

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF TECHNICAL TEACHER EDUCATION

Programme: BACHELOR OF EDUCATION HONOURS DEGREE

GENERAL EXAMINATION

SUBJECT: MICROPROCESSORS
Part/year: III
Time: 3 hours

CODE: TTE 3252
May 2010
100 marks

Instructions to candidate:

1. Answer any four questions. Paper contains five questions.
 2. All programming questions to be answered in Assembly Language
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QUESTION ONE

- a) Draw a block diagram of a structure of the 16F628 PIC microcontroller. [10]
- b) An electronic engineer wants to connect 16 light emitting diodes LEDs using a PIC 16F628 draw a diagram for him/her indicating how he/she can go about it [15]

QUESTION TWO

Using the 16F628 microcontroller as the microprocessor of choice perform the following tasks

- a) Explain with the aid of a diagram the concept SINK current. [7]
- b) Explain with the aid of a diagram the concept SOURCE current. [7]
- c) Expand on the following
 - i) TRISA and TRISB [5]
 - ii) PORTA and PORTB [5]
 - iii) INT [1]

QUESTION THREE

Given the following program code explain in detail what the program does.

[25]

```
LIST    p=16F628
        include "P16F628.inc"
        __config 0x3D18

        org      0x0000

        movlw   0x07
        movwf   CMCON

        bsf     STATUS, RP0
        movlw   b'00000000'
        movwf   TRISB
        movwf   TRISA
        bcf     STATUS, RP0

        movlw   0xff
        movwf   PORTA
        movwf   PORTB
        nop
        nop
        movlw   0x00
        movwf   PORTA
        movwf   PORTB
        goto    Loop

        end
```

QUESTION FOUR

Write a simple program in Assembly language which switches all output pins of a 16F628 PIC processor to high. Your program should show all the programming sequence steps necessary for setting up the processor.

[25]

QUESTION FIVE

Assuming you have been invited to a conference on microprocessors and you are to deliver a paper. The title of the paper is “**The Impact of Microprocessors on Modern Day Life**” write a detailed synopsis of the paper you might deliver.

[25]

END OF EXAMINATION