

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023  
(Second Semester)

Branch – APPLIED ELECTRONICS

**MAJOR ELECTIVE COURSE - I**  
**WEARABLE DEVICES AND ITS APPLICATIONS**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Choose the wearable device used in health care -----.  
(i) glucose monitors (ii) minuscule drone  
(iii) hearing aids (iv) VR headsets
- 2 State the device which is used for counts each step a person takes by detecting the motion of the person's hands or hips -----.  
(i) Accelerometer (ii) Gyroscopes  
(iii) Pressure sensors (iv) Pedometers
- 3 A KPF sensor is used for measuring -----.  
(i) Body temperature (ii) limb movement stretching and bending  
(iii) Blood pressure (iv) heart beat rate
- 4 The Electrochemical Gas sensor is used to detect ----- .  
(i) temperature (ii) Pressure  
(iii) SO<sub>2</sub> (iv) displacement
- 5 A.I stands for-----.  
(i) Automotive Intelligence (ii) Artificial Intelligence  
(iii) Autonomous Intelligence (iv) Appliances Intelligence

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Describe the types of wearable sensors used for Environment monitoring.  
OR  
b Explain the motivation for development of wearable devices.
- 7 a State how Accelerometer used wearable inertial sensor works?  
OR  
b Write a short notes on Invisible sensors.
- 8 a Explain the detection principle of temperature sensor thermistor.  
OR  
b Discuss about the conductive textile electrodes and its features.

Cont...

- 9 a Determine the role of wearable pulse oximeter.  
OR  
b Write a note on wearable biochemical sensors.
- 10 a Explain the uses of wearable cameras in safety and security area of applications.  
OR  
b Analyze the features of MEMS Microphones utilization as wearable devices.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Compare invasive and Non-invasive wearable sensors.  
OR  
b Explain the application of wearable sensors role in fashion, entertainment and military areas.
- 12 a Describe the operation of the magnetic sensor and Gyroscopic sensor.  
OR  
b Explain how the physical human activity recognition using wearable sensors is carried out?
- 13 a Describe intermittent and continuous temperature measurement and monitoring process.  
OR  
b Differentiate between the adhesive/tattoo type temperature sensor and their applications.
- 14 a Explain the operation of Glucotrack TM sensor.  
OR  
b How MOS type gas sensor can be used as a wearable sensor?
- 15 a State role of camera in smart watch and automatic digital diary in the revolution of wearable devices era.  
OR  
b Elucidate functions of wearable devices for blind-hearing and touch sensation.

Z-Z-Z

END