

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI**

JABATAN KEJURUTERAAN ELEKTRIK

PEPERIKSAAN AKHIR

SESI JUN 2017

DEU6233 : BIOMEDICAL INSTRUMENTATION

TARIKH : 27 OKTOBER 2017

MASA : 8.30 PAGI – 10.30 PAGI (2 JAM)

Kertas ini mengandungi **TUJUH (7)** halaman bercetak.

Bahagian A: Struktur (4 soalan)

Bahagian B: Esei (2 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 60 MARKS**BAHAGIAN A : 60 MARKAH****INSTRUCTION:**

This section consists of 4 (FOUR) structured questions. Answer ALL questions.

ARAHAN:

Bahagian ini mengandungi EMPAT (4) soalan berstruktur. Jawab SEMUA soalan.

QUESTION 1**SOALAN 1**CLO1
C1

- (a) Define the Ventricular Fibrillation for the human heart.
Takrifkan Ventricular Fibrillation untuk jantung manusia.

[3 marks]

[3 markah]

CLO1
C2

- (b) Identify TWO (2) functions of Pacemaker lead system in producing electrical stimulation to the heart.
Kenalpasti DUA (2) fungsi Pacemaker lead system untuk menghasilkan simulasi elektrik ke jantung.

[4 marks]

[4 markah]

CLO2
C4

(c)

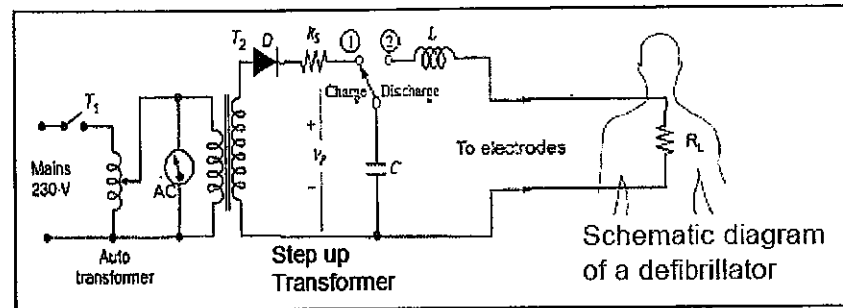


Figure 1(a)

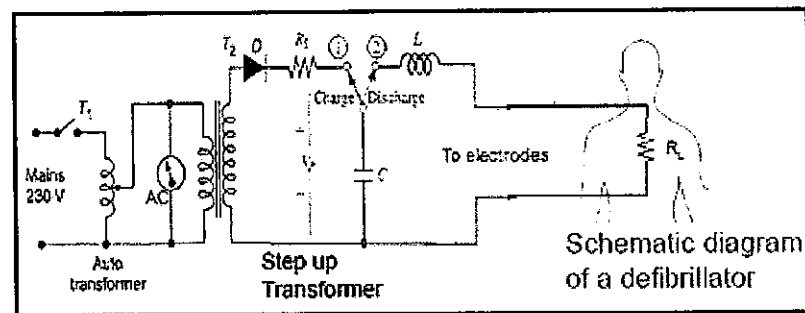


Figure 1(b)

During defibrillation, the energy stored in the capacitor is then delivered (Discharged) at a relatively rapid rate (in order of milliseconds) to the chest of subject through the patient's own resistance. Based on **Figure 1 (a)** and **Figure 1(b)**, examine the diagram on how the energy is delivered to the patient's heart.

Semasa defibrilasi, tenaga yang tersimpan dalam kapasitor akan dihantar (nyahcas) pada kadar yang pantas (dalam milisaat) ke dada pesakit melalui rintangan pesakit sendiri. Berdasarkan Rajah 1 (a) dan Rajah 1 (b), Kaji gambar rajah untuk mengetahui bagaimana tenaga dihantar ke jantung pesakit.

[8 marks]

[8 markah]

QUESTION 2

SOALAN 2

CLO1
C1

- (a) Before starting the hemodialysis process, a surgeon creates a vascular access point. List **FOUR (4)** types of vascular access point.
Sebelum mulakan hemodialisis, pakar bedah akan membuat vascular access point. Senaraikan EMPAT (4) jenis vascular access point.

[4 marks]

[4 markah]

CLO2
C2

- (b) Audio and visual alarms are triggered and the blood pump stop. Describe the possible causes related to hemodialysis system when the machine's alarm indicates 'Air bubble detector'.
Penggera audio dan visual dicetuskan. Kemudian pam darah berhenti. Terangkan sebab yang mungkin berkaitan dengan sistem hemodialisis apabila penggera mesin menunjukkan 'Pegesan Gelembung Udara'.

[5 marks]

[5 markah]

CLO1
C3

- (c) Draw and label the Hollow Fiber Dialyzer for hemodialysis machine.
Lukis dengan menglabelkan Hollow Fiber Dialyzer bagi mesin hemodialisis.

[6 marks]

[6 markah]

QUESTION 3

SOALAN 3

CLO1
C1

- (a) Mechanics of breathing is the ability of a person to bring air into his lungs. List **THREE (3)** instrumentations for measuring the mechanics of breathing.
Mekanik pernafasan adalah keupayaan seseorang untuk membawa udara ke dalam peparunya. Senaraikan TIGA (3) peralatan untuk mengukur mekanik pernafasan.

[3 marks]

[3 markah]

CLO1
C2

- (b) In respiratory application, there are two types of Plethysmograph. Explain the **Body Plethysmograph**.
Dalam penggunaan respirasi, terdapat dua jenis Plethysmograph. Terangkan Body Plethysmograph.

[4 marks]

[4 markah]

CLO2
C4

- (c) Differentiate between the daily and weekly maintenance when handling the autoclave.
Bezakan antara penyelenggaraan harian dan mingguan apabila mengendalikan autoclave.

[8 marks]

[8 markah]

QUESTION 4

SOALAN 4

CLO1
C1

- (a) Describe the following types of brainwave activity.
i) Theta
ii) Beta

Huraikan jenis-jenis gelombang aktiviti otak.

i) Theta

ii) Beta

[3 marks]

[3 markah]

CLO1
C2

- (b) There are three of ECG electrode placements. With the aid of a diagram, explain the Einthoven's Triangle placement.

Terdapat tiga penempatan ECG elektrod. Dengan bantuan gambarajah, terangkan penempatan Einthoven's Triangle.

[4 marks]

[4 markah]

CLO2
C3

- (c) Draw the block diagram pressure transducer calibration.
Bina gambarajah blok fungsi pressure transducer calibration.

[8 marks]

[8 markah]

SECTION B : 40 MARKS**BAHAGIAN B : 40 MARKAH****INSTRUCTION:**

This section consists of **TWO (2)** essay questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi DUA (2) soalan esei. Jawab SEMUA soalan.

QUESTION 1**SOALAN 1**

CLO1
C3

There are **THREE (3)** methods of assessment (diagnosis) in disabilities. Relate the concepts of assessment methods in disabilities.

Terdapat TIGA (3) kaedah menentukan kecacatan. Kaitkan konsep kaedah penentuan kecacatan berikut.

[20 marks]

[20 markah]

QUESTION 2**SOALAN 2**

CLO2
C4

Electrocardiograph (ECG) is a diagnostic tool that measures and records the electrical activity of the heart in exquisite detail. Draw the functional block diagram of Electrocardiograph (ECG). Predict common problems that always occur and explain possible solutions for that problems. *Electrocardiograph (ECG) adalah alat diagnos yang mengukur dan merekod terperinci aktiviti elektrik jantung. Lukis gambarajah blok fungsi Electrocardiograph (ECG).*

Ramalkan masalah yang selalu berlaku dan terangkan penyelesaian masalah berikut.

[20 marks]

[20 markah]

SOALAN TAMAT