

**F.Y. B. SC. (COMPUTER SCIENCE) SEM –II (CBCS - 2016
COURSE) : SUMMER - 2018
SUBJECT : PRINCIPLES OF DIGITAL ELECTRONICS – II**

Day : **Wednesday**
Date : **02/05/2018**

S-2018-0809

Time : **03.00 PM TO 06.00 PM**
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

Q.1 A) Select the correct option and rewrite the complete sentence: **[06]**

- a) _____ is the disadvantage of R-S flip-flop
 - i) It has no enable input
 - ii) It has an invalid state
 - iii) It has no clock input
 - iv) It has only a single output
- b) There are _____ types of multivibrators.
 - i) 2
 - ii) 3
 - iii) 4
 - iv) 1
- c) The largest binary number that can be stored in a shift register having eight flip-flops is _____.
 - i) 10110011
 - ii) 11001100
 - iii) 11111111
 - iv) 00111100
- d) Full form of EEPROM is _____.
 - i) Efficiently erasable Programmable Read only Memory
 - ii) Electronically Eliminating Programmable Read only Memory
 - iii) Electrically Eliminating Programmable Read only Memory
 - iv) Electrically Erasable Programmable Read only Memory
- e) _____ is not a type of shift register.
 - i) Serial-in-sequence -out
 - ii) Serial-in-serial-out
 - iii) Parallel-in-serial-out
 - iv) Parallel-in-parallel-out
- f) The number of states counted by MOD- 7 counter are _____.
 - i) 6
 - ii) 7
 - iii) 10
 - iv) 1

B) Answer the questions in one sentence: **[06]**

- a) Differentiate between RAM and ROM.
- b) State one application of bistable multivibrator.
- c) Define modulus of counter.
- d) What is race around condition in flip-flops?
- e) How many flip-flops are required to construct 4-bit counter?
- f) Define ring counter.

P.T.O.

Q.2 Answer **ANY THREE** of the following: [12]

- a) A timer 555 is configured to turn in astable mode with $R_A = 10k\Omega$, $R_B = 2k\Omega$ and $C = 0.0047 \mu F$. Determine the output frequency and the duty cycle.
- b) Explain the action of 3-bit asynchronous up counter in detail.
- c) Draw diagram for bistable multivibrator using IC 555 and explain it in brief.
- d) Explain the action of MOD - 5 counter using IC 7490.

Q.3 Answer **ANY FOUR** of the following: [12]

- a) Explain in brief :
 - i) Memory capacity
 - ii) Speed
 - iii) Address lines.
- b) Draw the logic diagram of J-K master-slave flip-flop.
- c) Draw well-labelled diagram for 3- bit parallel-in-parallel-out shift register.
- d) Explain the terms : Volatile and Non-volatile memory.
- e) Draw the logic diagram of 3-bit up-down counter.

Q.4 Answer **ANY TWO** of the following: [12]

- a) Explain the action of monostable multivibrator using IC 555. Draw the necessary waveform and derive expression for its frequency.
- b) With neat diagram explain the working of J-K flip-flop. Also plot its truth table.
- c) What is a shift register? Explain the action of 3- bit serial-in-parallel-out shift register.

Q.5 Answer **ANY TWO** of the following: [12]

- a) Explain MOD-2, MOD-10 counter using IC 7490.
- b) Explain the working of R-S flip-flop using NAND gates. Also draw truth table for it.
- c) Explain the classification of memory in detail.

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