

F 6918

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch : Computer Science and Engineering

CS 010 306—ELECTRONIC DEVICES AND CIRCUITS [CS]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Explain the working principle of CLC filter with a diagram.
2. What is meant by Faithful amplification ? How to achieve it ?
3. Draw an Op amp buffer. Comment on its gain.
4. Which op amp oscillator uses both the types of feedback ? How ?
5. Define Duty cycle. Write its significance.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Enumerate the advantages and potential applications of IC voltage regulators with examples.
7. Why the dc operating point is also called as dc silent point ?
8. Draw the op amp equivalent circuit and explain it in detail.
9. State the types of feedback. Compare their parameters.
10. What is dc restorer ? Explain its concept and types.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Draw a diode bridge rectifier and explain its operating principle. Compare it with centre tapped full wave rectifier.

Or

12. Draw a zener voltage regulator and explain it in detail. Design a zener regulator to get a constant voltage of 5V. Assume other parameters if necessary.

13. (a) Show that the BJT can be used as an electronic switch with a diagram. (6 marks)
(b) Explain the concept of load line with an example. (6 marks)

Or

14. Draw the CE BJT transistor configuration and explain it. Explain the characteristics of CE BJT.
15. State and prove all the potential applications of Op amp with diagrams.

Or

16. Draw op amp instrumentation amplifier and summer. Explain them. Derive their V_o expressions.
17. (a) Discuss the effect of feedback on amplifier performance. (6 marks)
(b) Draw the general form of oscillator circuit and explain it in detail. (6 marks)

Or

18. Draw the Harley oscillator and explain its operating principle.
19. (a) Differentiate clipper from clamper. Explain the types of clippers with diagrams. (6 marks)
(b) Draw an RC integrator and explain it. (6 marks)

Or

20. (a) Explain the potential applications of Schmitt trigger. (6 marks)
(b) Explain the block schematic of 555 timer and explain it. Mention its applications. (6 marks)

[5 × 12 = 60 marks]

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch : Computer Science and Engineering/Information Technology

CS 010 303/IT 010 306—PROBLEM SOLVING AND COMPUTER PROGRAMMING
[CS, IT]

(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. Draw a flow chart to accept two numbers, find the greatest and print the result.
2. What is the difference between while and do while control structures ? Also, state their application scenario.
3. Define recursive function. State one advantage and disadvantage.
4. What are self-referential structure ? Give example.
5. Define dynamic memory allocation and its usage scenario.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain arithmetic and logical operators used in C.
7. Write a C program to print the following pattern using repetitive control structures :

1

121

12321

1234321

8. Write a C function to search for a substring in a character array.

Turn over

9. Differentiate structures and unions with suitable example.
10. Distinguish between dynamic and static arrays with suitable examples.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. Write an algorithm to check whether the input year is leap year or not. Also, draw a flow chart for the same explaining the usage of different symbols.

Or

12. Describe in detail the classification of different data types used in C with suitable code snippets.

13. Write a C program to sort alphabetically the given two-dimensional array :

```
char somenames [5][4] = {"cat", "rat", "mat", "sat", "bat"}.
```

Or

14. Describe with the help of code snippets the different repetitive control structures used in C. Illustrate the working with suitable flow chart diagrams.

15. Explain with an example pass by value and pass by reference in C.

Or

16. What is a macro ? Explain with an example.

17. Write a C program using structures to store and display the details of 10 students' marks obtained in three subjects. The structure should contain appropriate members to store the details of each student like name, age, rollno, subject_name, subject_code, and marks_obtained for each student.

Or

18. Illustrate pointer arithmetic with suitable examples and explain how a two-dimensional array can be represented as a pointer.

19. Describe in detail with illustrative code snippets the different library functions related to file operations in C.

Or

20. Compare and contrast the different storage classes used in C .

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch : Computer Science and Engineering

CS 010 304—COMPUTER ORGANIZATION (CS)

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Give an example for addition of two.
2. Write down the basic steps to perform floating point subtraction.
3. Define micro instruction.
4. Write three differences between SRAM and DRAM.
5. List the advantages of memory interleaving.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. With neat diagram, describe the working of a BCD adder.
7. Appraise the functions performed by the arithmetic logic unit.
8. Discuss the control unit of a basic computer with a neat block diagram.
9. Write a note on associative memory.
10. Discuss the relation between address and memory space in virtual memory.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Explain with an example the steps in the Booth's algorithm for multiplication of signed – 2's complement numbers.

Or

12. Construct 4-bit by 3-bit array multiplier and obtain the result for the given sequence :

$$1011 \times 1110 \times 1100$$

13. Explain the following with an example :

(i) Addition of two floating point numbers

(6 marks)

(ii) Subtraction of two floating point numbers

(6 marks)

Or

14. Draw the flow chart for multiplication of two floating point numbers and explain the same with an example.

15. Appraise the issues to be addressed while designing a control unit.

Or

16. Explain with a diagram micro programmed control organization.

17. Write a detailed note on memory interleaving techniques.

Or

18. Fully associative, direct and set associative methods of mapping addresses to cache locations.

19. What is virtual memory ? Write a note on translation look aside buffer.

Or

20. Write notes on paging and explain how two stage address translation is done using segments and pages.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Third Semester

Branch—Computer Science and Engineering/Information Technology

SOLID STATE ELECTRONICS [R, T]

[Old Scheme—Prior to 2010 Admissions]

(Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. List out the different types of biasing. Compare their features.
2. Why biasing is necessary in BJT amplifier ? Explain the concept of DC and AC load line with neat diagram
3. What is the general condition under which a common gate amplifier would be used ? Explain.
4. Give reasons why a JFET might be used as an input device in a circuit as proposed to a MOSFET.
5. Why a LC tank circuit does not produce sustained oscillations ? How can this be overcome ?
6. Derive the general condition for oscillation for a LC oscillator.
7. In a low pass RC circuit, rise time is 45 nano seconds. What is the bandwidth that can be obtained using the circuit ?
8. What is the role of commutating capacitor ? Draw the circuit.
9. What is SMPS ? Draw its block diagram. Mention its applications.
10. Explain the construction of UJT with a diagram.

(10 × 4 = 40 marks)

Part B

Answer all questions.

Each full question carries 12 marks.

11. Explain the voltage divider bias circuit with a diagram. Design a voltage divider bias circuit for the specified conditions. $V_{CC} = 11\text{ v}$, $V_{CE} = 5\text{ v}$, $I_C = 1\text{ mA}$, $S = 24$, $\beta = 150$ and $V_E = 1\text{ v}$.

Or

Turn over

12. (i) Explain the fixed bias method and derive an expression for stability factor.
(ii) Explain the effect of cascading of transistors on bandwidth and gain. Derive the relevant equations.
13. Explain the operation of high frequency common source FET amplifier with neat diagram. Derive the expression for :
- Voltage gain.
 - Input admittance.
 - Input capacitance.
 - Output admittance.

Or

14. Explain the construction of MOSFET with diagrams. Explain its transfer characteristics. Derive an expression for pinch off voltage.
15. Derive the expressions for frequency of oscillation and condition for sustained oscillation of Hartley oscillator with neat circuit diagram. A Hartley oscillator has $L_1 = 5 \text{ mH}$, $L_2 = 20 \text{ mH}$ and frequency of oscillation ranging from 750 KHz to 1 MHz. Determine the value of 'c' over this frequency range.

Or

16. What is a Wien Bridge ? How is it used as an oscillator ? Derive the necessary Equations. Explain its principle with a diagram.
17. With neat circuit diagram and waveforms, explain the operation of collector coupled astable multivibrator which uses transistors. Derive the expression for pulse width.

Or

18. Explain the concept of Schmitt trigger with a diagram. Design a Schmitt trigger circuit for the data given : $V_{cc} = 22$, $UTP = 5.5 \text{ V}$ and $LTP = 3.5 \text{ V}$. $I_{c \text{ sat}} = 2 \text{ mA}$ and $h_{fe} (\text{min}) = 125$. Draw the designed circuit.
19. Draw a neat diagram of SMPS and explain its principle of operation. Bringout its design details.

Or

20. Write technical notes on :

- Seven segment display.
- Basic concept of TRIAC.
- Applications of SCR.

(5 × 12 = 60 marks)