What are the different techniques of ID theft? How to prevent being a victim of ID theft?	10	L2	CO4
	b.	With an example , explain the concept of phishing. What are the techniques used by phisher to launch phishing attacks?	10	L3	CO4
Module – 5					
Q.9	a.	Explain the importance of strong documentation in cyber forensics profession.	10	L2	CO5
	b.	Describe the following terms : i) Digital forensics ii) Computer forensics iii) Network forensics	10	L3	CO5
OR					
Q.10	a.	With neat diagram , explain the process model for understanding a seizure and handling of forensic evidence legal framework.	10	L3	CO5
	b.	List and explain phases and activities of forensics life cycle.	10	L3	CO5
