



This exam measures the following ILOs:[a1,a2,a3,a4,b1,b7,c1,c4]

Question [1] (35 marks)

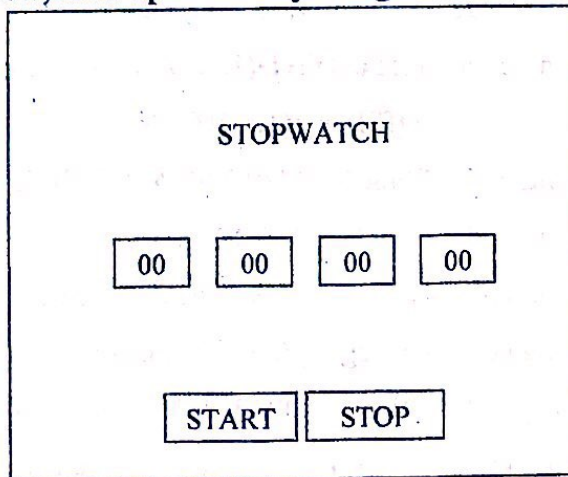
[a] Determine the errors of the following program (make a table for errors and correct it as shown):

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| # | Code | ✓ or X | Error | Correction |
|----|--------------------------------------|--------|-------|------------|
| 1 | #include<graphcs.h> | | | |
| 2 | #include<pitmap.h> | | | |
| 3 | #include<conio.h> | | | |
| 4 | vioid main() | | | |
| 5 | { | | | |
| 6 | int gd=DETECT, gm | | | |
| 7 | initgraph(&gd , gm , "C:\\TC\\BGI"); | | | |
| 8 | setcolour(15); | | | |
| 9 | Bar(0,0,640,480); | | | |
| 10 | setcolor(0); | | | |
| 11 | rectangle(190,90,510,410); | | | |
| 12 | for(int y=0,y<100;y++) | | | |
| 13 | { | | | |
| 14 | setcolor(6); | | | |
| 15 | lin(200,100+y,500,100+y); | | | |
| 16 | setcolor(15); | | | |
| 17 | line(200,200+y,500,200+y); | | | |
| 18 | setcolor(0); | | | |
| 19 | line(200,300+y,500,300+y); | | | |
| 20 | } | | | |
| 21 | displaybitmap(325,210;"nivr.bmp"); | | | |
| 22 | getch(); | | | |
| 23 | closegraph(); | | | |
| 24 | } | | | |

[b] Write a C program that draws a stopwatch at the center of computer screen, as shown below, then operate it by using the mouse.

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[c] What is the output of the following program?

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```
#include <graphics.h>
#include <dos.h>
#include <conio.h>
main()
{
    int i, j = 0, gd = DETECT, gm;
    initgraph(&gd, &gm, "");
    for( i = 420 ; i >= 0 ; i = i - 10)
    { j++;
      rectangle(50+i, 275, 150+i, 400);
      rectangle(150+i, 350, 200+i, 400);
      circle(75+i, 410, 10);
      circle(175+i, 410, 10);
      setcolor(j);
      delay(100);
      if( i == 0 )
        break;
      cleardevice();
    }
    getch();
    closegraph();
}
```

Question [2] (40 marks)

أجب عن هذا السؤال بالورقة المخصصة لذلك والموجودة في نهاية ورقة الإجابة

• **Write True (T) or False (F) for the following sentences:**

- 1) The following code: `initgraph(&gd, &gm, "C:\TC\BGI");` has no errors.
- 2) The following code: `rectangl(-5, 5, 480, 640);` has no errors.
- 3) The following code: `outtextxY(25;240,"KFS");` has one error.
- 4) The following code: `SetTextStyle(1,2,2);` has one error.
- 5) The following code: `setfillstyle(1;GREEN);` has 2 errors.
- 6) The following code: `FloodFill(320,240,WHITE);` has no error.
- 7) The following code: `setcolor(BLUE);` has no error.
- 8) The following code: `outtext("C++")` has no error.
- 9) The following code: `Closegraph();` has 2 errors.
- 10) The following code: `ellips(0, 200, 0, 360, 100, 50);` has one error.
- 11) The following code: `getmouse(b,x,&y);` has 2 errors.



- 12) The following code: `hidmouse()`; has no error.
- 13) In Arduino Uno, The number of digital I/O is 10.
- 14) The following code: `digitalWrit(IN4, LOW); dely(500)`; has 3 errors.
- 15) Arduino Uno can be used for Traffic Light by using 3 DC Motors.
- 16) In Arduino Uno, The number of analog inputs is 6.
- 17) The following code: `if(distance<30) { stopm(); sharpright();}` has no errors.
- 18) Arduino Uno can detect the distance by using Ultrasonic sensor.
- 19) Dc motor drive used for control of the speed of DC Motors.
- 20) Arduino is very good for rapid Prototyping.
- 21) The origin point is placed at the left corner by the top of the Computer screen.
- 22) Computer screen is divided horizontally into 480 pixels.
- 23) The screen is cleared by using the following function: `cleardevice()`;
- 24) Constants can not be changed by the program.
- 25) You can read the value of the constant variable but you can not change it.
- 26) A pointer is a variables that holds a memory location.
- 27) Computer memory (RAM) is usually organized in group of bytes called words.
- 28) In Arduino Uno, You can get to 15v as a power supply.
- 29) With Arduino Uno, you can design a line following robot.
- 30) Arduino provides IDE Environment.
- 31) The function: `Serial.Begin(9600)`; has no errors.
- 32) The microcontroller used in Arduino UNO is ATmega microcontroller.
- 33) `gets_arabic(350,20,p,4,15,10,0,"e:\\font_2\\15")`; has one error.
- 34) The following function: `printf("%d",&x)`; prints the value of x.
- 35) `sprintf(m,"%d",y)`; prints the value of y into array m.
- 36) In the function: `settextstyle(a,b,c)`; b means text color.
- 37) `setstyle(w,s)`; w refers to the style color.
- 38) `fillpoly(n,p)`; is used to draw a filled polygon figure.
- 39) `lillelipse(a,b,c,d)`; b refers to y-radius.
- 40) `drawpoly(n,p)`; n is the number of vertices.



• **Select the suitable answer of the following:**

- 41) The number of errors in the following Code: `pinMode(IN3,OUTPUT);`
a) Zero b) 2 c) 3 d) 5
- 42) The following code: `if(distance<30) { stopm() sharpright();}` has
a) 3 errors b) 2 errors c) 1 error d) No errors
- 43) The number of errors in the following Code: `Digitalwrite(IN2, Low);`
a) 2 b) Zero c) 5 d) 7
- 44) The number of errors in the following Code: `analogWrite(ENB,100)`
a) 3 b) 1 c) 2 d) Zero
- 45) In Arduino Uno board: Which pin has a built-in LED?
a) Pin A0 b) Pin 15 c) Pin 7 d) Pin 13
- 46) How many arguments does the function `pinMode` need to have??
a) 4 b) 2 c) 3 d) 1
- 47) In Arduino: What does IDE stand for?
a) Integrated Development Environment b) Internet Data Exchange
c) Identifier Extension d) Otherwise
- 48) Number of error in the following code is: `printf("How are you?\n")`
a) 2 b) Zero c) 1 d) Otherwise
- 49) What voltage does the Arduino operate at?
a) 50 volts b) 35 volts c) 5 volts d) 75 volts
- 50) Number of error in the following code is: `scanf("%d", n);`
a) 1 b) Zero c) 2 d) Otherwise
- 51) The number of errors in the following Code: `AnalogWrite(A3,100);`
a) 3 b) 1 c) 2 d) Zero
- 52) Number of error in the following code is: `if (n < 0) printf("Error!");`
a) Zero b) 2 c) 1 d) Otherwise
- 53) In Arduino Uno board: the output voltage can be:
a) 15v b) 25v c) 5v or 15v d) 3.3v or 5v
- 54) Number of error in the following code is: `fillploy(n,p);`
a) 1 b) Zero c) 2 d) Otherwise
- 55) How many arguments does the function `analogWrite` need to have??
a) 4 b) 2 c) 3 d) 1
- 56) Number of error in the following code is: `Sprintf(msg,"%d %d",x,y)`
a) 2 b) Zero c) 1 d) Otherwise



- 57) The following code: **drawpoly(3,p);** has
a) 3 errors b) 2 errors c) 1 error d) No errors
- 58) Number of error in the following code is: **Setmouse(x,y);**
a) 1 b) Zero c) 2 d) Otherwise
- 59) The following code: **limitmous(100, 100,200,200);** has
a) 3 errors b) 2 errors c) 1 error d) No errors
- 60) Number of error in the following code is: **showmouse();**
a) Zero b) 2 c) 1 d) Otherwise
- 61) A program written with the IDE for Arduino is called:
a) IDE source b) Sketch c) Cryptography d) Source code
- 62) Arduino IDE consists of 2 functions. What are they?
a) build() and loop() b) setup() and build()
c) setup() and loop() d) arduino() and graphics()
- 63) In the function: **drawpoly(n,p);** p is :
a) array b) vertices c) diameter d) radius
- 64) In the function: **fillelipse(a,b,c,d);** c is:
a) y-radius b) x-radius c) x-diameter d) y-diameter
- 65) The function: **Serial.println(x);** is used to print the value of x into:
a) paper b) Bluetooth c) Ultrasonic d) serial mointor
- 66) In the function: **Ultrasonic ultrasonic(12, 13);** 12 is a
a) trigger bin b) echo pin c) Vcc pin d) 5v pin
- 67) In the function: **lcd.begin(16, 2);** 16 is the number of
a) rows b) columns c) pins d) lcd
- 68) The following code: **ellipse(0, 100, 0, 200, 100, 50);** has
a) One error b) 2 errors c) zero error d) 3 errors
- 69) The following code: **getmouse(&b,x,&y);** has
a) One error b) 2 errors c) zero error d) 3 errors
- 70) The following code: **setcolour(BLO);** has
a) One error b) 2 errors c) zero error d) 3 errors



- 71) In the function: `circle(x,y,z)`; z is
a) radius b) diameter c) angle d) length
- 72) The following code: `line(0,0,640,480); line(640,0,0,480)`; draw two lines
a) intersected b) parallel c) perpendicular d) Otherwise
- 73) The output of the following code: `rectangle(100,100,200,200)`; is a
a) rectangle b) square c) bar d) circle
- 74) The output of the following code: `bar(100,100,200,200)`; is a bar with length
a) 300 pixels b)) 150 pixels c) 200 pixels d) 100 pixels
- 75) The output of the following code: `arc(320,240,0,180,50)`; is an arc with radius
a) 320 pixels b) 240 pixels c) 180 pixels d) 50 pixels
- 76) The output of: `ellipse(320,240,0,360,120,120)`; is a circle with radius
a) 120 pixels b) 320 pixels c) 240 pixels d) 60 pixels
- 77) The output of: `circle(100,100,50); circle(200,100,50)`; is two circle
a) ○ ○ b) ○○ c) ⊖ ⊖ d) ⊙
- 78) The following code: `outtextx(100,100,"KFS")`; has
a) one error b) no errors c) 2 errors d) 4 errors
- 79) The output of the following code: `line(0,0,60,80)`; is a line with length
a) 60 pixels b) 80 pixels c) 100 pixels d) 140 pixels
- 80) The output of the following code: `circle(640,240,240)`; is
a) ellipse b) half of circle c) quarter of circle d) circle

Good luck: Dr. Eng.: Famer Medhat

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