

083**Code : 15EC32T****Register
Number**

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III Semester Diploma Examination, Oct./Nov.-2019**DIGITAL ELECTRONICS****Time : 3 Hours]****[Max. Marks : 100**

- Instructions :** (i) Answer any six questions from Part – A. ($5 \times 6 = 30$ marks)
(ii) Answer any seven full questions from Part – B. ($7 \times 10 = 70$ marks)

PART – A

1. Define : 5
 - (i) Encoder
 - (ii) Decoder
 - (iii) Multiplexer
 - (iv) Demultiplexer
 - (v) Priority Encoder
2. Describe different types of triggering used in Flip-Flops. 5
3. Define counter, modulus, register, up-counting and down-counting. 5
4. List the applications of Registers. 5
5. Define Resolution, Accuracy, Settling time, Monotonicity and Speed as related to DAC. 5
6. List the features of DDR memory. 5
7. Compare the features of RAM and ROM. 5
8. Show how to implement 2-input X-NOR function using PAL. 5
9. Define the following terms with respect to logic gates : 5
 - (i) Power dissipation
 - (ii) Fan-in
 - (iii) Fan-out
 - (iv) Noise margin
 - (v) Propagation delay

PART - B

10. (a) Explain the working of 2 : 1 multiplexer. 5
(b) Differentiate between multiplexer and demultiplexer. 5
11. (a) Show how to implement NAND and X-OR gate using 4 : 1 multiplexer. 6
(b) Calculate the control lines and number of gates needed for 4 : 1 MUX and 1 : 8 DEMUX. 4
12. (a) Write any five comparison between combinational and sequential circuits. 5
(b) Show how to configure JK Flip-Flop as D Flip-Flop and T Flip-Flop. 5
13. (a) Demonstrate how IC 555 timer can be used as monostable multivibrator. 5
(b) List the applications of Flip-Flops. 5
14. (a) Explain the functioning of a 3-bit SERIAL-IN-SERIAL-OUT shift register. 5
(b) Distinguish between Synchronous and Asynchronous counter. 5
15. (a) Demonstrate how to configure IC 7490 as decade counter and write its truth-table. 6
(b) Compute the overall modulus of a cascaded counter containing mod 5, mod 8 and mod 4 and justify your answer. 4
16. (a) Explain a binary Ladder network of DAC with suitable diagram. 6
(b) An 8 bit D/A converter has a step size of 20 mV. Determine the full-scale output and percentage resolution. 4
17. (a) Show how successive approximation type ADC can be used to convert analog signal into digital form with circuit diagram. 7
(b) List any three applications of ADC. 3
18. (a) Explain the working principle of Dynamic Random access memory. 5
(b) A certain memory is specified as $32\text{ K} \times 8$. Determine : 5
(i) The number of bits in each word
(ii) The number of words being stored.
(iii) The number of address input lines.
19. (a) Explain the functioning of CMOS-inverter. 5
(b) Illustrate CMOS-TO-TTL interface using 5 V supply voltage. 5