

Answer the following questions:

Question [1]: [20 marks] [ILOs: a2,b3,c5]

- Design a one bit full adder , adds 1bit "a" to 1 bit "b" , result 1 bit "S" , consider carry from lower bit "Cl" and carry to a higher bit "Ch"
- Design a one bit comparator that compares 1bit "a" to 1 bit "b" resulting either of 3 outcomes: less if $a < b$, equal if $a = b$, greater if $a > b$. use this module to compare 2 bits "a -number" to 2 bits "b- number"
- Draw a flowchart, write an algorithm and write a C program to calculate the factorial of a number.

Question [2]: [40 Marks] [ILOs: a1,a2,a3,b1,b3,b4,c3,c5,d4]

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

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

- Email allow attaching files via messages.
- SMS messages can be sent to you when the system is off.
- HD capacity is more than flash memory.
- Scanner converts the hard copy into softcopy.
- Flash memory is considered as I/O device.
- Increasing resolution of screen improves the quality of picture.
- Printer converts the hard copy into softcopy.
- Pocket computers are the most expensive systems.
- GUI stands for general used icons.
- RAM stands for real access mode.
- SRAM is non volatile memory.
- Speakers are input devices.
- In Arduino Uno, The number of digital I/O is 10.
- Windows operating system must be booted before starting any computer process.
- Flash memory is NVRAM.
- Adobe Photoshop program is used to edit pictures.
- Print Screen key in the keyboard is used to copy the screen in image format.
- Computer networks aims to share their resources.
- Service providers include firewall to protect themselves from hackers.
- ISDN stands for integrated services data network.

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تابع السؤال الثاني

- 46) To compute a mathematical term, computer uses:
a) keyboard b) ALU c) memory d) Otherwise
- 47) Which part is not included in CPU?
a) Printer b) Control unit c) Cache memory d) Otherwise
- 48) Extension of document file is:
a) .xls b) .doc c) .html d) .ppt
- 49) which of the following is a volatile RAM.
a) Magnetic disks b) Memory cards c) DRAM d) Otherwise
- 50) What data type can be processed by computers
a) text b) pictures c) videos d) a,b,c
- 51) A company has 2 LAN networks in 2 distinct towns , the 2 networks are connected.
This type of network is? a) LAN b) MAN c) FAN d) WAN
- 52) In computers, subtraction is carried out using:
a) 9's complement b) 1's complement c) 2's complement d) Otherwise
- 53) $4AC XOR B2D = \dots\dots$ a) 42F b) F81 c) 02D d) Otherwise
- 54) POST term in computer stands for:
a) power on self test b) post office box c) test the message d) Otherwise
- 55) Logical simplification for the expression $f = A.B'+A.C+B.C'+A'.C' =$
a) $A+B.C$ b) $A+C'$ c) $A'+B'$ d) Otherwise
- 56) Logical simplification for the expression $f = x'.y'.z'+x.y'.z'+x.y'.z+x'.y'.z =$
a) $x+y.z$ b) $x'+y'$ c) y' d) Otherwise
- 57) Logical simplification for the expression $f = x+x'.y+x.y'.z =$
a) $x+y+z$ b) y' c) $x.y$ d) $x+y$
- 58) $1100\ 1100_2 = \dots\dots\dots$
a) 204_{10} b) 314_8 c) CC_{16} d) All of these
- 59) $ABC_{16} = \dots\dots\dots$
a) 5247_8 b) 101010111011_2 c) 2784_{10} d) Otherwise
- 60) $120_8 = \dots\dots\dots$
a) 50_{16} b) 80_{10} c) 1010000_2 d) All of these
- 61) $110.011_2 = \dots\dots\dots$
a) 6.33_8 b) 6.7_{16} c) 6.31_{10} d) 6.3_8
- 62) $AB.CD_{16} = \dots\dots\dots$
a) 101.101_2 b) Otherwise c) 253.632_8 d) 171.181_{10}
- 63) $AB.A_{16} = \dots\dots\dots$
a) Otherwise b) 10101011.101_2 c) 293.5_8 d) $1C1.625_{10}$
- 64) $101_2 \times 101_2 = \dots\dots\dots$
a) 25_{10} b) 101011_2 c) 23_8 d) Otherwise
- 65) $1000_2 - 1_2 = \dots\dots\dots$
a) A_{16} b) 7_{10} c) 8_8 d) All of these
- 66) $1101_2 \times 10_2 = \dots\dots\dots$
a) 25_{10} b) 101011_2 c) 32_8 d) Otherwise

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تابع السؤال الثاني

- 67) $77_8 - 76_8 = \dots\dots\dots$
a) 1_{16} b) 1_{10} c) 1_2 d) All of these
- 68) $55_{16} + 15_{10} = \dots\dots\dots$
a) 46_{16} b) 140_8 c) 100_{10} d) All of these
- 69) $144_8 \div 10_{10} = \dots\dots\dots$
a) A_{10} b) A_{16} c) 21_8 d) All of these
- 70) The number of errors in the following Code: **pinMode(IN3,OUTPUT);**
a) Zero b) 2 c) 3 d) 5
- 71) The number of errors in the following Code: **Digitalwrite(IN2, Low);**
a) 2 b) Zero c) 5 d) 7
- 72) The number of errors in the following Code: **analogWrite(ENB,100)**
a) 3 b) 1 c) 2 d) Zero
- 73) The following code: **if(distance<30) { stopm() sharpright();}** has
a) 3 errors b) 2 errors c) 1 error d) No errors
- 74) In Arduino Uno board: Which pin has a built-in LED?
a) Pin A0 b) Pin 15 c) Pin 7 d) Pin 13
- 75) What voltage does the Arduino operate at?
a) 50 volts b) 35 volts c) 5 volts d) 75 volts
- 76) How many arguments does the function **pinMode** need to have??
a) 4 b) 2 c) 3 d) 1
- 77) In Arduino: What does **IDE** stand for?
a) Integrated Development Environment b) Internet Data Exchange
c) Identifier Extension d) Otherwise
- 78) Number of error in the following C code is: **printf("How are you?\n")**
a) 2 b) Zero c) 1 d) Otherwise
- 79) Number of error in the following C code is: **scanf("%d", n);**
a) 1 b) Zero c) 2 d) Otherwise
- 80) Number of error in the following C code is: **if (n < 0) printf("Error!");**
a) Zero b) 2 c) 1 d) Otherwise

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Good luck: Prof. Dr.: Ali Sakr & Dr. Eng.: Famer Medhat