STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086
(For Candidates admitted during the academic year 2004-05 & thereafter)

SUBJECT CODE : CA/MO/DL34

B.C.A. DEGREE EXAMINATION – NOVEMBER 2007
THIRD SEMESTER

REG. NO. : _____

COURSE : MAJOR OPTIONAL
PAPER : DIGITAL LOGIC FUNDAMENTALS
TIME : 20 MINUTES **MAX. MARKS : 20**

TO BE ANSWERED ON THE QUESTION PAPER ITSELF :

SECTION – A **(20X1=20)**

ANSWER ALL THE FOLLOWING QUESTIONS:

I Choose the best answer :

1. The band between valance band and conduction band is called
   a) allowed b) forbidden c) secluded d) large gap

2. The energy gap for Ge at room temperature is
   a) .72 ev b) 1.1 ev c) 1.5 ev d) 2.1 ev

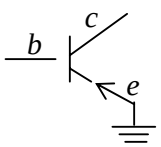
3. Depletion region has
   a) electron b) holes
   c) equal number of holes and electrons d) no free carries

4. $A+\overline{A}$ is equal to
   a) 1 b) 0 c) -1 d) -2

5. In J_k flip flop when $j=k=1$ the output will
   a) set b) reset c) Toggle d) not change

6. Full adder can add at a time
   a) 2 bits b) 3 bits c) 4 bits d) any number

7. At absolute zero semiconductors behave as
   a) insulators b) conductors c) semiconductors d) metals

8. 

   is called
   a) common emitter b) common base
   c) common collector d) common source to amitor

..2

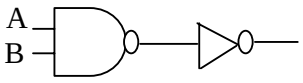
9. Multivibrator is called
   a) oscillator b) amplifier c) opamp d) stability amplifier

10. VVLSI means
    a) very very large scale chip b) very varying large scale chip
    c) very very low scale chip d) very very low sense Instrument

II Fill in the blanks :

11. The width of the depletion region in a PN junction _____ when forward biased.

12. In transistor $\alpha = 0.975$ then $\beta =$ _____.

13. The output of 

is _____

14. $Y = A\overline{B} + \overline{A}B$ resembles a _____

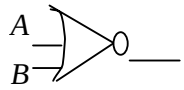
15. The forward resistance of pn junction diode is _____

III State True of False :

16. In a transistor $I_e = I_b + I_c$.

17. Number of holes is equal to number of electron in a intrinsic semiconductor.

18. Transistor switches from low to high or high to low.

19. The output of 

is $\overline{A+B}$.

20. F_1F_0 in shift register represents first in first out.

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THIRD SEMESTER

COURSE : MAJOR OPTIONAL
PAPER : DIGITAL LOGIC FUNDAMENTALS
TIME : 2 HOURS & 40 MINUTES **MAX. MARKS : 80**

SECTION – B **(8X5=40)**

ANSWER ANY EIGHT OF THE FOLLOWING QUESTIONS :

1. Explain the working of ENCODER.
2. How is basic gates constructed using diodes?
3. Explain the VI characteristics of $p-n$ junction diode.
4. Explain the working of transistor as an amplifier.
5. Give the k map for EXOR gate circuits.
6. Give the design of combinational circuits.
7. Explain the transistor as a electronic switch.
8. Explain the working of code converters.
9. Explain Master slave flip.
10. Explain Intrinsic and extrinsic semiconductor.

SECTION – C **(4X10=40)**

ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS :

11. Discuss the experimental procedure to study the characteristics of a *pnp* transistor in common emitter mode.
12. Explain the working of a) Multiplexer b) Demultiplexer
13. Explain with a neat diagram the working of a) Half adder b) Full adder
14. Give the construction and working of a) up/down counter b) Ripple counter
15. Give the theorems of Boolean Algebra. Give the sum of products and products of sum forms. How is *k* map constructed?
16. Explain the working of different types of shift registers.