KafrelSheikh University
Faculty of Engineering
Electrical Engineering Department
Final Exam, 2019 -2020
Subject: Computer Technology
Academic Number : ECS0101

Preparatory Year
Date: 14 / 1 / 2020
Time: 3 Hours.
Mark: 60
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This exam measures ILOs no: a2, a4, a5, a12, b1, b6, b8, c7, c9, d1, d2, d3, d4

Choose from the following, then Highlight the correct answer [40 Marks]

1) The Boolean expression $\{\bar{A}.B + A.\bar{B} + A.B\}$ is equivalent to

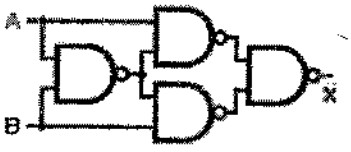
(A) $A + B$ **(B)** $\bar{A}.B$
(C) $\overline{A+B}$ **(D)** $A.B$

2) Which of logic function is illustrated by the figure

A. XOR
B. N OR
C. AND
D. NAND

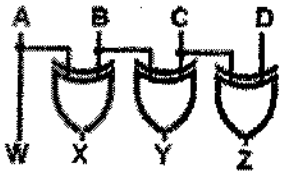
3) Which logic function does the circuit perform?

A. NAND
B. NOR
C. XOR
D. XNOR



4) The given logic circuit convert binary code into

A. Excess-3 code
B. BCD code
C. Gray code
D. ASCII code



5) The solutions to the equation $x^2 - 11x + 22 = 0$ are x = 3 and x = 6. the base of the numbers is:

A. Decimal C. binary
B. Octal D. Hexadecimal

6) The representation of gray number (101101) in binary is:

A. 110110 C. 111011
B. 111100 D.110010

7) The representation of decimal number (51.375) in binary is:

A. 110011.011 C. 110011
B. 111001.011 D. 110110

8) Carry out BCD subtraction for (68) – (61) using 10's complement method.

A. 00000111 C. 100000111
B. 01110000 D. 00001111

9) Signed negative binary number is recognized by its :

A. MSB C. Byte
B. LSB D. Nibble

10) If decimal number is a fraction its binary equivalent is obtained by ___ the number continuously by 2.

A. Dividing C. Adding
B. Multiplying D. Subtracting

11) The representation of octal number (532.2) in decimal is _____

A. 346.25 C. 340.67
B. 532.864 D. 531.668

12) The decimal equivalent of the binary number $(1011.011)_2$ is __

A. 11.375 C. 10.123
B. 11.175 D. 9.23

13) The hexadecimal number 1E.53 is equivalent to __

A. 35.684 C. 34.340
B. 36.246 D. 35.599

14) On subtracting (01010) from (11110) using 1's complement, we get ___

A. 01001 C. 10101
B. 11010 D. 10100

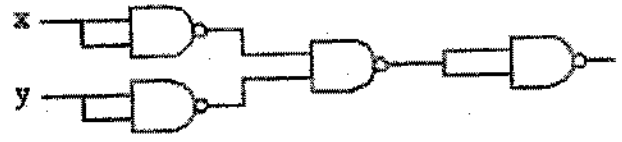
15) On subtracting (010110)2 from (1011001)2 using 2's complement, we get ____

A. 0111001 C. 0110110
B. 1100101 D. 1000011

16) The decimal number 10 is represented in its BCD form as_____

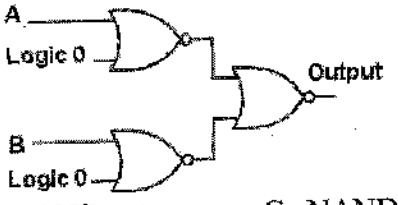
A. 10100000 C. 01010111
B. 00010000 D. 00101011

17) Which gate is the following circuit equivalent to?



A. AND gate C. NAND gate
B. NOR gate D. XOR gate

18) Which gate is the following circuit equivalent to?



A. AND gate C. NAND gate
B. NOR gate D. XOR gate

19) The simplification of Boolean expression $Q = AB + BC(B + C)$

A. $B(A + C)$ C. $A(B + C)$
B. $B(A.C)$ D. $(A + B).C$

20) The simplification of Boolean expression $Q = \overline{(A + BC)} + \overline{A\overline{B}}$

A. $Q = A\overline{B}$ C. $Q = \overline{B}C$
B. $Q = A + \overline{B}$ D. $Q = \overline{A}C$

21) What will be the output of the following Python code?

```
>>> for i in range(4):
...     go(100)
...     turn(90)
...
>>> pen_up()
>>> turn(90)
>>> go(200)
>>> for i in range(4):
...     go(100)
...     turn(90)
...
```

A. Error B. 1 square
C. 2 squares, at a separation of100 units, joined by a straight line.
D. 2 squares, at a separation of 100 units, without a line joining them.

22) What will be the output of the following Python functions?

```
>>> reset()
>>> go(150)
>>> pen_up()
>>> turn(90)
>>> go(50)
>>> turn(90)
>>> pen_down()
>>> color("yellow")
>>> width(5)
>>> go(150)
```

A. Three parallel lines
B. Three intersection lines.
C. Two intersection lines.
D. Two parallel lines

23) What is wrong with this code?

```
>>> def square:
...     for i in range(4):
...         go(50)
...         turn(-90)
...
... square()
```

A. Missing Brackets C. Missing Colon
B. Missing Comma D. Incorrect spelling

24) Look at this code, what is the variable?

```
>>> def square():
...     for i in range(4):
...         go(50)
...         turn(-90)
...
>>> square()
>>>
```

A. 0 C. for
B. 4 D. i

25) What keyword is used to define a function?

A. def C. while
B. if D. for

26) The following algorithm defined:

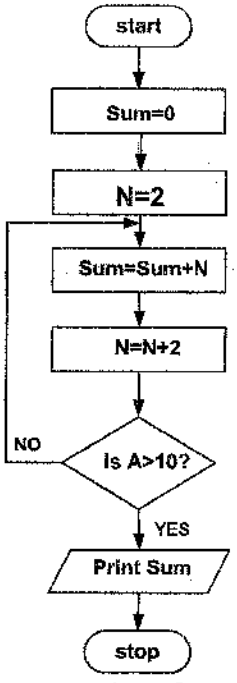
Step-1 Start
Step-2 Input F
Step-3 C = 5.0/9.0 (F - 32)
Step-4 print C
Step-5 Stop

A. convert temperature from Fahrenheit to Celsius
B. convert temperature from Celsius to Fahrenheit
C. calculate the area of triangle
D. calculate the perimeter of rectangle

27) What is the correct symbol for an input in a flow chart?

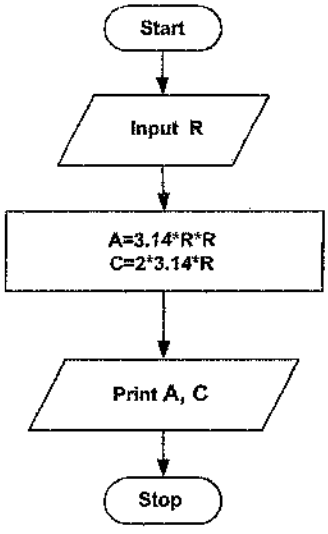
A. oval C. Rectangle
B. A parallelogram D. An arrow

28) The following flowchart defined:



A. Print even integer numbers from 2 and 10.
B. adding the integers from 2 to 10
C. calculate the average of a set of numbers
D. for calculating the division of two numbers

29) The following flowchart defined:



A. calculate the area of triangle
B. calculate the perimeter and area of circle
C. calculate the perimeter and area of rectangle
D. calculate the perimeter of rectangle

30) Look at this code, how many times will it loop?

```
>>> for i in range(4):
...     go(50)
...     turn(-90)
...
>>>
```

A. 50
B. 90
C. 0
D. 4

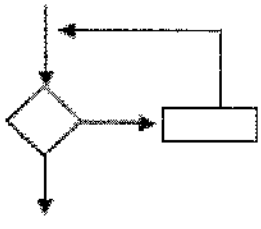
31) The command which helps us to reset the pen:

A. reset
B. penreset( )
C. penreset
D. reset( )

32) The command which helps us to hide the turtle.

A. invisible ( )
B. reset( )
C. invisible (x)
D. pen_up(x)

33) What type of structure is this?



A. Sequence
B. Case
C. repetition
D. process

34) _____ is a procedure or step by step process for solving a problem.

A. Algorithm
B. Flowchart
C. Pseudocode
D. All of these

35) The _____ symbol is used at the beginning of a flow chart.

A. oval
B. Rectangle
C. Diamond
D. None of these

36) The command which helps us to set the line color

A. color (x) C. color ("x")
B. width (x) D. width ( )

37) The command which helps us to move forward or backward

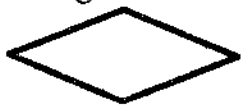
A. go ( ) C. turn(x)
B. pen_up(x) D. go (x)

38) Fill in the blank such that the following Python code results in the formation of an inverted, equilateral triangle.

```
>>> for i in range(3):
...     go(150)
...     turn(   )
...
```

A. -60 C. -90
B. 120 D. 60

39) The following box denotes:



A. Decision C. Initialization
B. Terminal D. I/O

40) The command which helps us to stop drawing when moving

A. pen_up( ) C. pen_down(x)
B. pen_up(x) D. pen_down( )

Which of the following expression is correct and which is not?(True or False) [20 Marks]

1. $\overline{A} \oplus \overline{B} = A \oplus B$
2. A+BC= (A+B) (B+C)
3. Addition of 648 and 487 in BCD Code is 1735.
4. The gray equivalent of decimal number 43 is **(100110)**.
5. When simplified with Boolean algebra (X+ Y) (Y+ Z) simplifies to X.
6. The code where all successive numbers differ from their preceding number by single bit is a binary code.
7. The range of numbers which can be represented by 9-bits if we are representing tow's complement integers is (- 256 to 255)
8. Simplification of the following Boolean expression is:

$$F(A, B, C) = ABC + A\overline{B}C + A\overline{C} = A$$

9. Simplification of the following Boolean expression is:

$$F(X, Y, Z) = \overline{\left(\overline{(X\overline{Y} + XYZ)} + X(Y + X\overline{Y})\right)} = 0$$

10. Reduce the following Boolean expressions:

$$\overline{A}\overline{C} + ABC + A\overline{C} = AB + \overline{C}$$

11. We can show the sequence of steps in an algorithm in a structural diagram called a flow chart.
12. When you write an algorithm the order of the instructions is very important.

13. The rectangle symbol represents only one processing operation.
14. Flowcharts can be drawn using software only and can't be drawn on paper.
15. The command which helps us to reset the pen is reset.
16. The command which helps us to hide the turtle is *invisible ( )*.
17. A flowchart is a diagram that represents a set of instructions.
18. Algorithms are used for testing a solution to a problem.
19. Rectangle is a symbol used connects two symbols of flowchart.
20. The process of drawing a flowchart for an algorithm is called Evaluation.