

**B.Sc. DEGREE EXAMINATION APRIL 2008**  
BRANCH III - PHYSICS  
SECOND SEMESTER

REG. No. \_\_\_\_\_

COURSE : **ALLIED – OPTIONAL**  
PAPER : **BASIC DIGITAL ELECTRONICS**  
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.  $A(\overline{A+B})$  is equal to  
a) A                      b) AB                      c) B                      d) A + B
2. The logic A.A is  
a) zero                      b)  $\overline{A}$                       c)  $\overline{\overline{A}}$                       d) A
3. The Boolean expression for EX-OR gate is  
a)  $\overline{A}B + A\overline{B}$                       b)  $\overline{A}B + \overline{A}B$                       c)  $AB + \overline{A}B$                       d)  $\overline{A}B + \overline{A}B$
4. In a Karnaugh map octets is a group of  
a) octal code                      b) two pairs                      c) eight ones                      d) eight zeros
5. Don't care condition is a condition in a logic network in which the output is  
a) one                      b) zero  
c) dependent of the input                      d) independent of the input
6. In a full adder circuit, If A = B = C = 1, the value of C and S is  
a) 1, 0 ;                      b) 0, 1 ;                      c) 0, 0                      d) 1, 1
7. The number of flip flops required to construct a mode – 12 counter is  
a) 3                      b) 4                      c) 5                      d) 6
8. DATA LATCH is a  
a) Delay flip flop                      b) JK master slave flip-flop  
c) Ring counter                      d) parallel counter
9. The logical extension of the basic serial shift register is  
a) parallel shift register                      b) Ring counter  
c) Transducer                      d) Ripple counter

10. Thick and Thin ICs are made  
 a) on ceramic wafers                      b) on silicon wafer  
 c) on polymer material                      d) on carbon films
11. In monolithic ICs  
 a) only active components are integrated  
 b) only passive components are integrated  
 c) all the discrete components are integrated with in a single piece  
 d) only diodes are integrated
12. One of the major component of the CPU is  
 a) ALU                      b) Joy stick                      c) CRT                      d) CDROM
13. ROM is a  
 a) Temporary memory                      b) fixed memory  
 c) Erasable memory                      d) rechargeable memory
14. The transfer of data from floppy disk and computer is controlled by the  
 a) Disk operating system                      b) ALU  
 c) program counter                      d) stack pointer
15. In the following, the application software is  
 a) UNIX                      b) WINDOWS  
 c) LINUX                      d) MICROSOFT WORD

II STATE WHETHER TRUE OR FALSE:

16. EX-OR gate cannot be used as a parity checker.
17. The Boolean equation obtained in POS method are first ORed and the ANDED.
18. Flip-flops are bistable multivibrator.
19. Integrated circuits generally made of Aluminum oxide.
20. CDROM is a primary memory.

III FILL IN THE BLANKS:

21.  $AB + \overline{A}BC = \underline{\hspace{2cm}}$ .
22. In a JK flip-flop, if J=K=1, the flip-flop  $\underline{\hspace{2cm}}$ .
23. In a shift register, to register the serial data 010101, the number of flip-flops required is  $\underline{\hspace{2cm}}$ .
24. The component that cannot be incorporated in ac IC is  $\underline{\hspace{2cm}}$ .

25. The output device used to produce charts, graphs, maps and drawing is \_\_\_\_\_.

IV ANSWER BRIEFLY:

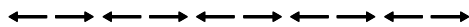
26. Give the truth table for a two input NAND gate.

27. What is race problem?

28. Mention any two disadvantages of ICs.

29. What is meant by quads in K-map?

30. What is system software?



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

SUBJECT CODE : **PH/AO/BD23**

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TIME : **2 ½ HOURS** MAX. MARKS : 70

**SECTION – B**

ANSWER ANY FIVE QUESTIONS: (5 x 6 = 30)

1. Explain, how NOR gate is used as universal logic gate?
2. Explain SOP and POS.
3. Explain the parallel four bit binary adder with example.
4. Draw the circuit diagram of a JK master slave flip-flop and explain its function.
5. Minimize the Boolean following logic functions and realize using logic gates  
 $f(ABCD) = \sum m(1,5,10,11,14,15)$
6. Explain the basic computer architecture with a block diagram.
7. Explain various output devices of a computer.

**SECTION – C**

ANSWER ANY TWO QUESTIONS: (2 x 20 = 40)

8. State and prove DeMorgans theorem.
9. With necessary diagram, truth table and output wave form, explain the function of a 4 – bit binary ripple counter.
10. Explain the steps involved in the fabrication of monolithic ICs. Also mention any five advantages of ICs.
11. Write a note on  
a) Primary memories      b) features of operating system.

