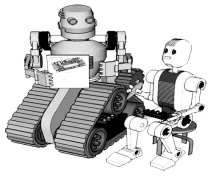
Quiz 12/04/2008 BCHS Advanced Computer Programming Introduction to Robotics 4th Period 2008-2009	NAME _____ SCORE ____



Instructions: Mark your answers on test and the answer sheet.
Turn in only the answer sheet. `CORRECT =+1;  BLANK -= 1;  INCORRECT -= 2;`

True and False

1. Each program can have only one **main()**.
2. If you clap your hands people hear it because air near their ears travels to your hands.
3. **C018** is executed first.
4. **#define X 123** replaces all occurrences of **123** with **X**
5. Functions are uniquely identified by their name.
6. A function parameter list is the data declarations for the data returned by a function.
7. A **#include <*filename.h*>** will look for ***filename.h*** in your project directory.
8. **void** is a not a data type.
9. The bitwise compliment is the same as a 1's compliment.
10. ~0x5A == 0xA5
11. Human hearing is limited to frequencies between about 30Hz and 30,000 Hz

Best Choice Matching - Regarding the MPLAB IDE

12. View machine code generated by compiler
13. View variables with a global scope
14. View variables defined in current procedure
15. View output from processor pins
16. View output from compiler and other tools

A) Watch Window

B) Output Window

C) Logic Analyzer Window

D) Disassembly Listing Window

E) Locals Window

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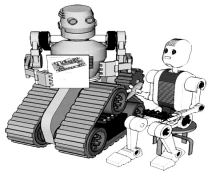


Best Answer Multiple Choice

On any question you may answer E for none of the above.

17. The **char** prior to **main()**
    A) is wrong because main always returns void on a uC
    B) indicates that main will return a character
    C) is used only when the procedure is named main.

```
char main(void)
```

18. The function signature consists of the
    A) return type and function name
    B) function name
    C) function name and parameter list
    D) return type, function name, and parameter list

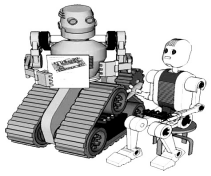
19. Which of the following did we use to determine the duration of a sound?
    A) duration = cycles * halfFrequency
    B) duration = cycles * halfPeriod
    C) duration = cycles * frequency
    D) duration = cycles * period

20. To decrease the duration of a tone without changing the pitch.
    A) Increase the delay between switching the port bit from on to off
    B) Decrease the delay between switching the port bit from on to off
    C) Decrease the number of cycles
    D) Increase the halfPeriod

21. To increase the frequency of a tone
    A) Decrease the period C) Increase the number of cycles
    B) Increase the period D) Decrease the number of cycles

22. The delay between turning the port on and off is
    A) The period C) One half the frequency
    B) The frequency D) One half the period

23. With PWM what is the duty cycle?
    A) The time the signal is high in seconds.
    B) The percentage of time the signal is low during each cycle
    C) The percentage of time the signal is high during each cycle



24. **#pragma** config
    A) Tells the compiler how to configure the chip
    B) Tells the compiler what chip is used
    C) Tells the compiler how to configure data

25. What file type **18F1320.lkr** is
    A) Header file B) Include file C) linker command file

26. The code that executes prior to any code we write sets up the data needed by our program. The name of that that code is.
    A) main B) Init C) Preamble

27. With 4 signals/pins you can charlieplex
    A) 4 LEDs B) 6 LEDs C) 8 LEDs D) 12 LEDs

28. Which of the following regarding frequency and period are true.

    A) f = 1*p B) f = L*p C) f = (1/p) D) f = (f/p)

29. Which is true
    A) halfPeriod = duration / cycles
    B) period = duration / cycles
    C) frequency = duration / cycles

30. #define is used to do
    A) variable declaration
    B) text substitution
    C) complex variables

31. A char ranges from
    A) 0..255 B) 0..256, C) -127..128 D) -128..127

32. An unsigned char ranges from
    A) 0..255 B) 0..256, C) -127..128 D) -128..127

33. The ! character is what operator
    A) Logical Not B) Bitwise Not C) Modulo operator

34. The ~ character is what operator
    A) Logical Not B) Bitwise Not C) Modulo operator

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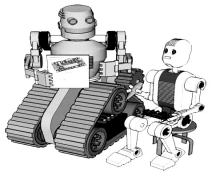

These questions are in regards to code on page 6.

35. Error in line 1.
    A) Syntax error in parameter list
    B) Missing parameter list
    C) Missing return type
    D) Illegal function name

36. Line 3 should be
    A) `for(d=delay; d<0; d++)`
    B) `for(d=delay; d>0; d--)`
    C) `for(d=delay; d>1; d++)`
    D) `for(d=delay; d<1; d--)`

37. The correct version of line 5 is
    A) `Nop(); Nop();`
    B) `Nop;  Nop;`
    C) `Nop()  Nop();`

38. If line 5 only had one Nop it would cut the delay generated for a given delay by ½.
    A) True
    B) False
    C) It depends on the value of delay

39. `Line 7`
    A) is correct
    B) the } is unneeded
    C) we can not tell

40. Which version of line 9 would be the best choice
    A) char cycles;
    B) unsigned char cycles;
    C) int cycles;
    D) unsigned int cycles;

41. The correct version of line 10 is
    A) `TRISA = 0xFB;`
    B) `TRISA = 0xFD;`
    C) `TRISA = 0xFE;`
    D) `TRISA = 0xFF;`

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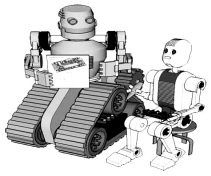


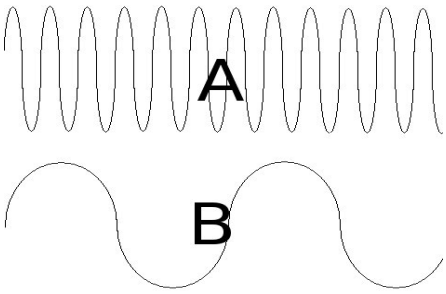
42. The correct version of line 11 is
```
A) for(cycles=0; cycles>MAX_CYCLES; cycles++)
B) for(cycles=0; cycles>MAX_CYCLES; cycles--)
C) for(cycles=0; cycles<MAX_CYCLES; cycles++)
D) for(cycles=0; cycles<MAX_CYCLES; cycles--)
```

43. The correct version of line 13 is
```
A) LATA=0x00;
B) LATA=0x01;
C) LATA=0x02;
D) LATA=0X04;
```

44. The correct version of line 14 is
```
A) myDelay(HALF_PERIOD);
B) myDelay(HALF_PERIOD*2);
C) myDelay(HALF_PERIOD/2);
```

45. The correct version of line 15 is
```
A) LATA=0x00;
B) LATA=0x01;
C) LATA=0x02;
D) A or B but not C
```

46. The correct version on line 16 is
```
A) blank, just as it is in the code
B) myDelay(HALF_PERIOD);
C) TRISA = 0x00;
D) myDelay(HALF_PERIOD*2);
```



47.Which has the greater period

48.Which has the greater frequency

49.which has the greater duration

50.My grade will be (no points off for a wrong guess)
A) 0..9 B) 10..19 C) 20..29 D) 30..39 E) 40..50

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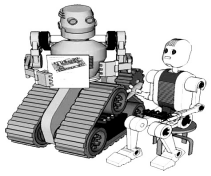

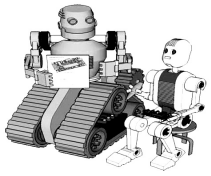

51.

```
// Make a sound then rest for an equal period, repeat
// Speaker is connected to RA0
...
#DEFINE MAX_CYCLES 1000
#DEFINE HALF_PERIOD 30


 1 myDelay(unsigned char delay)
 2 {
 3   for(d=delay; d>0; d++)
 4   {
 5     Nop; Nop;
 6   }
 7  }


...


 8  {
 9    char cycles;
 10   TRISA = 0xFF;
 11   for(cycles=0; cycles>MAX_CYCLES; cycles++)
 12   {
 13     LATA=0x01;  // on
 14     myDelay(HALF_PERIOD);
 15     LATA=0x00;  // odd
 16
 17  }
 18 }
```

For questions 35 to 46
The code in the above box has several flaws. In each of the remaining questions you will be asked to make a choice. Some questions pertain to simple syntax while others require you to understand how we make sounds using the micro controller.