

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**MSc DEGREE EXAMINATION MAY 2024
(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 × 1 = 10)

| Module No. | Question No. | Question | K Level | CO |
|------------|--------------|---|---------|-----|
| 1 | 1 | What is the Military's use of Wearable technology? a) Eliminating the need for Physical activity b) Increasing the cost of healthcare c) Educational Purpose training exercise and Sustainability technology d) Replacing traditional healthcare provides | K1 | CO1 |
| | 2 | Wearable technology is used in healthcare? a) Smart watches b) Hearing aids c) Minuscule drone d) VR headse | K2 | CO1 |
| 2 | 3 | Accelerometer is the measurement of _____ a) Velocity/time b) Energy/time c) Height/time d) Angle/time | K1 | CO2 |
| | 4 | Which instrument registers total distance covered by any number of pace? a) Passometer b) Pedometer c) Odometer d) Chaining | K2 | CO2 |
| 3 | 5 | What type of thermal sensor is commonly used to measure body temperature? a) Thermocouple b) Infrared Sensor c) Thermistor d) Mercury – in – glass thermister | K1 | CO3 |
| | 6 | MARG sensor is abbreviated as _____ a) Magnetic Angular Rate and Gravity b) Magnitude Angular Rate and Gravity c) Magnetic Angular Resistance and Gravity d) None of the above | K2 | CO3 |
| 4 | 7 | _____ is non-invasive method allowing the monitoring of the saturation of a patient's hemoglobin. a) Ear Oximetry b) Pulse Oximetry c) Skin-Reflectance Oximetry d) Intravascular Oximetry | K1 | CO4 |
| | 8 | _____ refers to the measurement of the charge of electroactive species adsorbed on to an electrode with respect to time. a) Chronocoulometry b) Colorimetry c) Spectroscopy d) Conductivity | K2 | CO4 |
| 5 | 9 | Which of the following represents the inverse transducer of a microphone? a) Micro speaker b) Pressure transducer c) Bourden element d) All of the mentioned | K1 | CO5 |
| | 10 | Which of the following assistive devices is required for students with hearing impairments? a) Wheel chair b) Crutches c) Communication Board d) Optical aids | 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. | Explain the Intelligent Clothing Sensor. | K5 | CO1 |
| | | (OR) | | |
| | 11.b. | Elucidate the Wearable devices used in the Mining Industry. | K4 | CO1 |
| 2 | 12.a. | How its Work Gyroscopic Sensors? | K4 | CO2 |
| | | (OR) | | |
| | 12.b. | What is meant by Human Kinetics? Explain it. | K4 | CO2 |
| 3 | 13.a. | Describe the Continuous Temperature Monitoring. | K4 | CO3 |
| | | (OR) | | |
| | 13.b. | Explain the Working Principle of KPF sensors. | K4 | CO3 |
| 4 | 14.a. | What is meant by Wearable Biochemical Sensors? Explain it. | K4 | CO4 |
| | | (OR) | | |
| | 14.b. | Discuss about Wearable Pulse Oximeter. | K4 | CO4 |
| 5 | 15.a. | Explain the Automatic Digital Diary. | K4 | CO5 |
| | | (OR) | | |
| | 15.b. | Discuss about the Assistive Devices for Fingers and Hands. | K4 | CO5 |

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 | Discuss about the Wearable devices in fashion and Entertainment applications. | K5 | CO1 |
| 2 | 17 | Explain the Energy Expenditure Measurements. | K4 | CO2 |
| 3 | 18 | Describe the detection principles of Thermistor and Infrared Radiation. | K5 | CO3 |
| 4 | 19 | Illustrate the Wearable Gas Sensors and its types. | K5 | CO4 |
| 5 | 20 | Compare and explain the various types of Wearable Microphones. | K4 | CO5 |