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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016**

COURSE NAME : PRINCIPLE OF PHYSIOLOGICAL DEVICES
COURSE CODE : BEU 30202
PROGRAMME : BEJ
EXAMINATION DATE : JUNE/JULY 2016
DURATION : 2 HOURS
**INSTRUCTION : ANSWER ALL QUESTIONS
PLEASE WRITE ALL THE ANSWERS ON
THE QUESTIONS BOOKLET**

THIS QUESTION PAPER CONSISTS OF EIGHT (8) PAGES

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Q1 When electrodes are used to record the electrocardiogram (ECG), an electrolyte gel is usually put between them and the surface of the skin. This makes it possible for the metal of the electrode to form metallic ions that move into the electrolyte gel.

(a) Discuss the function of the other **SIX (6)** types of electrode.

(12 marks)

(b) Discuss the characteristic of polarizable and non-polarizable electrodes. (8 marks)

(c) Derive the oxidation and reduction of Ag/AgCl electrode. (4 marks)

Q2 Biological sensor technologies provide contributions to the development and implementation of sensors for various applications used in medicine and biology.

(a) Define the biological sensor and the principle that made up the sensor. (4 marks)

(b) Briefly explain the application of biological sensor in current medical technology.
(8 marks)

(c) List down **FOUR (4)** advantages of biosensor.
(4 marks)

(d) Depending on the mechanism of transduction, biosensors could be classified into resonant biosensor, optical detection biosensor, thermal detection biosensor, and ion sensitive biosensor. Describe each of the type briefly.
(8 marks)

- (b) Ultrasonic machine and MRI machine are medical instrumentations that use the interfacing of computer. Both of the machines could produce the medical images that give benefit in diagnosis diseases. However, they have different procedure in producing the images. Differentiate between ultrasonic machine and MRI machine in terms of their scanning procedure.

(10 marks)

-END OF QUESTION-