De Mazenod College Kandana

Information and Communication Technology 20 E[I]

Name:…… 1st Term Test 29th November 2017 Class:12 Time: 1 Hour

Answer all the question

1. Babbage's Difference Engine is based on .
(1) mechanical technology. (2) vacuum tube technology.
(3) transistor technology. (4) Integrated Circuit (IC) technology.
(5) Very Large Scale Integrated (VLSI) Circuit technology.

2. Who is considered as father of computer?
   (1) Von Neumann
   (2) Blaise Pascal
   (3) Charles Babbage
   (4) Adam Vogue
   (5) Alan Turin

3. Which of the following components is located outside the microprocessor?
(1) Arithmetic Logic Unit (ALU) (2) RAM
(3) Control Unit (4) Registers
(5) Level 1 cache memory

4. The binary number equivalent to the 25_{10} is
(1) 0100101. (2) 0100111. (3) 0011001. (4) 0010110. (5) 0010111.

5. 1248 + 1658 =
(1) 201_8 (2) 289_{10} (3) 289_8 (4)311_8 (5)389_8

6. Which of the following can be considered as an expert system?
(1) A bank teller machine (2) A fully automatic washing machine
(3) A microwave oven (4) A diagnosis system of a health care facility
(5) An electronic blood pressure meter

7. The Boolean expression (x + y) . (x + z) simplifies to .
   (1) x (2) x. (y + z) (3) x. Y. z (4) x + Y. z (5) x+ y+ z

8. Which of the following statements is true with regard to data and information?
(1) Decision can be made only when a massive volume of data is available.
(2) Validity of information depends on the accuracy of data.
(3) Information obtained by processing data is always accurate.
(4) In order to obtain information, data must be collected from multiple sources.
(5) The accuracy of information depends only on the accuracy of input data.

9. The generation of monthly salary slips of employees in an organization is an example for
(1) Batch processing. (2) Real time processing. (3) Online processing.
(4) Transaction processing. (5) Interactive processing.

10. Consider the following statements about Firmware:
A - Firmware is the program required to bootup a computer system.
B - Firmware is incorporated in washing machines.
C - Firmware can be easily changed later on.

Which of the above statements is/are correct?
(1) A only (2) B only (3) A and B only
(4) A and C only (5) Band C only

11. What is the two's complement of -6_{10}?
(1)11111010 (2) 00000110 (3) 11111001 (4) 01011111 (5) 00000101

12. ABC Holdings is a manufacturing organization in Sri Lanka which has its head office in Japan. What is the most convenient method to conduct weekly progress review meetings between the local staff in Sri Lanka and the senior management team in Japan?

(1) Telephone calls (2) Skype (3) Email (4)SMS (5)YouTube

13. The first generation computer were based on
(1) Very Large Integration (VLSI)Technology
(2) Large Scale Integration (LSI) Technology
(3) Integrated Circuits (ICs)
(4) Transistor
(5) Vacuum tubes

14. The decimal number equivalent to 110110_2 is
(1) 39 (3) 54 (5) 108
(2) 48 (4) 55

15. Which of the following is/are not executable memory?
A. Cache memory
B. Primary memory
C. Rotating Memory
D. Optical Memory
E. Sequential Memory
(1) A, B and C (5) E,A and B
(2) B,C and D
(3) C,D and E
(4) D,E and A

16. -78 in 2's complement,
(1) $0100\ 1110_2$ (4) $1011\ 0010_2$
(2) $0100\ 1111_2$ (5) $1001\ 0010_2$
(3) $1011\ 0001_2$

17. The binary number equivalent to the $0.CAD_{16}$ is
(1)$0.1101\ 1010\ 1101_2$
(2)$0.1100\ 1011\ 1101_2$
(3)$0.1100\ 1010\ 1100_2$
(4)$0.1100\ 1010\ 1111_2$

(5) $0.1100\ 1010\ 1101_2$

18. The binary number equivalent to the BAD_{16} is
    (1) $1001\ 1010\ 1101_2$
    (2) $1011\ 1110\ 1101_2$
    (3) $1011\ 1011\ 1101_2$
    (4) $1011\ 1010\ 1001_2$
    (5) $1011\ 1010\ 1101_2$

19. The octal number equivalent to the $BAD.CAD_{16}$ is
    (1) 5655.6355_8
    (2) 5655.6555_8
    (3) 5565.6255_8
    (4) 5565.6655_8
    (5) 5655.6255_8

20. Which of the following statement is correct with respect to the evolution of computing devices?
    (1) Vacuum tubes were used by Blaise Pascal to build the Pascaline.
    (2) The Pascaline is considered as a first generation computing device.
    (3) Computers built using vacuum tubes are considered as second generation computers.
    (4) Electronic Numerical Integrator and Computer (ENIAC) was built using vacuum tubes.
    (5) Apple I and Apple II are two examples for second generation computers.

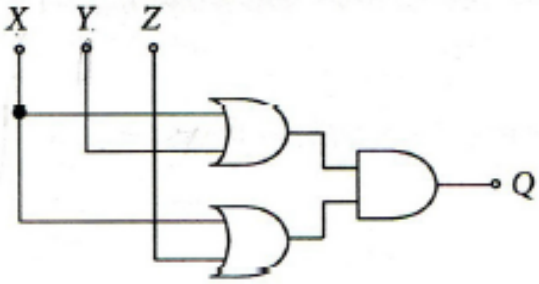
21. Which of the following converts digital data to analog data to transmit over an analog telephone network?
    (1) Network interface Card (NIC)
    (2) Modem
    (3) Multiplexer
    (4) Bluetooth adaptor
    (5) Wi-Fi card

22. The Sri Lankan cricket team won the T-20 world cup-2014 tournament. The Sri Lankan cricket fans had the highest value of this information when ……
    (1) The final match started
    (2) Thisara Perera scored the winning run
    (3) The caption Lasith Malinga received the trophy
    (4) They saw the news on the news on the newspapers
    (5) They saw the cricket team at the Katunayaka Airport

23. $4A6_{16}+99_{10}$ =
    (1) 615_{16}
    (2) 615_{10}
    (3) 509_{10}
    (4) 509_{16}
    (5) 659_{16}

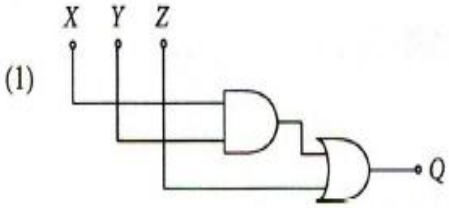
24. Representation of 5_{10} and -9_{10} in 8-bit Two's complement forms are
    (1) 00 00 01 01 and 11 11 01 11 respectively
    (2) 11 11 01 11 and 11 11 01 11 respectively
    (3) 00 00 01 01 and 10 00 10 01 respectively
    (4) 00 00 01 01 and 11 11 01 10 respectively
    (5) 11 11 10 11 and 11 11 01 10 respectively

25. Consider the following logic circuit:

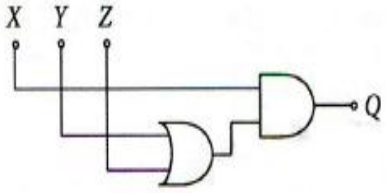


Which of the following circuit diagrams represents a simplified version of the above circuit?

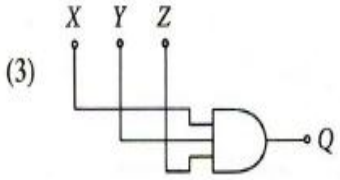
(1)



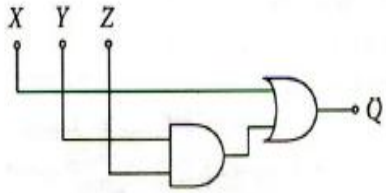
(2)



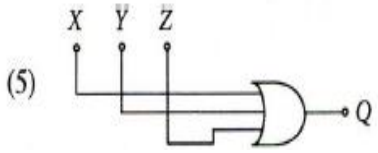
(3)



(4)



(5)



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Information and Communication Technology 20 E II

Name:…… 1st Term Test 29th November 2017 Grade 12 1Hour

Structured Part A

1. F(A,B,C,D)=∈ $m(0,3,4,7,8,11,12,15)$
   A. Draw the truth table and write the output F in SOP
   B. Simplify the output using Boolean algebra.
   C. Draw the simplified logic circuit
   D. Write the output F in POS
   E. Draw two ways of representing NOT gate (using only Universal logic gates)

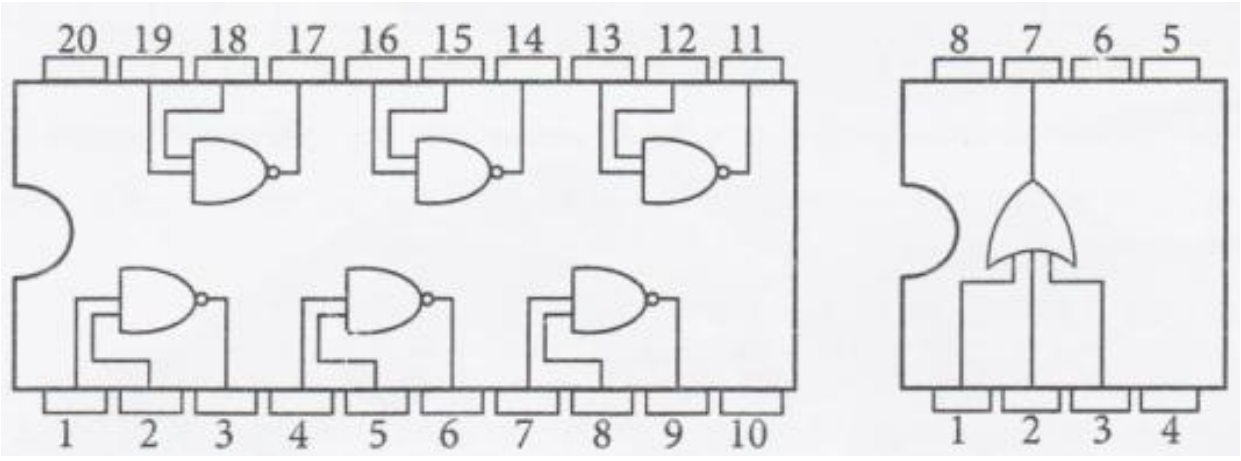
2. Use BITWISE operators to solve the following
   A. ~0111
   B. 01011_2 &10011_2
   C. 0011_2 ^10101_2
   D. A=11_{10} Find out A<<2
   E. A=11_{10}Find out A>>2
3. Convert the following binary numbers in to binary, Octal, decimal and hexadecimal
   A. 11101010.0101_2
   B. 17.2_8
   C. $BAD.CAD_{16}$
   D. $DAD.CD_{16}$
   E. 1010.010_{10}
4.
   A. Draw the von numann architecture
   B. Draw the fetch n execution cycle
   C. Briefly summarize the important points of electronic era
   D. Calculate thefolowing
      a. $1010/11_2$
      b. $1010101+11010_2$
      c. $11000-11_2$

Essay

Answer all questions

1.Top secret recipe for making milk rice at the restaurant chain SLFC is kept in an electronic safe at their head office. The lock (L) of the safe can either be in locked or unlocked states represented by logical truth values 0and1 respectively. This lock has three different key holes K1,K2 and K3 each with a unique key. These keys are in the custody of three directors of SLFC. The lock opens when at least two keys are inserted into the corresponding key holes. The situation were the corresponding key is properly inserted into any key hole is represented by the logical truthvalue1 and all the other situations are represented by the logical truth value 0.

Assuming that only the following Integrated Circuits (ICs) are available, construct a logic circuit to operate the lock (L) of the safe, by using the truth tables and Boolean algebra. Clearly show the truth tables, Boolean expressions and K-map used to construct your circuit.



2. A switch (A),a temperature sensor(B) and a timer (C) of an air-conditioner determine turned on and turned off states of the air-conditioner. Turned on and turned off states of the air-conditioner as well as the "ON" and "OFF" states of the switch , temperature sensor and the timer are represented by the logical values 1 and 0,respectively.

The air conditioner can be turned on or off manually by setting the switch to its 'ON' or "OFF" states, respectively.

The temperature sensor detects the temperature in the room. The temperature sets its state as ' ON' or 'OFF' when the detected temperature is respectively higher or lower than a pre-defined temperature value. The air-conditioner is automatically turned off when the timer reaches the preset time value.

a) Construct the logic circuit using only NOR gates to control the air-conditioner. Clearly show truth table, Boolean expression and Boolean algebraic rules used for simplification. Assume that the electricity is always supplied to the air –conditioner.

b) The user of the air – conditioner says that the switch is not required for operation of air – conditioner, Do you agree with this statement? Justify your answer