

Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University), Coimbatore – 641 043

Master's Degree Examination – November 2018
Semester I

CLASS : I PG
MAJOR: COMPUTER APPLICATIONS

MAX. MARKS: 60
TIME: 3 Hrs.

17MCAC02 Digital Computer Fundamentals
PART – A

(10 x 1/2 = 5)

Choose the correct answer

- 1) The base or radix in octal system is _____.
a) 8 b) 7 c) 10 d) 9
- 2) What is the output state of an OR gate if the inputs are 0 and 1?
a) 0 b) 1 c) 3 d) 2
- 3) $A + A.B = ?$
a) B b) A.B c) A d) A or B
- 4) How many cells do a 5-variable K-map contains?
a) 32 b) 24 c) 22 d) 25
- 5) Which device has many inputs and one output?
a) Flip flop b) Multiplexer c) Demultiplexer d) Counter
- 6) How many select lines does a 8-to-1 multiplexer requires?
a) 4 select lines b) 2 select lines c) 1 select line d) 3 select lines
- 7) A J-K flip-flop has two control inputs. What happens to the Q output when the control inputs are 0 and 1?
a) The Q output is set to 1 b) The Q output toggles to the other state
c) The Q output is reset to 0 d) The Q output remains unchanged
- 8) A set of flip flops integrated together is called _____.
a) counter b) adder c) register d) accumulator
- 9) Which is volatile memory?
a) ROM b) RAM c) EEPROM d) EEPRAM
- 10) EPROM is erased by _____.
a) red light b) sodium light c) ultra violet rays d) infra-red rays

PART - B

(5x4 =20)

Answer All Questions

(Each answer should not exceed 200 words or one page)

- 11) a) Find the decimal, octal and hexadecimal number for the following binary number:
1111011
(or)
b) Write a short note on
(i) Binary Coded Decimal (ii) Error-Detection Codes
- 12) a) State and prove Demorgan's Theorem of Boolean algebra.
(or)
b) What are universal gates? Explain.
- 13) a) Draw the logic circuit and truth table for 4-to-1 multiplexer and explain it.
(or)
b) What is a Half Adder? Explain with logic diagram.
- 14) a) What is a T flip-flop? Explain its operation.
(or)
b) What is a shift register? Explain its operations.
- 15) a) Distinguish between Primary and secondary memories.
(or)
b) Explain briefly about the memory hierarchy.

PART - C

(5 x7 =35)

Answer All Questions

(Each answer should not exceed 600 words or three pages)

- 16) a) Convert the following hexadecimal numbers to binary numbers:
i) E5 ii) B4D iii) 7AF4
(or)
b) What are digital logic gates? Explain with TT.
- 17) a) Write any five laws of Boolean algebra and Construct the truth table.
(or)
b) Simplify the Boolean functions
 $F(w,x,y,z) = \text{Sum of } (1,3,7,11,15)$
and the don't care conditions: $d(w,x,y,z) = \text{sum of } (0,2,5)$
- 18) a) What is a decoder? Draw a 3-to-8 line decoder and explain it.
(or)
b) What is a subtractor? Discuss about the half-subtractor and full-subtractor.
- 19) a) What is a flip-flop? Explain about Clocked RS flip-flop and D flip-flop.
(or)
b) What are the types of counters? Explain
- 20) a) Explain the operations of magnetic tape, hard disks, and floppy disks.
(or)
b) What are the types of ROM's and RAM's? Explain.
