

F 6890

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch : Applied Electronics and Instrumentation Engineering/Electronics and
Communication Engineering

AI 010 304/EC 010 304—SOLID STATE DEVICES [AI, EC]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.
Each question carries 3 marks.*

1. Explain indirect semiconductors.
2. Describe equilibrium condition, for a P-N junction.
3. Briefly explain Laser diodes.
4. Define Pinchoff in JFET.
5. Describe depletion MOSFETS.

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Explain Hall effect.
7. Write the Einstein relation and explain.
8. What is Zener breakdown ? Explain.
9. Explain about current amplification factor in BJT.
10. Explain about Tunnel diodes.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. With the help of neat sketches, explain carrier concentration and fermi level in intrinsic and extrinsic semiconductors. Derive suitable relationship between them.

Or

12. Describe and discuss mobility and conductivity. With necessary diagrams, discuss the dependence of the above two in a semiconductor on temperature.

13. Explain $p-n$ junction diode plot the V-I characteristics and explain.

Or

14. What is meant by direct and indirect recombination ?

15. Explain in detail about capacitance of $p-n$ junction.

Or

16. Write short note on the following :

(i) Optical absorption.

(ii) Solar cells.

(6 + 6 = 12 marks)

17. Explain basic principle of operation of BJT. Also explain modes of operation.

Or

18. Explain JFET with its V-I characteristics.

19. Draw the constructional diagram of a MOSFET and discuss its drain and transconductance characteristics.

Or

20. Explain principle of operation of SCR. Draw the two transistor equivalent of an SCR. Also explain its applications.

[5 × 12 = 60 marks]

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch : Applied Electronics and Instrumentation Engineering/Electronics and
Communication Engineering

AI 010 305/EC 010 305—ANALOG CIRCUITS—I [AI, EC]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

Assume missing datas.

Part A

Answer all questions.

Each question carries 3 marks.

1. Discuss the need of short circuit protection.
2. What is stability Factor ? Explain.
3. Explain, why class-c power amplifier off us high efficiency.
4. Compare CE and CB transistor configuration.
5. Define efficiency of a power amplifier. Compare efficiency of class A, B, AB amplifiers.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the working of a shunt voltage regulator with neat sketch.
7. Explain Thermal run away.
8. What is MOSFET ? Compare MOSFET and JFET.
9. Explain Miller effect.
10. Explain feedback amplifiers.

(5 × 5 = 25 marks)

Turn over

Part C

*Answer all questions.
Each question carries 12 marks.*

11. Discuss the operation of half wave, full wave and bridge rectifiers.

Or

12. (a) Discuss the working of voltage regulator.
(b) Explain the methods of short circuit protection.

(6 + 6 = 12 marks)

13. Obtain the h -parameter model for CC mode.

Or

14. What is stability factor ? Discuss and derive the stability factor for CE amplifier with emitter bias.
15. Explain any two biasing schemes used in MOSFETS.

Or

16. Sketch and explain the working of C.S. MOSFET amplifier with bypass capacitor.
17. Explain the characteristics and working of a CD MOSFET amplifier.

Or

18. Explain the IV relation in MOSFET.
19. Explain the operation of class AB power amplifiers.

Or

20. (a) Discuss the concept of trans conductance and trans resistance amplifiers.
(b) Explain transformerless power amplifier.

(6 + 6 = 12 marks)

[5 × 12 = 60 marks]

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch : Applied Electronics and Instrumentation/Electronics and Communication/
Electronics and Instrumentation/Instrumentation and Control Engineering

AI 010 306/EC 010 306/EI 010 306/IC 010 306—COMPUTER PROGRAMMING
[AI, EC, EI, IC]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

Write neat and efficient C programs wherever required.

Part A

Answer all questions.

Each question carries 3 marks.

1. List the differences between constants and variables.
2. Define recursion.
3. What is enumerator ?
4. List the possible arithmetic operations that can be performed on pointers.
5. What is a pre-processor directive in C language ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Describe the different symbols used in flowchart
7. Write a C program to print the following pattern using repetitive control structures as an equilateral triangle of numbers as shown below :

1
321
54321
7654321

Turn over

8. Write a C function to compute the frequency of occurrence of each element in an given integer array.
9. Write a C program to find the nth Fibonacci number using recursive functions.
10. Demonstrate fopen() and fclose(), C file library functions with illustrative code snippets.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. Write an algorithm to calculate the sum of digits of an integer. For example, the sum of digits of number 3122 is $3 + 1 + 2 + 2 = 8$. The algorithm should accept any arbitrary integer typed by the user. Also draw a flowchart for the same.

Or

12. Describe in detail the classification of different data types used in C. Also, describe what is operator precedence and rule of associativity.
13. Describe with the help of code snippets the different repetitive control structures used in C.

Or

14. Describe with the help of code snippets the different selective control structures used in C.
15. Discuss in detail about the syntax, memory allocation, usage, working and application of multi-dimensional arrays in C with a help of an illustrative program.

Or

16. Explain structure and union with an example.
17. Implement a function in C to insert one-character string into another string. The arguments to the function should consist of the source string, the string to be inserted and the position in the source string where the string is to be inserted.

Or

18. With illustrative examples explain pointers and discuss the advantages and disadvantages of them. Also, discuss the pointer representation of arrays.
19. Write a C program to create a file and store information of students like name, age, rollno, and percentage of marks. Use appropriate file functions to get the data and display the data on the console.

Or

20. Discuss about the different types of bitwise operators in C using suitable illustrative examples. Also, discuss about how input values can be given to a program as command line arguments in C.

(5 × 12 = 60 marks)