PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MSc DEGREE EXAMINATION DECEMBER 2025
(Second Semester)
Branch - **APPLIED ELECTRONICS**

MAJOR ELECTIVE COURSE – I : WEARABLE DEVICES AND ITS APPLICATIONS

Time: Three Hours   Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks $(10 \times 1 = 10)$

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is a type of wearable device? a) A desktop computer b) A smart home security system c) A fitness tracker d) A landline telephone	K1	CO1
	2	A wearable device that helps in tracking location information is most likely to use a) A camera b) A GPS sensor c) A sound sensor d) A temperature sensor	K2	CO1
2	3	What is the primary function of a gyroscope in a wearable inertial sensor? a) To measure linear acceleration b) To detect the Earth's magnetic field c) To measure angular velocity or rotational speed d) To count steps and detect vibration	K1	CO2
	4	Which application benefits from a wearable IMU's ability to precisely monitor orientation and sudden changes in movement for early detection? a) Weather forecasting b) Fall detection in the elderly c) GPS navigation d) Heart rate monitoring	K2	CO2
3	5	Which of the following is a challenge often associated with textile electrodes, particularly in "dry electrode" applications without a conductive gel? a) High skin-electrode impedance and motion artifacts b) Difficulty in washing and reusability c) The need for frequent replacement d) High cost of materials	K1	CO3
	6	What is a primary function of wearable devices in healthcare? a) To administer medication directly b) To monitor physiological data and provide insights into health c) To perform complex surgical procedures d) To replace the need for human doctors	K2	CO3
4	7	A wearable biosensor's transducer converts a biochemical event into which type of signal? a) Mechanical signal b) Thermal signal c) Chemical signal d) Electrical signal	K1	CO4
	8	Which of the following is a common application for wearable biochemical sensors? a) Diagnosing infectious diseases b) Monitoring weather conditions c) Controlling home appliances d) Tracking GPS location	K2	CO4
5	9	What is the primary characteristic of wearable computing devices, including cameras and microphones? a) High power consumption b) Fixed in one location c) Can be worn on the body and used during activities d) Require external monitors	K1	CO5

5	10	What is the primary function of a microphone in any context, including wearable devices? a) To amplify signals b) To convert electrical signals to sound c) To convert sound to electrical signals d) To play background music	K2	CO5

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.	Describe the intelligent clothing wearable sensors.	K4	CO1
		(OR)		
	11.b.	Explain the public sector and security.		
2	12.a.	Identify the distinctions between gyroscopic and magnetic sensors.	K4	CO2
		(OR)		
	12.b.	Pedometers and Actigraphs are examples of tools used to assess energy expenditure.		
3	13.a.	Demonstrate wearable piezoresistive sensors for measuring blood pressure in cuffles.	K5	CO3
		(OR)		
	13.b.	Describe the conductive textile electrodes.		
4	14.a.	Identify non-invasive glucose monitoring tools, such as GlucoTrackTM.	K5	CO4
		(OR)		
	14.b.	Give examples of the electrochemical and metal oxide (MOS) types.		
5	15.a.	Discuss about Applications in safety and security.	K6	CO5
		(OR)		
	15.b.	Elaborate the Assistive Devices for wrist.		

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	Differentiate between wearable electronics and the rise of wearable computing.	K4	CO1
2	17	Compare the Fall Detection and Fall Risk Assessment.	K4	CO2
3	18	Describe the continuous and intermittent temperature monitoring.	K5	CO3
4	19	Build the Wearable Biochemical Sensors System Design and Relevant Parameters.	K6	CO4
5	20	What are the applications? microphones and AI for clinical trials and respiratory diagnostics?	K5	CO5

Z-Z-Z   END