
UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2005/2006

April-May 2006

RET 564 – Kawalan Bangunan dan Instrumentasi
(Building Control and Instrumentation)

Duration: 2 hours
(Masa: 2 jam)

(Sila pastikan bahawa kertas peperiksaan ini mengandungi **TIGA** muka surat yang tercetak sebelum anda memulakan peperiksaan ini.)
*Please check that this examination paper consists of **THREE** pages of printed material before you begin the examination.*

Jawab **SEMUA** soalan.
*Answer **ALL** questions.*

...2/-

1. Bincangkan definisi, ciri-ciri dan tujuan bangunan pintar yang membezakannya daripada bangunan biasa.

Discuss what are the definition, characteristics and purposes of intelligent buildings that distinguish them from ordinary buildings.

(20 markah/marks)

2. (a) Bincangkan apakah **Empat** tujuan kawalan automatik?

*Discuss what are the **Four** purposes of automatic controls?*

- (b) Terdapat dua *loop* bagi sistem kawalan. Dengan bantuan lakaran, bincangkan apakah dua *loop* tersebut, prinsip operasinya dan ciri-ciri yang membezakannya.

There are two control loops of control systems. With the aid of sketches, discuss what they are, their principles of operation and their respective characteristics.

(20 markah/marks)

3. Apakah "mod kawalan" dalam sistem kawalan HVAC? Dengan bantuan lakaran, bincangkan tiga jenis mod kawalan HVAC yang asas.

What is "control modes" in the HVAC control systems? With the aid of sketches, discuss the three basic types of HVAC control modes.

(20 markah/marks)

4. Terdapat beberapa prinsip dan garis panduan yang perlu dipatuhi dalam merekabentuk sistem kawalan HVAC. Bincangkan.

There are principles and guidelines that should be followed in designing HVAC control systems. Discuss what they are.

(20 markah/marks)

5. Bincangkan prinsip operasi bagi sistem kawalan kuasa janaan sendiri, elektrik dan pneumatik. Lakarkan contoh masing-masing.

Discuss the principles of operation of self-powered, electric and pneumatic control systems. Sketch their respective examples.

(20 markah/marks)