

القسم : التحكم الآلي / الحاسب أسئلة الامتحان النهائي لمادة : حاكمات دقيقة
 لطلبة الفصل : السادس / الإستدراكي رمز المادة : CT341 التاريخ : 2018 / 2 / 7

عربي

كلية التقنية الالكترونية
 College of Electronic Technology - Tripoli



الزمن : ساعتان
 المجموعة :

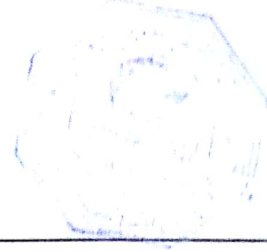
إسم الأستاذ: م. عبدالباسط المشاط عاشور
 رقم القيد :

الفصل الدراسي : خريف 2017

إسم الطالب :

Important Notes:

- This paper contains **FIVE** questions in **FIVE** pages.
- Attempt **ALL** questions.
- Total time allowed **TWO HOURS**.
- Total Marks: **40**
- Enhance your answers with proper sketches whenever applicable.



Q.1 Multiple Choice Questions (MCQ):

1 Mark each

- The number of Arduino Uno analog outputs is
 6.
 7.
 8.
 9.
- ISR is
 - a special code segment executed if triggered by certain event.
 - a special sensor known as Infra Red Sensor.
 - a special Arduino extra hardware known as shield.
 - None of the above.
- To generate a 980 Hz PWM signal, we use
 - digitalWrite(6, HIGH).
 - digitalWrite(3, 980) .
 - analogWrite (6, 128).
 - analogWrite(3,980).
- RS-232 is an example of
 - parallel data transmission.
 - asynchronous serial data transmission.
 - synchronous serial data transmission.
 - data storage device.
- RAM size of ATmega328 Microcontroller is
 - 512 byte.
 - 1024 byte.
 - 2048 byte.
 - None of the above.



6. Which of the following is a source of external interrupt?
- a. Timer2. ()
 - b. EEPROM. ()
 - c. Digital pin 2. ()
 - d. Serial ports. ()

For the following, defend your choice with good reason(s): **2 Marks each**

7. _____ is an example of an analog input device
- a. L293D-based H-bridge. ()
 - b. Toggle switch. ()
 - c. Flex sensor. ()
 - d. IR transmitter diode. ()

Reason:

.....

.....

8. **Parity Bit** is used as
- a. basic error detection technique. ()
 - b. advanced error detection technique. ()
 - c. basic error correction technique. ()
 - d. advanced error detection and correction technique. ()

Reason:

.....

.....

(10 Marks)

Q.2 Write short hands on the following:

(6 Marks)

- Inter-Integrated Circuit transmission technique.
- Controlling stepper motor in full step sequence.

Q.3 Explain with examples the purpose of the following Arduino functions:

(8 Marks)

- millis().
- SPI.setClockDivider().
- attachInterrupt().
- analogRead().

(8 Marks)

Q.4 Correct any possible errors in the following:

a)

```
1. #include <LCD.h>
2. LiquidCrystal_I2C lcd(0x27,16,2);
3. void setup( )
4. {
5. lcd.initialize();
6. }
7. void loop()
8. {
9. lcd.setCursor(0,0);
10. lcd.print("CT341Final Exam");
11. lcd.setCursor(2,4);
12. lcd.print("Good luck!");
```

	Error	Reason	Correct form
1.			
2.			
3.			
4.			

b)

```
1. #include <Servo.h>
2. YourServo Servo1;
3. int Servo = 2;
4. int pos = 0;
5. int SPos = 0;
6. int EPos = 200;
7. void setup( ) {
8. YourServo1.attach(Servo); }
9. void loop( ) {
10. for (pos = EPos; pos >= SPos; pos -= 1) {
11. YourServo1.write(pos);
12. delay(15); }
13. }
```

Q.5 A grocery shop moving text display system is to be designed using Arduino Uno board.
The intended system has the following features:

- It displays shop name in the first row of an LCD.
- It displays contact number in the second line.
- Shop name text direction can be toggled on key press.

Hints:

- For shop name use your surname.
- For contact number use your student ID.
- The default text direction is right to left.

Carry out the following tasks:

- a) Draw the system block diagram with proper labels and pin numbers.
- b) Write a sketch for this system.

(8 Marks)

END OF QUESTIONS



Important Notes:

- This paper contains **FOUR** questions in **FOUR** pages.
- Attempt **ALL** questions.
- Total time allowed **TWO HOURS**. Total Marks: 40
- Enhance your answers with proper sketches whenever applicable.

Q.1 Multiple Choice Questions (MCQ):

2 Marks each

Defend your choice with good reason(s). Choices without valid reason(s) will be ignored.

1. To turn on the built-in LED connected to Arduino Uno pin 13, we
- make ATMEGA328 PORTA = 0b00100000. ()
 - make ATMEGA328 PORTB = 0b00100000. ()
 - make ATMEGA328 PORTC = 0b00100000. ()
 - make ATMEGA328 PORTD = 0b00100000. ()

Reason(s):

2. The sampling rate of ADC of ATmega328 is
- 5 KHz with 8 bit resolution. ()
 - 15 KHz with 10 bit resolution. ()
 - 16 MHz with 8 bit resolution. ()
 - 20 MHz with 10 bit resolution. ()

Reason(s):

3. *SoftwareSerial* library is used to create
- serial UART ports. ()
 - serial I²C bus. ()
 - serial SPI bus. ()
 - None of the above. ()

Reason(s):

4. To on an LED connected to port B pin 2 of ATmega328 with half brightness, we use
- digitalWrite(2, HIGH). ()
 - analogWrite(2, 128). ()
 - digitalWrite(10, HIGH). ()
 - analogWrite(10, 128). ()

Reason(s):



5. To produce a pulse train with equal time for high and low, we may use
- a. pulseIn(). ()
 - b. millis(). ()
 - c. tone(). ()
 - d. None of the above. ()

Reason(s):

.....

(10 Marks)

Q.2 Using the international Morse code table shown in figure 1, write a sketch to generate a Morse-coded signal representing the message "CET". Note that:

- The length of a dot is one unit.
- The length of a dash is three units.
- The space between parts of the same letter is one unit.
- The space between letters is three units.

A	• —	U	• • —
B	— • • •	V	• • • —
C	— • — •	W	• — —
D	— • •	X	— • • —
E	•	Y	— • — —
F	• • — •	Z	— — • •
G	— — — •		
H	• • • •		
I	• •		
J	• — — —		
K	— • —	1	• — — — —
L	• — • •	2	• • — — —
M	— —	3	• • • — —
N	— •	4	• • • • —
O	— — — —	5	• • • • •
P	• — — •	6	— • • • •
Q	— — — • —	7	— — • • •
R	• — •	8	— — — • •
S	• • •	9	— — — — •
T	—	0	— — — — —

Fig. (1) International Morse Code.

(6 Marks)

