



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 (Repeaters)

24BSC25A: 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. Mention any four special purpose diodes.
2. Mention any two applications of MOSFET.
3. Define intrinsic stand-off ratio for an UJT.
4. Mention any two applications of DIAC.
5. Draw the block diagram of operational amplifier.
6. Define CMRR and Slew rate for an operational amplifier.
7. What do you mean by high pass filter?
8. State Barkhausen criteria for sustained oscillations in an oscillator.
9. Define fan in and fan out for a digital logic family.
10. What do you mean by latch?
11. Draw the block diagram of ADC.
12. What do mean by shift registers?
13. Mention different types of computer languages.

SECTION – B

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

(5X8=40)

14. a) Analyse the output characteristics of an N Channel JFET with necessary diagram.
b) Compare FET with BJT.
15. Explain the construction and working of UJT relaxation oscillator.
16. a) Mention the ideal characteristics of an op-amp.
b) Draw the circuit diagram and wave form for an op-amp integrator circuit.
17. With a circuit Diagram explain the phase shift Oscillator using op amp. Give formula for frequency of oscillations.
18. Explain any five characteristics of digital logic families.
19. With circuit diagram and truth table explain the RS flip flop and D Flip flop.
20. Mention the types of shift register. Explain the working of a 4-bit SISO shift registers with diagrams and truth table.
21. Explain the functions of a basic computer with a block diagram.



SECTION - C

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

(4X5=20)

22. A JFET has the following parameters. $I_{DSS} = 32\text{mA}$, $V_{GS}(\text{off}) = -8\text{V}$, $V_{GS} = -4.5\text{V}$.
Find the value of drain current.
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} ?
24. Design a Low Pass Filter using operational amplifier at a cut off frequency of 2KHz and a gain of 2.
25. A Phase shift oscillator has $R = 20\text{K}\Omega$ and $C = 22\mu\text{F}$. Calculate the frequency of oscillation.
26. Compare TTL and CMOS families with 4 points.
27. Explain the JK Flip flop with circuit diagram and truth table.
28. What is a flowchart? Explain its symbols and uses.

