



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

NAAC A GRADE • AFFILIATED TO BANGALORE UNIVERSITY • AICTE APPROVED • 2(F) & 12 (B) RECOGNITION OF UGC • ISO 9001:2015 CERTIFIED
Electronics City P.O., Bengaluru - 560 100, Karnataka, INDIA ☎ (+91) 8088140679 ✉ pro@sfscollge.in 🌐 www.sfscollge.in

END SEMESTER EXAMINATION – MAY 2025 ELECTRONICS - II SEMESTER BSC 24BSC25A: ANALOG AND DIGITAL ELECTRONICS - II

Time: 3 Hours

Max. Marks: 80

Instruction: Answer should be written completely in English.

PART-A

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

(10X2=20)

1. Draw the symbol CMOS inverters and IGBT.
2. Mention any two applications of TRIAC.
3. Draw the symbol of Varactor diode and Schottky diode
4. Draw the symbol of SCR and DIAC.
5. Draw the block diagram of Differential Amplifier.
6. What do you mean by comparator?
7. What do you mean by Slew rate of an op amp?
8. What do you mean by Latch?
9. What do you mean by sequential circuits?
10. Give two applications of ADC.
11. What are registers?
12. Mention any two applications of Counters.
13. Mention any two Peripheral Interfacing Techniques.

PART-B

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

(5X8=40)

14. Explain with a diagram the construction and working of n-channel MOSFET. (8)
15. Explain the construction and working of UJT Relaxation Oscillator. (8)
16. a) With a circuit diagram explain the phase shift oscillator using Op-amp. Give formula for frequency of oscillations.
b) What are the Barkhausen criterion for sustained oscillations. (6+2)



17. a) Draw the pin diagram of an Op-amp.
 b) What are the ideal characteristics of an op-amp. (4+4)
18. With a circuit diagram and example explain the R-2R resistor ladder network method of analog to digital conversion. (8)
19. Explain the JK and T flipflop with a circuit diagram and truth table. (8)
20. Explain the working of SISO Register with circuit diagram, truth table and timing diagram. (8)
21. a) Draw the Logic diagram, Truth table and timing diagram of 2-bit Synchronous counter.
 b) What are the four types of shift registers. (5+3)

PART-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 0.6. If the inter base resistance is $10 \text{ k}\Omega$. What are the values of R_{B1} and R_{B2} ?
24. Design a Low Pass filter with $R=2 \text{ k}\Omega$, $C=0.1 \mu\text{F}$ and the pass band gain is 2.
25. In an Astable Multivibrator if $R_A=22 \text{ k}\Omega$, $R_B=2.2 \text{ k}\Omega$, $C=0.1 \mu\text{F}$. Calculate the frequency of the Output waveform.
26. Design a Mod 5 Counters using K-maps.
27. Draw the truth table and timing diagram of RS flip flop with input values RS- 01,10,00, 01, 01, 10,10,11,10,00,01 for 10 clock pulse.
28. Design a computer system suitable for a degree students of St Francis de Sales College.

