

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: IT201

Course Name: DIGITAL SYSTEM DESIGN (IT)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks

Marks

- | | | |
|---|--|-----|
| 1 | a) Convert $(504.75)_{10}$ to binary, octal and hexadecimal number systems. | (6) |
| | b) Calculate the following using BCD arithmetic | (5) |
| | i) $0111\ 1000 + 0101\ 0110$ | |
| | ii) $0100\ 0101 - 0100\ 1001$ | |
| | c) Compare 1's and 2's complement methods of representations. | (4) |
| 2 | a) Simplify $F(A,B,C,D) = \sum m(1,3,4,5,10,12,13,15)$ using tabulation method | (8) |
| | b) Using K-map minimize the given Boolean function $F=A'B'D'+A'CD+A'BC$ and $d=A'BC'D+ACD+AB'D'$ | (7) |
| 3 | a) List the postulates of Boolean algebra. | (4) |
| | b) Write notes on character coding schemes. | (4) |
| | c) Minimize the following expression using K-map.
$F(w,x,y,z) = \Pi(0,1,2,3,4,10,11)$ | (7) |

PART B

Answer any two full questions, each carries 15 marks

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|---|---|------|
| 4 | a) Differentiate between combinational circuit and sequential circuit with neat diagrams. | (5) |
| | b) Design full adder circuit and implement: | (10) |
| | i) Using basic gates ii) Using NAND gates only. | |
| 5 | a) Explain a 4-bit carry look ahead adder with neat diagram. | (8) |
| | b) Demonstrate a 4 x 1 Multiplexer and 1 x 4 Demultiplexer with neat diagram. | (7) |
| 6 | a) Explain the working of basic RS Flip Flop and Clocked RS Flip Flop with neat diagrams. | (7) |
| | b) Describe master slave flip flop with neat diagram. | (4) |
| | c) Differentiate between edge triggering and level triggering of flip flops. | (4) |

PART C

Answer any two full questions, each carries 20 marks

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|---|--|------|
| 7 | a) Demonstrate Asynchronous BCD counter with truth table and circuit diagram | (10) |
| | b) Write notes on PLA. | (5) |
| | c) Write short note on random access memory (RAM). | (5) |
| 8 | a) Explain 4-bit serial-in-parallel-out shift register and bi-directional shift register with neat diagrams. | (15) |
| | b) Write short note on read only memory (ROM). | (5) |
| 9 | a) Design 4-bit Synchronous Binary counter using T Flip Flops. | (10) |
| | b) Explain Booth's multiplication algorithm with suitable example. | (10) |
