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B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2018
DIGITAL ELECTRONICS – I (Paper – V)

Day and Date : Wednesday, 4-4-2018
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right place indicate full marks.**

1. Multiple choice questions :

14

- 1) A half adder makes _____ bit of addition.
a) 1 b) 2 c) 3 d) 4
- 2) Acronym of ASCII is
a) American Standard Code for Information Integer
b) American Standard Code for Information Interchange
c) American Standard Code for Informal Interchange
d) American Standard Code for Informal Interconversion
- 3) Flip-flop stores _____ bit information.
a) 0 b) 1 c) 3 d) 4
- 4) Shift counter is also known as
a) Ring counter b) MOD counter
c) Johnson counter d) Up counter
- 5) Demultiplexer means
a) One to many b) Many to one c) One to one d) Many to many
- 6) _____ is unweighted code.
a) BCD b) excess-3 c) binary d) hexadecimal
- 7) In hexadecimal number system _____ numbers are used.
a) 6 b) 10 c) 16 d) 20
- 8) The excess-3 code of 7 is
a) 1011 b) 1001 c) 1100 d) 1010
- 9) _____ is called as inverter.
a) NOT b) NAND c) NOR d) EX-OR
- 10) _____ gate whose output is 1 only when both inputs are 1.
a) OR b) NAND c) AND d) EX-OR
- 11) In 32 to 1 multiplexer _____ control lines are used.
a) 2 b) 3 c) 4 d) 5
- 12) A _____ flip-flop can be used to divide the input clock frequency by 2.
a) T b) D c) RS d) JK

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- 13) In IC 7490 _____ flip-flops are used.
a) 2 b) 3 c) 4 d) 5
- 14) A IC 74138 is _____ decoder.
a) Octal to binary b) 3 to 8
c) Hex to binary d) Decimal to binary
2. Answer **any seven** of the following : **14**
- 1) Write four Boolean rules of Boolean algebra.
 - 2) What is K-MAP ?
 - 3) State De-Morgan's theorems.
 - 4) Draw block diagram of 4 to 1 multiplexer.
 - 5) What is ASCII explain with example.
 - 6) What is race around condition in JK flip-flop ?
 - 7) Draw diagram of half subtractor.
 - 8) Write conversion of gray to binary and binary to gray with one example each.
 - 9) What is 1's complement and 2's complement explain with one example.
3. A) Answer **any two** of the following : **10**
- 1) Write conversion of binary to decimal and decimal to binary with one example each.
 - 2) Explain full adder with neat diagram.
 - 3) Explain ring counter.
- B) Explain IC 74150. **4**
4. Attempt **any two** of the following : **14**
- 1) What is counter ? Explain 3-bit synchronous and asynchronous up counter.
 - 2) What are universal gates ? Explain interconversion of gates using NAND gate.
 - 3) What is shift register ? Explain all types shift register with necessary diagrams.
5. Attempt **any two** of the following : **14**
- 1) What is flip-flop ? Explain T flip-flop and D flip-flop.
 - 2) What is tree multiplexing ? Explain how to build 32 to 1 multiplexer using 4 to 1 multiplexer.
 - 3) Explain 4 variables K-MAP with one example.
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