

SECOND SEMESTER B.A./B.Sc. DEGREE EXAMINATION, APRIL 2020

(CBCSS—UG)

Electronics

ELE 2C 02—ELECTRONIC CIRCUITS

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A

*Answer all questions.
2 marks for each question.*

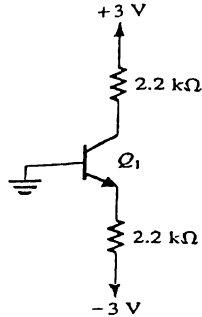
1. What is Q-point ?
2. What is the purpose of biasing a transistor ?
3. What is Zener breakdown ?
4. Define negative feedback.
5. Define sensitivity.
6. What are barkhausen conditions for oscillation ?
7. What is ripple factor of a rectifier ?
8. Differentiate between astable and monostable multivibrator.
9. What are the applications of rectifier ?
10. What is class A power amplifier ?
11. When the regulation by a Zener diode is with a varying input voltage, what happens to the voltage drop across the resistance ? Justify.
12. A transistor has an I_C of 100mA and I_B of 0.5mA. What is the value of α_{dc} ?

Section B

*Answer all questions.
5 marks for each question.*

13. Draw the block diagram and explain the principle and working of SMPS.
14. Explain the working of bridge rectifier with necessary diagrams.

15. Find the emitter, base and collector voltages and currents for the given circuit. Use $\beta = 50$ and $V_{BE} = 0.8V$, independent of current.



16. What is a feedback amplifier? What are the two types of feedbacks to an amplifier? Explain with suitable diagrams.
17. With suitable diagram explain the working of a crystal oscillator.
18. Write a short note on RC Phase shift Oscillator.
19. What is the use of filter circuits? Give a brief description on the basic types of RC filters.

Section C

Answer any **one** question.

10 marks for each question.

20. Explain in brief different biasing circuits of BJT with necessary diagrams and equations.
21. List out some important features of 555 Timer. Briefly explain the operation of 555 timer as Astable and Monostable multivibrator with relevant diagrams.

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Electronics

ELE 2B 02—ELECTRONIC CIRCUITS

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

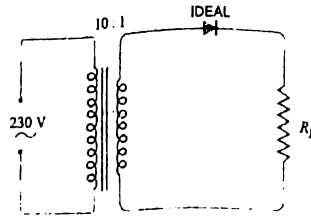
Section A*Answer questions up to 20 marks.**2 marks for each question.*

1. What is the importance of PIV in rectifier ?
2. In an NPN silicon transistor, $\alpha = 0.995$, $I_E = 10\text{mA}$ and leakage current $I_{CBO} = 0.5 \mu\text{A}$. Determine I_{CBO} .
3. What are the advantages of push-pull amplifier ?
4. What is ripple factor of a rectifier ?
5. Differentiate between astable and monostable multivibrator.
6. What are the Feedback Amplifier Topologies ?
7. What is a differentiator circuit ?
8. Draw a simple passive RC Low Pass Filter circuit and plot the frequency response of 1st-order Low Pass Filter.
9. Define positive feedback.
10. Define negative feedback.
11. Define sensitivity.
12. What are barkhausen conditions for oscillation ?

Section B*Answer questions up to 30 marks.**5 marks for each question.*

13. An a.c. supply of 230 V is applied to a half-wave rectifier circuit through a transformer of turn ratio 10 : 1. Find (i) the output d.c. voltage and (ii) the peak inverse voltage. Assume the diode to be ideal.

Turn over



14. Explain the working of zener voltage regulator.
15. Write a short note on class A amplifiers.
16. Give a brief description of the voltage divider transistor biasing. Derive the expressions for V_C , V_B , I_C and I_B .
17. Draw the circuit diagram and explain the working principle of complementary symmetry pushpull amplifier.
18. What is the purpose of a Schmitt trigger? How does it work?
19. Draw the circuit diagram and explain the working of a monostable multivibrator using BJT.

Section C

Answer any **one** question.

The question carries 10 marks.

20. With the help of suitable circuit diagrams and waveforms explain different types of clamping circuits.
21. Write a short note on :
 - (i) Colpitts Oscillator.
 - (ii) Hartley Oscillator.

SECOND SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2018

(SSE)

Electronics and Computer Science

E 204 T—DIGITAL INTEGRATED CIRCUITS

(1999/2000 Admissions)

Time : Three Hours

Maximum : 75 Marks

*Answer any five questions.
All questions carry equal marks.*

1. (a) Fill in the blanks :

(i) $(8045)_{10} = (\text{_____})_2$.

(ii) $(101110)_2 = (\text{_____})_{10}$.

(iii) $(0111 + 0101)_2 = (\text{_____})_2$.

(iv) $(1011 - 0101)_2 = (\text{_____})_2$.

(8 marks)

(b) Simplify the following Boolean function and implement using gates :—

$$f(A, B, C, D) = \sum(1, 2, 6, 9, 10, 14) + \sum_d(4, 7, 8, 11, 12).$$

(7 marks)

2. (a) Compare TTL and CMOS logic families.

(6 marks)

(b) Explain the characteristics and applications of ECL.

(5 marks)

(c) What is meant by active pull of a TTL ?

(4 marks)

3. (a) What is propagation delay ? How can it be eliminated ?

(5 marks)

(b) Explain how flip flops can be used as a memory element ?

(5 marks)

(c) Distinguish between edge triggering and level triggering that are used with flip flops.

(5 marks)

4. (a) Explain with suitable circuit diagram the working of a universal shift register.

(9 marks)

(b) Compare the merits and demerits of synchronous and asynchronous counters.

(6 marks)

5. (a) Design a synchronous mod-12 counter using JK flip-flop.

(8 marks)

(b) With the help of logical diagrams and truth table explain the working of half adder and full adder.

(7 marks)

Turn over

6. (a) With diagrams, explain any *one* type of A/D converter. (7 marks)
- (b) What are modems ? Distinguish between synchronous and asynchronous modems. (8 marks)
7. (a) With neat logical diagram, explain the working of 2 to 4 decoder. (7 marks)
- (b) Explain with logical diagram how two 4 : 1 Muxs can be converted to an 8 : 1 Mux. (8 marks)
8. Write short note on any *three* :
- (a) CMOS logic gates.
 - (b) T and D flip flops.
 - (c) Ripple counters.
 - (d) Decimal to binary encoder.
 - (e) D/A converters.

(3 × 5 = 15 marks)