

F 3525

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

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]

(Improvement/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. What is a 'keyword' ?
2. Explain fseek ().
3. Write the syntax of 'nested if' statement.
4. Define function.
5. What are arrays ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. What are the features of a good program ?
7. Explain how an array is defined and how the array elements are accessed.
8. Write the differences between 'macro' and 'function'.
9. Explain the uses of pointers, briefly.
10. Illustrate the storage class associated with variables.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each question carries 12 marks.

11. Write an algorithm and flowchart to find the smallest from a set of 50 numbers.

Or

12. Write a C program to find whether a number is odd or even. If odd, find the cube of the number.
13. Write a C program to sort a list of integers and to search for a particular item using binary search.

Or

14. Explain in detail the different control statements used in C with example.
15. Write a C program to evaluate :

$$f(x) = x - \frac{x}{3!} + \frac{x^5}{5!}$$

Or

16. Write a C program to extract a portion of a character string and to display it.
17. Write a C program to read the marks of 3 subjects of 10 students and declare the result as 'Fail' if the average mark is less than 40% and 'Distribution' if the average mark is greater than 80%.

Or

18. Write a C program to sort a set of 20 numbers and to print the largest (using pointers).
19. Explain Dynamic Memory Allocation. Explain the different memory management functions.

Or

20. What is a file ? Explain the different functions supported by C to perform the basic file operations with suitable examples.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Computer Science and Engineering

CS 010 304—COMPUTER ORGANISATION (CS)

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What is the range of the number that can be represented by an n-bit signed number.
2. Compare the fixed point and floating point representation of a number.
3. What is parallelism in an instruction ?
4. A 64 bit Processor has 32 bit address line. What is the maximum RAM that the processor can have ?
5. What is the function of a Page frame data table ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Differentiate between restoring and non-restoring division.
7. Explain how multiplication is Performed in a floating point number.
8. What is the function of a control unit.
9. Write notes on different levels of cache.
10. What are paged segments.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. Write a note on the different arithmetic operations that can be performed in signed numbers.

Or

12. With an example, show how a number can be divided by other, using non-restoring division.

Turn over

13. Write a note on how the different arithmetic operations are Performed using floating point arithmetic.

Or

14. Write a note on the different functions of ALU unit.

15. Explain the different steps to be taken care of while designing a control unit.

Or

16. Compare Hard wired and microprogrammed control unit.

17. Explain briefly the different types of memories you are familiar with.

Or

18. Briefly describe the different methods by which the updation of main memory takes place.

19. Translation Look aside buffer is an important component of a Computer system. State its functions and uses.

Or

20. Write short notes on paged memory.

(5 × 12 = 60 marks)

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Name.....

Reg. No.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Computer Science and Engineering/Information Technology
CS 010 305/IT 010 304—SWITCHING THEORY AND LOGIC DESIGN [CS, IT]

[New Scheme—2010 Admission onwards]

(Improvement/Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What is a Shift Register ?
2. Draw the circuit of a T flip-flop using NAND gates.
3. What are serial adders ?
4. State and prove De Morgan's Theorem.
5. Write the characteristics of MOS Gates.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Convert the following decimal numbers to the equivalent binary numbers.
 - (a) 131.5625.
 - (b) 0.375.
 - (c) 4096.
 - (d) 0.625.
 - (e) 6.25.
7. Explain the working of a CMOS-NAND gate.
8. Explain a parity generator circuit.
9. Compare PLA and PAL.
10. Compare ring counter and Johnson counter.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.
Each full question carries 12 marks.

11. (a) Simplify using Quine McCluskey method $f = \Sigma (3, 6, 7, 8, 10)$.

Or

- (b) Design a BCD to excess 3 code converter.

12. (a) What is a comparator circuit? Explain how (with design) a comparator can be designed for comparing two, 2 bit numbers for greater than, less than and equality check.

Or

- (b) Explain how a 16 : 1 Mux can be formed using 8 : 1 and 4 : 1 Mux.

13. (a) Explain with a neat figure, the working of a master-slave JK Flip-flop.

Or

- (b) Design the sequential circuit described by the following state equations. Use JK flip-flop.

$$A(t+1) = xAB + yA'C + xy.$$

$$B(t+1) = xAC + y'BC'$$

$$C(t+1) = x'B + yAB'$$

14. (a) Design a synchronous Decade counter using JK Flip-flop ϵ .

Or

- (b) Explain the different types of Shift Registers.

15. (a) Write short notes on the following logic families :

(a) ECL ; (b) TTL.

Or

- (b) Explain about Fault Detection in digital circuits.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Computer Science and Engineering

CS 010 306—ELECTRONIC DEVICES AND CIRCUITS (CS)

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. What are the characteristics of π filters ?
2. Explain the concept of load line.
3. What are the uses of non-inverting amplifiers ?
4. Discuss the applications of positive feedback in amplifiers.
5. Explain the sine wave response of a low-pass RC Circuit.

(5 × 3 = 15 marks)

Part B

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

6. Explain with diagrams the principle of operation of a Zener voltage regulator.
7. Explain with diagram how a BJT is operated as a switch.
8. Explain a simplified model of OP-AMP.
9. Explain, how feedback affect the performance of an amplifier ?
10. What are the uses of Clipping and Clamping circuits ?

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Explain with a circuit diagram the working of a bridge rectifier. Derive an expression for its output voltage.

Or

12. What are the characteristics of IC voltage regulators ? Explain them for any *one* of the 78XX regulator.

13. What is Stability ? Explain the methods used to attain stability in transistor circuits.

Or

14. Explain with diagrams the principle of operation of a single stage CE amplifier. What are its characteristics ?

15. Draw and explain the circuit of an instrumentation amplifier. What are its uses ?

Or

16. Explain with examples the uses of summation amplifier.

17. Explain with a circuit diagram the principle of operation of an RC phase shift oscillation. Derive an expression for its frequency of oscillation.

Or

18. Draw the circuit of a Colpitt's oscillator using OPAMP. Derive expression for its frequency of oscillation.

19. Draw and explain the circuit and working of a bi-stable multi-vibrator using OPAMP.

Or

20. Explain with diagrams the working of Schmitt trigger. What are its applications ?

(5 × 12 = 60 marks)

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Reg. No.....

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2016

Third Semester

Branch : Computer Science and Engineering/Information Technology

SOLID STATE ELECTRONICS (R, T)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. Name the two techniques used in the stability of the q point. Explain.
2. Draw Darlington pair configuration using BJTs. Mention its advantages and applications.
3. How does body effect change the small signal equivalent of the MOSFET ? Explain.
4. Differentiate MOSFET from JFET.
5. Explain the concept of feedback with a diagram.
6. If $L_1 = 1\text{mH}$, $L_2 = 2\text{mH}$ and $C = 0.1\text{ nF}$, what is the frequency of oscillation of the Hartley oscillator?
7. A wien bridge oscillator is used for operation at 10 kHz. If the value of the resistor R is $100\text{ K}\Omega$, what is the value of C required?
8. Determine the value of capacitors to be used in an astable multivibrator to provide a train of pulse $1\ \mu\text{ sec}$ wide at a repetition rate of 70 kHz with $R_1 = R_2 = 12\text{ K ohms}$.
9. Mention the types of LED . Explain their advantages and applications.
10. What is the concept of Opto coupler ? Explain with a diagram.

(10 × 4 = 40 marks)

Turn over

Part B

Answer all questions.

Each full question carries 12 marks.

11. (i) Explain the collector feedback bias amplifier and derive an expression for stability factors.
(ii) Define and explain :
1. Heat Sink.
 2. Thermal Runaway.

Or

12. (i) Explain with circuit diagram of Darlington connection and derive the expression for A_i , A_v , R_i and R_o .
(ii) Explain Bootstrap emitter follower circuit.
13. (i) Explain graphically the amplification process in a simple MOSFET amplifier circuit.
(ii) Describe the small signal equivalent circuit of the MOSFET and determine the values of small signal parameters.

Or

14. (i) Explain the static and dynamic characteristics of MOSFET with neat diagrams.
(ii) Develop a small signal model of JFET device and analyze basic JFET amplifiers.
15. Explain the working of a Hartley oscillator with a neat circuit diagram and derive the frequency of oscillation.

Or

16. Draw the circuit diagram and explain the working principle of RC phase shift oscillator. Also derive the expression for frequency of oscillation and condition for sustained oscillation.
17. Briefly discuss about the one shot multivibrator with neat circuit diagrams and waveforms. Derive the expression and mention its advantages and disadvantages.

Or

18. Draw the circuit of Bootstrap voltage time base generator and explain the quiescent conditions, formation of sweep, retrace interval and recovery process.
19. (i) Differentiate Photo diode and photo transistor. Explain their construction and principle of operation.
(ii) Differentiate LED from LCD.

Or

20. Differentiate DIAC from TRIAC. Explain their construction and principle of operation.

(5 × 12 = 60 marks)