

B.Sc. DEGREE EXAMINATION NOVEMBER 2016
BRANCH III - PHYSICS
FIRST SEMESTER

REG. No. _____

COURSE : MAJOR – CORE
PAPER : ELECTRONICS – I
TIME : 30 MINS.

MAX. MARKS : 30

SECTION – A

TO BE ANSWERED IN THE QUESTION PAPER ITSELF

ANSWER ALL QUESTIONS:

(30 x 1 = 30)

I CHOOSE THE CORRECT ANSWER:

1. A string of eight bits is called as a
a) word b) nibble c) byte d) octal
2. In the binary number system, the digit at the extreme right is referred to as.....
a) LSB b) MSB c) BCD d) MB
3. $[E]_H = [?]_2$
a) $[1001]_2$ b) $[1101]_2$ c) $[1011]_2$ d) $[1110]_2$
4. In binary addition, $1 + 1 = ?$
a) $[1]_2$ b) $[2]_2$ c) $[10]_2$ d) $[10]_{10}$
5. Apply the rule of Boolean algebra, $A + A + 0 = ?$
a) 1 b) A c) A d) 0
6. A full adder can be converted into a full subtractor with the addition of only one...gate
a) NAND b) NOT c) NOR d) XOR
7. $A \oplus B = \dots\dots\dots$
a) $AB + AB$ b) $AB + AB$ c) $AB + AB$ d) $AB + AB$
8. Which IC is used in parallel binary adder?
a) 7432 b) 7483 c) 7476 d) 7473
9. Flip flop is a multivibrator.
a) astable b) monostable c) bistable d) tristable
10. How many flip flops are required to construct a decade counter?
a) 2 b) 4 c) 8 d) 10
11. Flip flop can store bit digital information.
a) 1 b) 4 c) 8 d) 16
12. ICs are generally made of.....
a) Sn b) Se c) Sb d) Si

13. Most commonly used ICs are.....
a) Thin film b) Thick film c) Monolithic d) Hybrid
14. Which layer is removed in the etching process?
a) Si b) SiO c) SO₂ d) SiO₂
15. Light emitting diodes are not made from.....
a) silicon b) gallium c) phosphorus d) arsenic

II FILL IN THE BLANKS:

16. A continuously varying signal is called an _____.
17. The associative law for addition of three variables is $A+(B+C) =$ _____
18. Flip flop has _____ stable states..
19. SSI stands for _____.
20. The resistance of photo diode with no incident light is called _____.

III STATE WHETHER TRUE OR FALSE:

21. Square wave is a digital signal .
22. De Morgan's theorem represents, $A + B = A + B$.
23. Flip flop is also called as a latch .
24. Inductors and transformers cannot be fabricated on an IC .
25. Photo diode operates in a forward bias.

IV ANSWER BRIEFLY:

26. Define digital circuit.

27. What is half adder?

28. What is ripple counter?

29. What is an integrated circuit?

30. What is LED?

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STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2015-16 & thereafter)

SUBJECT CODE : 15PH/MC/EL14

B.Sc. DEGREE EXAMINATION NOVEMBER 2016
BRANCH III - PHYSICS
FIRST SEMESTER

COURSE : MAJOR – CORE
PAPER : ELECTRONICS – I
TIME : 2 ½ HOURS **MAX. MARKS : 70**

SECTION – B

ANSWER ANY FIVE QUESTIONS: (5 x 5 = 25)

1. Perform the following. (i) Add: $(101101)_2 + (100111)_2$
(ii) Subtract: $(101101)_2 - (100111)_2$
(iii) Multiply: $(10110)_2 \times (110)_2$
2. Simplify the following Boolean expression
(i) $Y = A + AB$
(ii) $Y = AB + AC + BC$
3. Simplify using K map: $Y = F(A, B, C, D) = \Sigma(2, 3, 12, 13, 14, 15)$
4. Explain the working of a shift right shift register by using JK flip-flops.
5. Explain integrated resistors.
6. What value of series resistor is required to limit the current through a LED to 20mA with a forward voltage drop of 1.6 V when connected to a 10 V supply?
7. Explain the operation of photo diode.

SECTION – C

ANSWER ANY THREE QUESTIONS: (3 x 15 = 45)

8. Convert the following numbers
(i) $[37]_{10} = [?]_2$
(ii) $[110001]_2 = [?]_{10}$
(iii) $[91]_{10} = [?]_8$ (iv) $[100111110010]_2 = [?]_{16}$ (v) $[B2F]_{16} = [?]_8$ (vi) $[765]_8 = [?]_{10}$
9. Explain (i) full adder
(ii) half subtractor with the corresponding logic circuit and truth table.
10. Discuss in detail the operation of a JK master-slave flip-flop with necessary circuit.
11. Explain the fabrication process of a monolithic IC?
12. Explain (i) Multicolor LED
(ii) Power indicator
(iii) Seven segment display.

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