**Question Bank**

1.Which one of the microcontroller is used in Arduino UNO?  
ATmega328p  
ATmega2560  
ATmega32114  
AT91SAM3x8E

Answer: a

2.What does p refer to in ATmega328p?  
Production of power  
Pico-Power consumption  
Power generation  
Programmable on chip

Answer: b

3.A program written with the IDE for Arduino is called \_\_\_\_\_\_\_\_\_  
IDE source  
Sketch  
Image  
Source code

Answer: b

4. Arduino IDE sketch editor consists of 2 functions. What are they?  
Build() and loop()  
Setup() and build()  
Setup() and loop()  
Loop() and build() and setup()

Answer: c

5. How many digital pins are there on the UNO board?  
14  
12  
16  
20

Answer: a

6. If WDTCR register of AVR working on 5V, is programed with 0x0B, after what time, the watchdog timer times out

130ms

260ms

65ms

520ms

Answer: a

7. For Arduino the Oscillator used for generation of clock signal is:

Crystal Oscillator

RC Oscillator

Phase Shift Oscillator

Wien Bridge oscillator

Answer: a

8. ATmega328p CPU core consist of how many general purpose registers?

32 X 8 bit

30 X 16bit

40 X 8bit

32 X16 bit

Answer: a

9. In ATmega328p Status register I denote:

Copy Storage

Half Carry Flag

Negative Flag

Global Interrupt Enable

Answer: d

10.Which signal is used to select the slave In the serial peripheral interfacing how you can you select as slave?  
By applying 1 on slave select pin  
By applying 1 on master select pin  
By applying 0 on slave select pin   
Using clock signal with less frequency

Answer: c

11. The address of the next instruction to be executed by the current process is provided by the  
CPU registers

Program counter

Process stack

Pipe

**Answer:** **b**

12. To break the normal sequence of program and execute another program is called:

Control unit

Execution unit

ISR

Counting unit

**Answer:** **c**

13. A 13- bit program counter can execute a maximum of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_memory locations.

8 Megabyte

8 Kilobyte

16Kilobyte

64 Megabyte

**Answer:** **b**

14. Which one of the following do not offers CPUs with integrated memory or peripherals?  
Microcontroller

Microprocessor  
DSP processor

Memory system

**Answer:** **b**

15.The Number of timers/counter registers used inATmega328p are:

6

1

4

3

**Answer:** **d**

16. In TIMER/COUNTER-1 clock select bit 0 1 0 indicates:

No clock source

clk/1

clk/8

clk/64

**Answer:** **c**

17. Choose the External Interrupt in ATmega328p from the following:

INT1

EE\_READY

ANA\_COMP

TIMER\_OVF

**Answer:** **a**

18. When Atmega328p wakes up, then the value of PC becomes?  
00H

000H

0000H

00000H

**Answer:** **c**

19. In ATMEGA 328p microcontroller out of 32 KB Flash Memory how much is use for Bootloader?

3kb

0.5kb

5kb

10kb

**Answer:** **b**

20.In ATMEGA 328p which general purpose register is use for indirect addressing mode?

A

B

X

M

**Answer:** **c**

21.Which of the following memories has more speed in accessing data?

SRAM

DRAM

EPROM

EEPROM

**Answer:** **a**

22. SPI uses how many lines to transfer the data?  
4 lines  
1 line  
3 lines  
2 lines

**Answer:** **d**

23. Which allows the full duplex synchronous communication between the master and the slave?  
SPI  
serial port  
I2C  
parallel port

**Answer:** **a**

24. Which of the following is not a serial protocol?

SPI

I2C

Serial port

RS232

**Answer:** **d**

25. Which of the following have an asynchronous data transmission?

SPI

RS232

Parallel port

I2C

Answer: b

26.Which loop is guaranteed to execute at least one time.  
for  
while  
dowhile  
None of the above

Ans C

27. C program is a combination of?

Statements

Functions

Variables

All of the above

Ans: d

28. Loops in c language are implemented using?

while block

for block

do while block

All the above

Ans: D

29. What is the way to suddenly come out of or Quit any Loop in C Language?

continue; statement

break; statement

leave; statement

quit; statement

Ans: B

30. Which keyword can be used for coming out of recursion?

return

break

exit

both A and B

Ans : A

31.Which company developed I2C?

Intel

Motorola

Phillips

IBM

Answer: c

32. Two wire interface is also called as \_\_\_\_\_\_\_\_\_

UART

SPI

I2C

USART

Answer: c

33. Inter Integrated Circuit is a \_\_\_\_\_\_\_\_\_\_\_\_\_

Single master, single slave

Multi master, single slave

Single master, multi slave

Multi master, multi slave

Answer: d

34. In I2C typical voltages used are \_\_\_\_\_\_\_\_\_\_\_

5V and 90V

3.3V and 29V

5V or 3.3V

2.5Vand 40V

Answer: c

35. In I2C if 128 devices are connected then addressing bit use is:

7 bit

1bit

2bit

3bit

Answer: a

36. In I2C if 1024 devices are connected then addressing bit use is:

10 bit

7bit

5bit

6bit

Answer: a

37. SPI device communicates in \_\_\_\_\_\_\_\_\_

Simplex

Half duplex

Full duplex

Both half and full duplex

Answer: c

38.How many logic signals are there in SPI?

5 signals

6 signals

4 signals

7 signals

Answer: a or c

39.The RS232 is also known as

UART

SPI

Physical interface

Electrical interface

Answer: d

40.Which lines are utilized during the enable state of hardware flow control in DTE and DCE devices of RS232?

CD & IR

DSR & DTR

RTS & CTS

None of the above

Answer: c

41.Which component is in the ADC :

Comparator

Integrator

Adder

Multiplier

Answer: a

42.Which of the following is correct about LM35 based sensors?

its output voltage is directly proportional to the Celsius scale  
its output voltage is directly proportional to the Fahrenheit scale  
none of the mentioned  
all of the mentioned

Ans: A

43.Which bit of the UCSRA is used for doubling the baud rate of the transmission?

DOR  
PE  
U2X  
MPCM

Ans: C

44. In a ADC the input is \_\_\_\_\_\_ and the output is \_\_\_\_\_\_

analog,digital  
current,voltage  
digital,analog  
analog, current

Ans: A

45. Electric motor protection has which sensor?

Pressure sensor  
Touch sensor  
Temperature sensor  
Humidity sensor

Ans: C

46. Why are the pulse width modulated outputs required in most of the application?

To control average value of an input variables

To control average value of an output variables

Both A and B

None of the above

Ans: B

47. How do the variations in the average value get affected by PWM period?

Longer the PWM period, faster will be the variation in an average value

Shorter the PWM period, faster will be the variation in an average value  
Shorter the PWM period, slower will be the variation in an average value  
Longer the PWM period, slower will be the variation in an average value

Ans: B

An analog signal carries 2 bits in each signal unit. If 1000 signal units are sent per second, then baud rate and bit rate of the signal will be respectively.  
4000 bauds \ sec & 1000 bps  
2000 bauds \ sec & 2000 bps  
1000 bauds \ sec & 500 bps  
1000 bauds \ sec & 2000 bps

Ans: C

48. For each of the statement below assuming y=20 before of the statement, what are the values of x after execution.

(i)      x=y==y--;

(ii)    x=5\*y++

 For (i) y-- gives 20 then decreases the value of y to 19. So y==y-- is false and gives 0 which is assigned to x. Therefore value of x is 1.

For (ii) y++ gives 20 which is multiplied by 5 and assigned to x. Therefore value of x is 100.

Secure digital card application uses which protocol?

UART  
SPI  
I2C  
USART

Ans: B

49. What is the use of the prescalar in the operation of the timer?

for fast calculations  
for increasing the time delay given by the timer by decreasing its frequency of operation  
for removing the concept the reloading of count  
for easy counter operations

Ans: b

50. Which of the following are the registers that are used for controlling the ADC conversion in the AVR?

ADCSRA  
ADMUX  
SPIOR  
All of the mentioned

Ans: D

51. What is the internal Vref of an Atmega328 p?  
2.1V

1.2V  
1.1V  
2.2 V

Ans: c

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for removing the concept the reloading of count  
for easy counter operations

Ans: b

53. With fosc=16 MHz, what will the count that has to filled in the UBRR register to account for the 9600 baud rate?

101H  
103 H

A3H  
A1H

Ans: B

54.The size of signed char and Unsigned char

-128 to +127, 0 to 255

0 to 255, -128 to +127

-128 to -1, 0 to +127

0 to +127, -128 to -1

55. The most significant bit with 1 in a signed number represent

Positive number

Negative number

Even Number

Odd Number

56. Which is not correct?

Keywords can use for user variable or function names.

Short is qualifier and int is a basic data types

Size of an int data types depends on the system/compiler

None of the above

57. Which is correct with respect to the size of data types?

char>int> float

int>char>float

float>char>int

float>int>char

58. The keyword……… is used to transfer control from a function back to the calling function.

switch

back

return

go back

59. A function, which calls itself is called a

Self function

Auto function

Recursive function

Dynamic function

60. How many values can a C function return at a time?

One value

Maximum 8 values

Maximum 16 values

Maximum 64 values

61. What will be the output of the program?

Void main (void)

{

int r;

int s=0, t=1, u=2;

r=s++||t++||u++;

printf (“%d, %d, %d, %d”,r, s,t,u);

}

1,1,2,3

0,1,2,3

1,1,2,2

0,1,2,3

62.What will be the output

void main()

{

Int m= 12;

m=! m >10;

printf (“m=%d”,m);

}

12

0

1

14

63. Which of the following is correct for the operator ++ ?

It is binary operator

It can be applied to an expression

It cannot be applied to an expression

All are correct.

64. Void main()

{

int a=0x23;

int b=0x35;

if (a&&b)

{

printf (“EXAM”);

}

}

Exam will be printed

Exam will not be printed

Compile error

Nothing will be printed

65. Void main ()

{

int a=-5;

printf (“%x”, a<<4);

}

0xFFFB

0xFFFA

0xFAFB

0xDAFA

66. void main ()

{

int a=10, b=11, c=13, d;

d= (a=c, b+=a, c=a+b+c);

printf (“%d, %d,%d”, d,a,b,c);

}

50,13,24,50

50,13,11,13

50,12,14,50

13,24,24,12

67. Which function executes first when a sketch is built?

loop()

setup()

init()

delay()

68. Select the function that you can use to detect a button press on the Arduino

buttonRead()

buttonPress()

analogRead()

digitalRead()

69.What is the size of a C structure?

C structure is always 128 bytes.

Size of C structure is the total bytes of all elements of structure.

Size of C structure is the size of largest element.

None of the above

70.Choose a correct statement about C structure elements?

Structure elements are stored on random free memory locations

Structure elements are stored in register memory locations

Structure elements are stored in contiguous memory locations

None of the above

71. What is actually passed if you pass a structure variable to a function?

Copy of structure variable

Reference of structure variable

Starting address of structure variable

Ending address of structure variable

72. The size of a union is determined by the size of the \_\_\_\_\_\_\_\_\_\_  
First member in the union  
Last member in the union  
Biggest member in the union  
Sum of the sizes of all members

73. What is the similarity between a structure, union and enumeration?

All of them let you define new values

All of them let you define new data types

All of them let you define new pointers

All of them let you define new structures

74. Which compiling option is used to compile programs to form part of a library?

-c

-p

-f

-g

75. Among unary operation which operator represents increment?

(A) --

(B) ++

(C) -

(D) !

Answer –(B)

76.Which of the following is an advantage of SPI?  
a)No start and stop bits  
b)Use 4 wires  
c)Allows for single master  
d) Error checking is not present

Answer –(A)

77. What is the directional nature of four active wires MOSI,MISO,SCK & SS’ usually adopted in SPI Bus for carrying the information between the devices ?  
a.Uni-directional  
b.Bi-directional  
c.Multi-directional  
d. None of the above

Answer –(B)

78.Which of the following can be used for long distance communication?  
a)I2C  
b)Parallel port  
c)SPI  
d) RS232

Answer –(D)

79.What is the name for the library to manipulate the data in and out of the EEPROM of the arduino board.

EEPROM.h

eeprom.h

Eeprom.h

eepROM.h

Answer- EEPROM.h

80.Which interface does SD.h depend on for communication between SD card module and the arduino

SPI

I2C

USB

TTL

Answer-SPI

81.The Arduino Diecimila has 14 Digital I/O Pins of which \_\_ pins can provide PWM output.  
a)6  
b)4  
c)1  
d) 8

Answer- a

82.Why are the pulse width modulated outputs required in most of the applications?  
a.To control average value of an input variables  
b.To control average value of output variables  
c.Both a & b  
d. None of the above

Answer- b. To control average value of output variables

83. On reset, what are the contents of the SREG register?

00h

ffh

1fh

11h

ANS- a) 00h

84.TIMSK register is used for? knowing the status of the timer count

used for masking the interrupts flags of the Timer0, Timer1 and Timer2

it is used for enabling all the timer interrupts

it is used for resetting the value of the interrupts

ANS-b) used for masking the interrupts flags of the Timer0, Timer1 and Timer2

85.Which of the timer can operate in the 16 bit condition?

timer0

timer1 timer2

all of the mentioned

ANS- b) timer1

86. What is the difference in the operation of a normal and a CTC mode of a timer?

in CTC mode PWM is used here serial timer is monitored

in CTC mode, timer counts up until contents of TCNT register becomes equal to the contents of OCR none of the mentioned

ANS- c) in CTC mode, timer counts up until contents of TCNT register becomes equal to the contents of OCR

1. What will happen in that condition, if an interrupt occurs while the microcontroller is serving any other interrupt?

both the interrupts will be handled simultaneously

the interrupt which is being done first will be served first

the interrupt that is more priority in the interrupt vector table will be served first

the interrupt having low priority in the interrupt vector table will be served first

ANS- c) the interrupt that is more priority in the interrupt vector table will be served first

1. What is instruction is required to return from an Interrupt?

RETI IRET ENDI IEND

ANS- a) RETI

1. Which bits need to be set for a Timer/Counter 1 Overflow interrupt to be triggered?

SREG I and TOIE1

SREG I and TOV1

TOIE1 and TOV1

SREG I, TOIE1 and TOV1

ANS- d) SREG I, TOIE1 and TOV1

90.When an interrupt is triggered, what register is placed on the stack?

PC

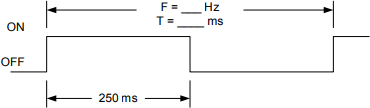
IVT

ISR

SREG

ANS- a) PC

91.What is the frequency, period, and duty cycle of the following waveform.

 F = 1 Hz, T = 250 ms, duty cycle = 50%

F = 1 Hz, T = 500 ms, duty cycle= 100%

F = 2 Hz, T = 500 ms, duty cycle = 50%

F = 2 Hz, T = 250 ms, duty cycle = 100%

ANS- c) F = 2 Hz, T = 500 ms, duty cycle = 50%

92. Which of the following can periodically trigger the context switch?

software interrupt

hardware interrupt

peripheral memory

ANS-b) hardware interrupt

1. What is the use of the prescalar in the operation of the timer?

for fast calculations

for increasing the time delay given by the timer by decreasing its frequency of operation for removing the concept the reloading of count

for easy counter operations

ANS- b) for increasing the time delay given by the timer by decreasing its frequency of operation

94.In ATMEGA328, which of the following registers are not used for programming timers?

TCNT

TCON TIFR

None of the mentioned

ANS- b) TCON

1. What triggers a Timer/Counter 1 Overflow Interrupt?

Counter goes from 0xF1 to 0x00

Counter goes from 0xFF to 0x00

Counter goes from 0xFFF1 to 0x0000

Counter goes from 0xFFFF to 0x0000

ANS- D) Counter goes from 0xFFFF to 0x0000

1. Why RETI instruction be the last instruction of ISR?

because it returns with carry

because it returns to the main program with all the flags of the SREG raised

because it returns to the main program where interrupt is generated and set the global interrupt enable bit in SREG none of the mentioned

ANS- c) because it returns to the main program where interrupt is generated and set the global interrupt enable bit in SREG

1. By default, INT0-INT2 interrupts are?

edge triggered

level triggered

all of the mentioned

none of the mentioned

ANS- b) level triggered

1. The function of watchdog timer is similar to the interval timer.

True

False

Cannot determined

None

Ans-a) True

1. Which out of the following is the main function of a Watchdog timer?

control the compare mode

control the capture mode

protection from failures to the system all of the mentioned

ANS- c) protection from failures to the system

1. When the call instruction is executed, the stack memory is loaded from

the address of previous instruction

the next address of instruction to be executed

address of the call instruction next address of the stack pointer

Ans-b) the next address of instruction to be executed

1. Which of the following helps in the generation of waveforms?

Timer

Input

Output Memory

Ans –a) Timer

1. The input output devices can be access as
2. Port mapped I/O
3. Memory mapped I/O
4. Both a and b
5. None

Ans- c) Both a and b

1. While CPU is executing a program, an interrupt exists then it Follows the next instruction in the program

jumps to instruction in other registers

breaks the normal sequence of execution of instructions

stops executing the program

Ans-c) breaks the normal sequence of execution of instructions

1. While executing the main program, if two or more interrupts occur, then the sequence of appearance of interrupts is called

multi-interrupt nested interrupt

interrupt within interrupt

nested interrupt and interrupt within interrupt

Ans-c) interrupt within interrupt

1. In general, exceptions and interrupts help the embedded engineer in the area.

internal errors and special conditions management

hardware concurrency service requests management all of the above

Ans-d) all of the above

1. The Programmable interrupt controller is required to handle one interrupt request

handle one or more interrupt requests at a time handle no interrupt request

none of the above

Ans-b) handle one or more interrupt requests at a time

1. Which of the following bits reads 0 under normal conditions but goes 1 when it wants to initiate some action?

WDTNMI WDTHOLD WDTTMSEL WDTCNTCL

Ans-d) WDTCNTCL

1. steper.setSpeed (20) indicates the speed in 20 rps

20 prh

20 times

20 rpm

108.Serial.begin (9600) means

Initialize serial communication at 9600 packets per second Initialize serial communication at 9600 bits per second Initialize serial communication at 9600 perbits hour Initialize serial communication at 9600 per minutes

1. Motor can be attached to which pin number of the Arduino? PINA0

PINA1 PIN8 PINA2

1. To print data using serial communication with new line, which functions is used?

print

Serial.println

Println

Serialprintln

1. What is the difference between the LM34 and the LM35 based sensors?

one requires external calibration while other does not

one has output voltage proportional to the Celsius scale while others have to the Fahrenheit scale one is fast other is slow

all of the mentioned

Ans- (B) LM35 has the output voltage proportional to the Celsius scale while the LM35 based sensors have output voltage proportional to the Fahrenheit scale.

111. Temperature sensor provides V for each degree count? 1

0.1

0.01

10

Ans-(C) 0.01

1. Delay(10000) results in a delay of . 100000 seconds

100 seconds

1 second

10 seconds (d)10Seconds

1. How many pins does LM35 sensor have? 5 pins

2 pins

4 pins

3 pins

Ans- (d) 3 pins

1. How many analoginput pins are there in the UNO board?

14

12

06

20

115. Zigbee IEEE standard is

802.15.4

802.15.3

802.15.2

802.15.1

116. Zigbee normally follows

Mesh Network

Star Network

BUS Network

Delta Network

117. Zigbee operates under

S Band

Ku Band

Ka Band

X Band

118. Which of the following is not a characteristic of a ZigBee network?

Low power consumption

Easy installation

High data rate

Unlicensed radio band

119. Bluetooth is the wireless technology for

local area network

personal area network

metropolitan area network

wide area network

119. Change in output of sensor with change in input is

Threshold Slew rate Sensitivity

None of the mentioned

120. Which type of sensor is used to measure the distance between the vehicle and other objects in its environment:

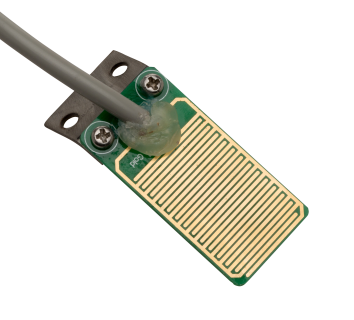
Ultrasonic Sensor

Tactile sensor

Motion Sensor

None of these

121. Identify the component



Rain Sensor

Temperature sensor

Wind sensor

Ultrasonic sensor

122. RFID with inbuilt power source is called Passive RFID

Active RFID

123. RFID Operating Supply Voltage must be

3.3 Volt

10.3 Volt

5.3 Volt

6.3 Volt

124. Select RFID module from the list RC522

RC533

RC433 RC122

125. In a project the presence of living creature can be detected by Green LED

Red LED

Yellow light sensor PIR Sensor

126. GPS constellation use

24 Satellites

23 Satellites

22 Satellites

21 Satellites

127. Select GPS module from the list NEO-6M

NE-6A EO-6W ON-6K

128. To calculate your 3-D position (latitude, longitude and altitude) and track movement, a GPS receiver must be locked on to minimum

1. Satellite
2. Satellites
3. Satellites
4. Satellites
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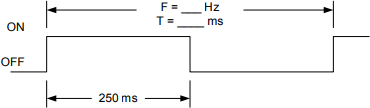
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1. When the call instruction is executed, the stack memory is loaded from the address of previous instruction

the next address of instruction to be executed address of the call instruction

next address of the stack pointer

Ans-b) the next address of instruction to be executed

1. Which of the following helps in the generation of waveforms?

Timer Input Output Memory

Ans –a) Timer

1. The input output devices can be access as
2. Port mapped I/O

b. Memory mapped I/O

1. Both a and b
2. None

Ans- c) Both a and b

1. While CPU is executing a program, an interrupt

exists then it Follows the next instruction in the program

jumps to instruction in other registers

breaks the normal sequence of execution of instructions stops executing the program

Ans-c) breaks the normal sequence of execution of instructions

1. While executing the main program, if two or more interrupts occur, then the sequence of appearance of interrupts is called

multi-interrupt nested interrupt

interrupt within interrupt

nested interrupt and interrupt within interrupt

Ans-c) interrupt within interrupt

1. In general, exceptions and interrupts help the embedded engineer in the area.

internal errors and special conditions management

hardware concurrency service requests management all of the above

Ans-d) all of the above

1. The Programmable interrupt controller is required to handle one interrupt request

handle one or more interrupt requests at a time handle no interrupt request

none of the above

Ans-b) handle one or more interrupt requests at a time

1. Which of the following bits reads 0 under normal conditions but goes 1 when it wants to initiate some action?

WDTNMI WDTHOLD WDTTMSEL WDTCNTCL

Ans-d) WDTCNTCL

1. steper.setSpeed (20) indicates the speed in

20 rps

20 prh

20 times

20 rpm

1. Serial.begin (9600) means

Initialize serial communication at 9600 packets per second Initialize serial communication at 9600 bits per second Initialize serial communication at 9600 perbits hour Initialize serial communication at 9600 per minutes

1. Motor can be attached to which pin number of the Arduino? PINA0

PINA1 PIN8 PINA2

1. To print data using serial communication with new line, which functions is used?

print Serial.println println Serialprintln

1. What is the difference between the LM34 and the LM35 based sensors?

one requires external calibration while other does not

one has output voltage proportional to the Celsius scale while others have to the Fahrenheit scale one is fast other is slow

all of the mentioned

Ans- (B) LM35 has the output voltage proportional to the Celsius scale while the LM35 based sensors have output voltage proportional to the Fahrenheit scale.

1. Temperature sensor provides V for each degree count?

1

0.1

0.01

10

Ans-(C) 0.01

1. Delay(10000) results in a delay of . 100000 seconds

100 seconds

1 second

10 seconds (d)10Seconds

1. How many pins does LM35 sensor have?

5 pins

2 pins

4 pins

3 pins

Ans- (d) 3 pins

162.How many analog input pins are there in the UNO board?

14

12

06

20

163. Zigbee IEEE standard is 802.15.4

802.15.3

802.15.2

802.15.1

164. Zigbee normally follows Mesh Network

Star Network BUS Network Delta Network

165.Zigbee operates under

S Band

Ku Band

Ka Band

X Band

166. Which of the following is not a characteristic of a ZigBee network?

Low power consumption

Easy installation High data rate

Unlicensed radio band

167. Bluetooth is the wireless technology for

local area network

personal area network

metropolitan area network wide area network

168.Change in output of sensor with change in input is

Threshold Slew rate Sensitivity

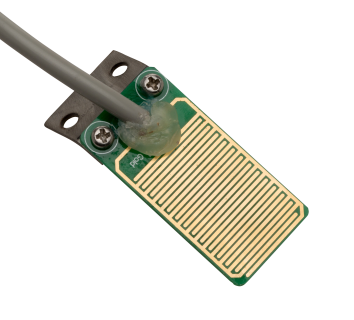
None of the mentioned

169. Which type of sensor is used to measure the distance between the vehicle and other objects in its environment:

Ultrasonic sensor Tactile sensor

Motion sensor None of these

170. Identify the component



Rain Sensor

Temperature sensor Wind sensor Ultrasonic sensor

171. RFID with inbuilt power source is called Passive RFID

Active RFID

172. RFID Operating Supply Voltage must be

3.3 Volt

10.3 Volt

5.3 Volt

6.3 Volt

173. Select RFID module from the list

RC522

RC533

RC433 RC122

174. In a project the presence of living creature can be detected by Green LED

Red LED

Yellow light sensor PIR Sensor

175. GPS constellation use

24 Satellites

23 Satellites

22 Satellites

21 Satellites

176. Select GPS module from the list

NEO-6M

NE-6A EO-6W ON-6K

177. To calculate your 3-D position (latitude, longitude and altitude) and track movement, a GPS receiver must be locked on to minimum

1. Satellite
2. Satellites
3. Satellites
4. Satellites

178. In Rainy condition Rain Sensor resistance is I I increased

Decreased Unchanged Constant

**Long Questions**

1. Draw and explain the ATMEGA 328p Microcontroller Architecture.
2. Explain the Arduino IDE.
3. Draw and explain the program status register.
4. For each of the statement below assuming y=20 before of the statement, what are the values of x after execution.
   1. x=y==y--;
   2. x=5\*y++
5. **What is the general form of function in C?**
6. What is the difference between while and do-while statement?
7. What is the data storage?
8. Explain the frame of I2C protocol.
9. What is the difference between SPI and I2C?
10. What is RS-232?

8. Write and explain the different data types statements in C with example.

9. Write and explain the program loop statements in C with example.

10. Explain in detail about I2C Protocol.

11. Short Notes

* Pulse Width Modulation
* Structure
* Union
* Pointer

12. What is the serial communication explain briefly.

13. **What is the explanation for prototype function in C?**

14. **What are the general description for loop statements and available loop types in C?**

15. Distinguish between constant and variable.

16. What is the difference between Structures and Union?

### 17. Explain in detail about RS-232?

### 18. Explain the pulse width modulation in detail.

19. Describe the Arduino libraries?

20. Write and explain the decision making statements in C with example.

21. Write and explain the program loop statements in C with example.

22. Explain in detail about SPI Protocol.

23. Explain in detail about ADC.

24. Explain in detail about USART Protocol.

25. Write a program of Ultrasonic sensor interfacing with Arduino Uno

26. Write a program of LED interfacing with Arduino Uno.

27. Write a program of LCD Display interfacing with Arduino Uno.

28. Write a program seven segment display interfacing with Arduino Uno.

29. Write a program of temperature sensor interfacing with Arduino Uno.

30. Write a program of Servo motor interfacing with Arduino Uno.

31. Write a program of stepper motor interfacing with Arduino Uno.

32. What is the difference between timer and counter?

33. What is the prescalar mechanism?

34. Explain the different modes of timers.

35. Draw and explain the External Interrupt Control Register A.

36. Write the interrupt function in detail

37. Explain the RFID interface card with Arduino with programming?

38. What is Arduino Bluetooth module?

39. Explain in details about the Timer 0.

40. Explain in details about the Timer 1.

41. Write a program for interrupt if interrupt occur at pin2 it toggle the pin state.

42. Write and explain the wireless communication interference with Arduino with program.

43. Write and explain the GPS navigation interface with Arduino with program.