S. B. Roll. No.....

DIGITAL ELECTRONICS
3rd Exam/ECE/CSE/IT/0195/Nov'24
(For 2018 Batch onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Do as directed. **15x1=15**

a. Define Digital Signal.
b. The decimal number equivalent to $(1101)_2$ is_____
c. How many digits in octal system?
d. The 2's complement of 11001000 is
e. BCD stands for_____.
f. How many numbers of characters represented by ASC-II CODE?
g. The hexadecimal digits are 0 to 9 and A to _____
h. A ripple counter is _____Sequential circuit.
i. The modulo of a 4-bit binary counter is _____
j. BCD numbers express each decimal digit as a_____
k. Pocket calculators use _____system.
l. An inverter is also known as _____gate.
m. Full subtractor has how many outputs?
n. A half subtractor subtracts how many bits?
o. IC 74194 is which shift register?

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. List out differences between an Analog and Digital signal.
ii. Draw and write the truth table of OR gate.
iii. State and verify Duality principle.
iv. What do you mean by minterm and maxterm?
v. What do you mean by SOP and POS.?
vi. Differentiate between combinational and sequential circuits.
vii. Design and implement a half subtractor.
viii. What are the basic differences between MUX and DEMUX?
ix. Give applications of flip-flops.
x. Discuss the working of buffer register.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Define and explain universal shift register in detail.
b. What do you mean by ripple counter explain?
c. What is race around condition in JK flip flop? How can it be avoided?
d. Design 4:1 multiplexer.
e. Prove the following logic expression using Boolean algebra:
AB+CD= (A+C) (A+D) (B+C) (B+D)