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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2018/2019**

COURSE NAME : MEDICAL EQUIPMENT  
MANAGEMENT DAN SAFETY

COURSE CODE : BEU 40902

PROGRAMME CODE : BEJ

EXAMINATION DATE : DECEMBER 2018/ JANUARY 2019

DURATION : 2 HOURS

INSTRUCTION : ANSWER ALL QUESTIONS IN  
THIS QUESTION PAPER

THIS QUESTION PAPER CONSISTS OF **TWELVE (12)** PAGES

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**Q1** Biomedical engineer is responsible for conducting testing and maintenance on all applicable biomedical equipment according to the manufacturer's recommendation. List the procedures involved in:-

(a) Acceptance testing.

(5 marks)

(b) Plan preventive maintenance.

(7 marks)

(c) Corrective maintenance.

(8 marks)





(d) International Electrotechnical Commission (IEC) 60601 is a series of technical standards for the safety and effectiveness of medical electrical equipment.

(i) Indicate **SIX (6)** tests conducted by safety analyzer to fulfill IEC 60601 standard.

(6 marks)

(ii) Summarize **THREE (3)** non-functional current using appropriate diagram. Label clearly the current path.

(9 marks)

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- (e) Simple scoring system can be established to determine whether scheduled maintenance should be performed and at what frequency. Identify **THREE (3)** factors considered in order to arrive to the maintenance schedule as part of equipment control program.

(3 marks)

**Q3** The use of computer hardware and software to manage health care information is expanding.

- (a) Point out **THREE (3)** Impacts of information technology (IT) on health care.

(3 marks)

- (b) Point out **THREE (3)** Effects of technology on inpatient care.

(3 marks)

- (c) Point out **THREE (3)** functions of Computerized Maintenance Management and Information System. (3 marks)

**Q4** Medical waste covers all wastes produced in healthcare or diagnostic activities.

- (a) Identify the **THREE (3)** types of medical waste related to the human body. (3 marks)

- (b) Elaborate your answers in **Q4(a)**. (3 marks)



- (c) You have just been appointed as water and habitat engineer at your work place. Establish **FIVE (5)** strategies to ensure that the hospital wastes are managed in compliance with national legislation and international conventions. (5 marks)

- Q5** (a) Electromagnetic compatibility (EMC) is defined as the condition which exists when equipment is performing its designed functions without causing or suffering unacceptable degradation due to electromagnetic interference to or from other equipment.
- (i) As an engineer working in healthcare setting, point out **THREE (3)** ways of confirming electromagnetic compatibility of medical devices. (6 marks)

- (ii) In your own words, point out the importance of establishing acceptable emission limits and immunity limits.

(2 marks)

- (b) Construct a table to distinguish acceptable radiated emission limits and radio frequency immunity fields for industrial and residential area.

(4 marks)

- Q6** (a) ISO 9000 is the general standard related to fundamentals of implementation of a quality management system. Illustrate the concept of ISO 9000.

(6 marks)

- (b) Explain **THREE (3)** general benefits of implementing hospital accreditation. (3 marks)
- (c) Establish **FOUR (4)** conditions of a healthcare institution that is eligible for accreditation. (4 marks)
- (d) Malaysian Society for Quality in Health (MSQH) is an independent accrediting body that is involved in accreditation of hospital in Malaysia. Simplify surveyor activities into a checklist to be used during accreditation visit in hospital. (6 marks)

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**-END OF QUESTIONS –**