



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

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END SEMESTER EXAMINATION – APRIL/MAY 2026

ELECTRONICS – II SEMESTER BSC

25BSC25A: ANALOG AND DIGITAL ELECTRONICS II

Time: 3 Hours.

Max. Marks: 80

Instruction: *Answer should be written completely in English.*

SECTION - A

Answer any **TEN** questions. Each question carries **TWO** marks.

(10X2=20)

1. Draw the symbol of N channel and P channel MOSFET.
2. Define intrinsic stand-off ratio for an UJT.
3. What is an IGBT? Mention any two applications.
4. Draw the block diagram of operational Amplifier.
5. Define CMRR and Slew rate for an operational amplifier.
6. Draw the diagram of op-amp as comparator.
7. State the Barkhausen Condition for sustained oscillation.
8. Define fan in and fan out for a digital Logic Family.
9. What is ADC and DAC?
10. What do you mean by toggling and racing condition?
11. What do you mean by level triggering clock?
12. List any two applications of shift registers.
13. What do you mean by ring counter?

SECTION - B

Answer any **FIVE** questions. Each question carries **EIGHT** marks.

(5X8=40)

14. Explain the construction and working of a N Channel JFET with necessary diagrams.
15. Explain the construction and working of UJT relaxation oscillator with necessary diagram. Write the formula for frequency.
16. Draw the circuit diagram and expected wave forms of an Integrator and differentiator using an op-amp and write its output voltage formula.
17. What do you mean by oscillator? With a circuit diagram explain the construction and working of a Wien Bridge oscillator Write the formula for frequency and mention the application.
18. Explain any five characteristics of digital logic families.



19. Explain the working of Successive approximation method of ADC with diagram
20. Mention the types of shift register. Explain the working of a 4-bit SISO shift registers with diagrams and truth table.
21. Draw the logic diagrams and truth tables of a JK flip-flop and a D flip-flop. Also mention their applications.

SECTION - C

Answer any **FOUR** questions. Each question carries **FIVE** marks.

(4X5=20)

22. The following readings were obtained experimentally from a JFET:

Determine a) a. c. drain resistance b) transconductance and c) amplification factor.

V_{GS}	0V	0V	-0.4V
V_{DS}	8V	8V	16V
I_D	10mA	5mA	8mA

23. The intrinsic stand-off ratio for a UJT is determined to be 0.65. If the inter-base resistance is $20\text{ K}\Omega$, what are the values of R_{B1} and R_{B2} ?
23. Design and draw a first order high pass filter for a cut off frequency of 10KHz, with a pass band gain of 10. Choose $C = 0.02\mu\text{F}$, $R_f = 20\text{K}\Omega$.
25. An astable multivibrator has $R_1 = 10\text{k}\Omega$, $R_2 = 10\text{k}\Omega$, $C = 0.1\mu\text{F}$. Find the frequency. Draw the circuit diagram.
26. Compare TTL and CMOS families with 4 points.
27. Draw the logic diagram, truth table, and timing waveforms of a Synchronous counter.
28. Design of Mod 3 counter using K Map.

