

**LIBRARY USE****La Trobe University****Semester Two/Annual Examination Period****2006**Student ID:        Seat Number:   

Unit Code: ELE12EDP

Unit Name: Electronic Engineering Design Project

Paper No: 1

Paper Name: Electronic Engineering Design Project

Reading Time: 15 minutes

Writing Time: 2 hours

Examination Date: 3 Nov 2006 Examination Start Time: 09:00

No. of pages (including cover sheet): 7

**ALLOWABLE MATERIALS****AND****INSTRUCTIONS TO CANDIDATES**

- 1) No support material allowed.
- 2) Only non-programmable calculators allowed.
- 3) Write neatly. Clearly separate your answers to the questions.
- 4) Hand in the entire examination paper with the script books.

**Section A**

- 5) Answer **all questions** in the Section A script book provided. Allow 1 hour for this section.

**Section B**

- 6) Answer **all questions** in the Section B script book provided. Allow 30 minutes for this section.

**Section C**

- 7) Students should answer **ONE** topic from question 28 in the Section C script book. Allow 30 minutes for this section.

**This paper MUST NOT BE REMOVED from the examination venue**

## Section A

**Answer all questions in this section, in the Section A script book.**

**Allow 1 hour for this section.**

### **Question 1.**

In project management, briefly outline the three (3) parameters that define the project, including their purpose in the management of the project.

### **Question 2.**

Identify three (3) of the skills/characteristics required by effective project managers. Briefly explain why these are necessary.

### **Question 3.**

Draw a cross-section of a single-layer thru-hole PCB, including:

- (a) Substrate.
- (b) Component.
- (c) Pin.
- (d) Track.
- (e) Thru-hole.
- (f) Pad.
- (g) Solder.

### **Question 4.**

- (a) Sketch a crossover.
- (b) Draw a four-way junction so that it cannot be confused with a crossover.
- (c) What is the international standard letter code for a digital device?
- (d) Draw the modern symbol for a 3-input AND gate. (*Hint: it is rectangular.*)

### **Question 5.**

- (a) Describe how a Surface Mount (SMT) component is mounted.
- (b) Do PCBs manufactured using the Solder Mask Over Bare Copper (SMOBC) technique have any advantages for SMT assembly? Explain.

**Question 6.**

- (a) For leaded assembly, is it the best practice to cut the lead of the component before soldering, after soldering, or does that not matter? Give the reason for your answer.
  
- (b) What is the MAIN reason that temperature controlled soldering irons are used in production?

**SECTION B**

**Engineering Management**

Allow **30 minutes** for this section Questions 7-27 (21 questions).

Answer all questions in the **Section B** script book

We have studied the conventions of formal report writing including tone and aspects of style.

Given these formalities, proofread and improve the following examples of students' writing.

Where necessary, replace errors with more suitable words.

**Question 7.**

The team played well but they could not win the match.

**Question 8.**

The work was divided between he and I.

**Question 9.**

That is the man who I supported.

**Question 10.**

From (who, whom) will I receive the advice?

**Question 11.**

Each policeman carried their weapon in their hand.

**Question 12.**

There were many in number who had a quite unique dancing style,

**Question 13.**

A large amount of people sat for the exam

**Question 14.**

It's common knowledge that engineers can't spell.

**Question 15.**

Give me a ball park figure for the new equipment.

**Question 16.**

The engineer only supervises the project on Friday.

**Question 17.**

Due to the fact that he crashed, the driver sustained a great amount of injury.

**Question 18.**

He was the best player of the two.

**Question 19.**

I feel that Edison was an inspiration to his employees.

**Question 20.**

Students shouldn't use contractions.

**Question 21.**

It's obvious who's the winner of the race

**Question 22.**

40 passengers were placed in 5 boats

**Question 23.**

affect / effect

- (a) The way you play will .....the result
- (b) What .....will the new law have on us?

**Question 24.**

accept / except

- (a) No one .....you will be attending
- (b) He was asked to ..... the position

**Question 25.**

advise / advice

I .....you to follow your teacher's .....

**Question 26.**

Mr. Jones and myself attended the meeting

**Question 27.**

At this point in time we have a window of opportunity to win the election.

## **SECTION C**

### **Engineering in Society**

Students should answer **ONE** of the topics in Question 28.

Answer question in the **Section C** script book

**Allow 30 minutes for this section.**

#### **Question 28.**

Write a report of approximately 600 words on **ONE** of the following topics:

- (a) Write a report discussing whether you would work for **Thomas Edison** during the invention of the light bulb. Support your argument by referring to the major steps in the process of invention that led to the light bulb, including key dates.

**OR**

- (b) Write a report discussing whether **Guglielmo Marconi** is the true inventor of radio. If not, who is? Justify your answer. You may wish to start with a statement of what constitutes an invention, and also refer to other inventors and their inventions including references to actual events and key dates.

**OR**

- (c) **Sir John Monash** was, by training, an engineer, and he also had a military background. **Admiral Grace Murray Hopper** was a computer scientist, also with a military background. Write a report comparing and contrasting the careers of these people, including references to actual events and key dates.

**OR**

- (d) **Nikola Tesla and Thomas Edison** fought the “battle of the phases” or “the battle of the currents”. Write a report on the ethics of this struggle, including references to actual events and key dates.