TOTAL PAGES: 2

25CHP104

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch- **CHEMISTRY**

ELECTRONICS FOR CHEMISTS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A semiconductor with added trivalent impurity is called: a) N-type b) P-type c) Metallic conductor d) Intrinsic semiconductor	K1	CO1
	2	The current is the same in all elements of: a) Parallel circuit b) Series circuit c) Open circuit d) Short circuit	K2	CO1
2	3	What is the typical value of the input impedance for an ideal operational amplifier? a) Zero b) About 1 kΩ c) Very low d) Infinity	K1	CO2
	4	A circuit that amplifies the difference between two input signals is known as a: a) Summing amplifier b) Differential amplifier c) Integrator d) Differentiator	K2	CO2
3	5	A thermocouple works on: a) Seebeck effect b) Piezoelectric effect c) Hall effect d) Magnetic effect	K1	CO3
	6	LVDT works on the principle of: a) Mutual inductance b) Self-inductance c) Capacitance d) Resistance	K2	CO3
4	7	A valve that controls the path of fluid flow is called a: a) Flow control valve b) Pressure relief valve c) Directional control valve d) Check valve	K1	CO4
	8	The component that converts a control signal into physical action is called: a) A sensor b) A transducer c) An actuator d) A converter	K2	CO4
5	9	For fluid level monitoring, commonly used sensor is: a) Float sensor b) pH sensor c) Thermistor d) Ammeter	K1	CO5
	10	The ammeter should always be connected: a) In series b) In parallel c) Across supply d) None of these	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Name the different configurations of a transistor and state their features.	K1	CO1
		(OR)		
	11.b.	List the applications of Zener diode as a voltage regulator. Explain its working principle with diagram.		
2	12.a.	Compare the operation and transfer functions of an ideal op-amp integrator and an ideal op-amp differentiator.	K2	CO2
		(OR)		
	12.b.	Describe the basic function of an Analog-to-Digital Converter (ADC) and a Digital-to-Analog Converter (DAC).		
3	13.a.	Illustrate the effect of noise on measurement signals with a neat sketch.	K3	CO3
		(OR)		
	13.b.	Ascertain the dependability requirements of an instrumentation system with examples.		
4	14.a.	Differentiate between pneumatic actuators and hydraulic actuators with examples of their uses.	K4	CO4
		(OR)		
	14.b.	Explain the basic structure and functions of a control system with neat diagrams.		
5	15.a.	Interpret the working principle of a pH meter with diagram.	K5	CO5
		(OR)		
	15.b.	Conclude the significance of auto titrators in reducing manual errors in titration processes.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions
ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Describe in detail Kirchoff's Laws with examples and circuit diagrams.	K2	CO1
2	17	Construct and illustrate the working of a summing amplifier. Classify its applications in analog computing.	K3	CO3
3	18	Classify temperature sensors and distinguish their working principles.	K3	CO3
4	19	Explain the functions and applications of directional control valves and flow control valves in control engineering.	K4	CO4
5	20	Interpret the working of an electronic balance by explaining its construction and key components.	K5	CO5

Z-Z-Z END