

**Code : 15EC32T**

Register  
Number

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**III Semester Diploma Examination, Nov./Dec.-2018**

**DIGITAL ELECTRONICS**

**Time : 3 Hours ]**

**[ Max. Marks : 100**

**Instructions :** (1) Answer any **six** questions from Part – A. (**5 × 6 = 30 Marks**)

(2) Answer any **seven** full questions from Part – B. (**10 × 7 = 70 Marks**)

**PART – A**

1. Define : 5
  - (i) Encoder
  - (ii) Decoder
  - (iii) Multiplexer
  - (iv) Demultiplexer
  - (v) Priority encoder
2. Convert JK flip-flop into T flip-flop. 5
3. Write the concept of universal shift register and list the applications of shift register. 5
4. List the functions of typical shift register IC. 5
5. Identify the pins of a typical ADC IC and state their functions. 5
6. Write a note on flash memory. 5
7. Compare PLA and PAL. 5
8. Compare the features of static and dynamic RAM. 5
9. List the advantages and disadvantages of CMOS devices. 5

**PART – B**

10. Explain Decimal to BCD encoder with suitable circuit, logic symbol and truth table. 10
11. (a) Construct 4 : 1 multiplexer using 2 : 1 multiplexer. 5  
(b) Calculate the control lines needed for 4 : 1 mux and 1 : 8 demux. Sketch their logic diagrams. 5
12. Draw the logic diagram and gate level structure of JK flip-flop. Also, write the truth table. 10
13. (a) Sketch 555 timer as Astable and Monostable multivibrator. 5  
(b) Describe the functioning of D flip-flop with truth table. 5
14. Explain the functioning of 3 bit shift register under SIPO and SISO modes. 10
15. (a) Write the truth table and circuit of mod-5 counter. 5  
(b) Show how flip-flops can be used to realise counter. 5
16. (a) List the pin functions of a typical DAC IC. 5  
(b) Explain the working of a successive approximation type ADC. 5
17. (a) An 8-bit DAC has a step size of 20 mV. Determine the full-scale output and percentage resolution. 5  
(b) Determine the resolution of a 12-bit A/D converter having a full-scale analog input voltage of 5 V. 5
18. (a) Relate memory capacity and address range with two examples. 5  
(b) List the features and applications of EEPROM. 5
19. (a) Define fan-in, fan-out, propagation delay, power dissipation and noise margin as applicable to logic families. 5  
(b) Draw and explain the functioning of CMOS inverter. 5