Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – June 2021
VI Semester

Class : III UG **Time : 3 Hours**
Major : Physics **Max. Marks: 100**

18BPHC21 Digital Electronics

Part A **10 X 1 =10**
Choose the Correct Answer

1. The number system, Which uses alphabets as well as numerals is CO1 K1
   a. Binary b. Octal c. Decimal d. Hexadecimal

2. A person represents himself as being $(01011)_2$ year old. What is his actual age? CO1 K3
   a. 11 b. 35 c. 15 d. None of the above

3. The logic expression AB+AB can be implemented by given input and B to a two input CO2 K2
   a. NORgate b. Exclusive NOR gate c. Exclusive OR gate d. NAND

4. Which of the following is known as half adder CO2 K1
   a. XOR gate b. XNOR gate c. NAND gate d. NOR gate

5. A decimal number 6 in excess -3 code is written as CO3 K2
   a. 0110 b. 0011 c. 1101 d.1001

6. The total number of cell in the Karnaugh map of a switching function (A, B, C) consist of only three variables are CO3 K2
   a. 4 b. 8 c. 16 d. 3

7. Which of the flip flop is used to eliminate race around problem CO4 K2
   a. Master slave J- K flip flop b. R-S flip flop
   c. J-K flip flop d. D flip flop

8. How many flip-flops are required to construct a mod-64 ripple counter? CO4 K3
   a. 32 b. 8 c. 6 d. None of the all

9. The contents of memory into blocks of the same size is called as CO5 K2
   a. ROM b. EPROM c. EEPROM d. All the above

10. Which one of the following has capability to store data in extremely high densities? CO5 K1
    a. Register b. Semiconductor c. Capacitor d. flip flop

Part B

Answer ALL questions **5 X6 = 30**

Each answer should not exceed 400 words or two pages

11. a. Simplify the following binary operation. i..1011.01+1001.11 ii. 110.01-100.1 iii.101.01*11	CO1K4
(or)	
11.b. Convert following decimal number into an equivalent binary numbers i.. 41 ii. 1996	CO1 K4
12. a. Draw OR, AND and NAND gates using diodes.	CO2 K3
(or)	
12.b State and Prove the De Morgan's theorems.	CO2 K4
13. a. Calculate the value of resistor for 2ma current through LED and 5V power supply with forward voltage drop of 2V.	CO3 K3
(or)	
13.b. Explain Gray code in terms of Binary to Gray and Gray to Binary converter.	CO3 K3
14.a. Discuss about pulse triggering JK flip-flop.	CO4 K3
(or)	
14.b. Design mod 5 ripplecounter using D flip-flop and the wave form.	CO4K4
15.a. Explain aboutRead Only Memory (ROM) .	CO5 K3
(or)	
15.b. Discuss Programmable Read only Memory (PROM).	CO5 K3

Part C

Answer ALL questions **5X 12 = 60**

Each answer should not exceed 800 words or four pages

16.a. What is BCD code and convert 63718decimal into equivalent i. Binary ii. Octal iii. Hexadecimal	CO1 K6
(or)	
16.b. Define 1's and 2's complements and Perform the following subtraction using 1's and 2's complements i. 10111.0-10011.1, ii. 11011 – 11001	CO1 K6
17.a. Discuss NOR gate in detail and show how it can be used as universal gate	CO2 K4
(or)	
17.b. Design Full Subtractor using NAND gates and explainits operation.	CO2 K4
18.a. Obtain the minimal POS expression for the switching function given below using 4-variable Karnaugh map f(A, B, C, D)= Σ(0,1,2,3,4,7,8,11,12,13,14,15)	CO3 K6
(or)	
18.b. Explain Error detection and correction method using parity method.	CO3 K5
19.a. Design and explain about 8-bit up-down Synchronous counter.	CO4 K4
(or)	
19.b. Construct and explain Serial-In Serial-out and Parallel-In -Serialout shift registers and write two of its applications each	CO4 K4
20.a. Describe the Random access memory (RAM) and summarize the operation of 7489 chip and explain how it can be used in gadget	CO5 K3
(or)	
20.b. Discuss Electrically Programmable Read only Memory(EPROM) with logic diagram and its advantages.	CO5 K3

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