

Government College of Engineering, Aurangabad
(An Autonomous Institute of Government of Maharashtra)

T. E. (EEP) Old Examination
End Semester Examination

EE 302: DIGITAL ELECTRONICS

17 NOV 2016

Time: Three Hours

Max Marks: 60

“Verify the course code and check whether you have got the correct question paper”

N.B:-

1. Attempt **all** questions
2. Each question carries 12 marks
3. Assume suitable data if necessary and state it clearly
4. Use of programmable calculator is not allowed

- Q.1 a) Convert $(45.31)_{10}$ into binary. (2)
b) Convert gray code 1001 to binary. (2)
c) Perform $(8E9D)_H - (6CB)_H$. (2)
d) Simplify $F = \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC$ (2)
e) Give electrical analogy for Ex-OR gate. (2)
f) Subtract $(46)_{10}$ from $(83)_{10}$ using 2's complement method. (2)
- Q.2 Attempt **any two**
- a) Design a digital system for BCD to 7-segment decoder. Implement the circuit using NAND gates. (6)
 - b) Using K-map, implement the circuit with minimum number of NAND gates for the following function- (6)
 $F = \sum m(1, 2, 4, 7, 8, 9, 11, 12, 13, 15)$
 - c) What are considerations taken while interfacing CMOS with TTL circuit? Explain. (6)
- Q.3 Attempt **any two**
- a) Draw a diagram of MOD-8 asynchronous counter and explain its operation. (6)
 - b) What do you understand by a register? With help of neat diagram explain 5-bit universal shift register. (6)
 - c) What is the difference between multiplexer and demultiplexer? With the aid of neat diagram and truth table describe IC 74150. (6)
- Q.4 Attempt **any two**
- a) With a neat block diagram explain the working of a dual slope analog to digital converter. (6)
 - b) Discuss the performance criteria for a digital to analog converter. How does these criteria help in selecting DAC? (6)
 - c) With the help of block diagram explain programmable logic array. (6)

Q.5 Write short notes on **(any two)** -

(12)

- a) D to S-R flip-flop conversion using K-map
- b) Half and full subtractor
- c) Complex Programmable Logic Devices
- d) 7- segment decoder