University of Salahadin Engineering College Electrical Engineering Dept.

Name:

Second Term Examinations 2016-2017

Fourth Year: E/C, GEN. & POWER

Subject: Embedded Sys. & MCUs

Duration: 90 Minutes Lecturer: Ahmed Kh.

Group:

1) To read analog input from the physical world using a potentiometer, the
a) Digital read serial c) Analog write serial d) Digital write serial 2) The Arduino and Genuino boards have a circuit inside called an
2) The Arduino and Genuino boards have a circuit inside called an
and converts it to a number between
c) Analog-to-digital converter or ADC, 0 and 1023 d) ICSP circuit, 0 and 1020. 3) The command used for reading the output signal from the potentiometer is
3) The command used for reading the output signal from the potentiometer is
a) analogRead() b) digitalWrite() c) AnalogRead() d) DigitalWrite() 4) To begin serial communications between your board and your computer, you can use the
4) To begin serial communications between your board and your computer, you can use the
Command. a) serial.Begin(9600); b) Serial.println(9600); c) Serial.Println(9600); d) Serial.begin(9600); 5) GPIO stands for, and it can be used as digital input or output. a) Great Portion input/output. b) General Protection input/output. c) General Purpose input/output. d) General port inter operational 6) ICSP stands for and it is a protocol used to program micro controllers like the PIC and the AVR chips. a) In-Circuit Serial Programming b) Interface Serial Programming. c) Internal Serial Programming. d) Integrated Standard Programming. 7) The built-in LED is connected to Arduino pin 13, and it can be used for a) Blinking. b) Diagnosting. c) Troubleshooting d) None of above. 8) The Arduino Programs are called
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0.71
9) The built-in pullup resistors are accessed by setting the
a) digitalWrite() as INPUT_PULLUP b) PinMode() as OUTPUT_PULLUP
c) analogWrite() as INPUT_PULLDOWN d) pinMode() as INPUT_PULLUP
10) When connecting a sensor to a pin configured with INPUT_PULLUP, the other end should be connected to
a) 10 KOHM Resistor. b) Ground
c) Arduino pin 12. d) None of above
11) There are two special functions that are a part of every Arduino program a) main(). b) setup() and loop().
a) main(). c) setup(). d) loop().

12) reads the value from a spec	ified digital pin, either HIGH or LOW.
a) DigitalRead()	b) digitalRead();
c) Serial.Begin();	d) DigitalWrite();
13) If a voltage of 3.1 volts is sensed at a digital inp value of	ut on the Arduino, then the digitalRead() command will return a
a) High	b) Low
c) Ambiguous.	d) Floating
14) The pin can be madewith	This will enable the internal 20K pullup resistors
a) LOW, Digitalwrite()	b) HIGH, DigitalWrite().
c) TRUE, DigitalWrite().	d) HIGH, digitalWrite().
15) A pin may also be configured as anwit	th command.
a) HIGH or LOW, PinMode().	b) TRUE or FALSE, pinMode().
c) INPUT or OUTPUT, pinMode().	d) PULLUP or PULLDOWN, pinMode().

Q2 [40 MARKS]/ Design an embedded system to control the speed of a small PMDC motor using the potentiometer output. The design should include the schematic diagram and the code.

Q3 [30 MARKS]/ Write the sketch code for the schematic diagram shown below if you know that it is an embedded system that designed to control the Fan (M1) with the help of BJT transistor (T1). When the base of the transistor is fired, the fan start to rotate (ON) and when the base is not fired the motor is (OFF). The (ON) and (OFF) times are 2 seconds and 3 seconds respectively.

