

Roll No.

Total No. of Questions: 09

**B.Tech.(ECE)- Sem.-4 Exam: May 2020**

**ANALOG CIRCUITS**

**Subject Code: BTEC-401-18**

**Time: 3 Hrs.**

**Max. Marks: 60**

**INSTRUCTION TO CANDIDATES:**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

1. Answer briefly:

- (a) What do you understand by transistor biasing?
- (b) What are the various configuration techniques for BJTs? Name them.
- (c) It is desirable to have high input impedance for a transistor amplifier, why?
- (d) What is negative feedback?
- (e) Define Gain Margin and Phase Margin in feedback amplifiers.
- (f) What is an Oscillator circuit?
- (g) Three R-C sections are used in R-C phase shift oscillators, why?
- (h) Define Cascade amplifier.
- (i) What is Crossover Distortion in power amplifiers?
- (j) What is a push-pull arrangement?

**SECTION-B**

2. Describe that how the diodes can be used in clipping circuits using suitable circuit diagram(s)?
3. What are the various FET Configurations. Explain briefly giving their circuit diagrams.
4. An amplifier has a current gain of 250 and a bandwidth of 400KHz without feedback. If feedback factor of 0.01 is applied, what is the bandwidth of the amplifier now?

5. Describe how the Oscillations can be produced using an oscillator circuit?
6. Show that maximum collector efficiency of Class A Transformer coupled power amplifier is 50%?

### **SECTION-C**

7. Analysis single-stage transistor amplifier using circuit diagram. Also give its D.C. And A.C.equivalent circuits?
8. Explain the commonly used types of L-C Oscillators using their circuit diagrams.
9. Elaborate the working operation and performance of Class AB Power amplifier in details.

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**B.Tech.(ECE)- Sem.-4**  
**MICROPROCESSORS & MICROCONTROLLERS**  
**Subject Code: BTEC-402-18**

**Time: 3 Hrs.**

**Max. Marks: 60**

**INSTRUCTION TO CANDIDATES:**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO markseach.
2. SECTION-B contains FIVE questions carrying FIVE marks each and studentshave to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and studentshave to attempt any TWO questions.

### **SECTION-A**

1. Answer briefly:

- (a) What is the function of RST and ALE signals?
- (b) What do you understand by Embedded Systems?
- (c) Enlist some salient features of 8085.
- (d) List the different flags of 8085 microprocessor.
- (e) How many ways an 8051 can be interrupted?
- (f) Discuss the difference between ADD and ADDC instruction.
- (g) Discuss CALL and RET instructions.

(h) Name various types of interrupt pins present in 8085.

(i) What is the use of SMOD bit in 8051?

(j) What is the use of DPTR?

### SECTION-B

2. Differentiate between memory mapped I/O and peripheral mapped I/O in case of 8085 microprocessor.

3. Draw and explain the timing diagram of memory read cycle.

4. Compare RISC and CISC processors.

5. Explain the alternate functions of 'Port 3' of 8051. How it can be used as input and output port.

6. Discuss the various registers of 8051 microcontroller.

### SECTION-C

7. Draw and discuss the internal architecture of 8085 microprocessor.

8. Classify and explain different types of 8085 instructions with examples.

9. Show the connections for Interfacing of DAC with 8051 and write a program to demonstrate its working.

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Roll No. \_\_\_\_\_

## B Tech(ECE) Sem 4(Batch 2018)

### Understanding Human Values2: Understanding Harmony

**Sub Code:HSMC-122-18**

Time:3Hrs

Max Marks:60

Instruction to the candidates

1)SECTION A is COMPULSORY consisting of TEN questions carrying TWO marks each.

2) SECTION B contains FIVE questions having FIVE marks each and students have to attempt any FOUR questions.

3)SECTION Ccontains THREE questions having TEN marks each and students have to attempt any TWO questions.

### SECTION A

**Q1. Write briefly:**

- a) What do you mean by Human Values?
- b) What is Natural Acceptance?
- c) Differentiate between Self and Body.
- d) What is Pre-conditioning?
- e) What is the difference between Respect and Differentiation?
- f) Why Respect is important in relationships?
- g) What do you mean by Harmony in the family?
- h) What is Mutual Fulfilment?
- i) Define Ethical Human Conduct
- j) What do you mean by Professional Competence?

### SECTION B

- Q2. What is the meaning and purpose of Self Exploration?
- Q3. What do you mean by right understanding in the self?
- Q4. What is respect ? When do we feel we have been disrespected?
- Q5. Explain the basic activity in the four orders in nature.
- Q6. What do you mean by competence in professional ethics? Elaborate with examples.

### SECTION C

- Q7. Elaborate how sensation from the body cannot be a source of continuous happiness?
- Q8. What do you mean by harmony in human-human relationships? Explain in detail.
- Q9. What do you mean by understanding harmony in the nature and the existence? Express in detail.

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**B-TECH ELECTRONICS & COMMUNICATION ENGINEERING**

**SEM. 4<sup>TH</sup>**

**DATA STRUCTURES AND ALGORITHMS**

**SUBJECT CODE: BTCS-301-18**

**TIME: 3HRS**

**MAX. MARKS:60**

**INSTRUCTION TO CANDIDATES**

1. SECTION 'A' IS COMPULSORY CONSISTING OF TEN QUESTIONS CARRYING TWO MARKS EACH
2. SECTION 'B' CONTAINS FIVE QUESTIONS CARRYING FIVE MARKS EACH AND STUDENTS HAVE TO ATTEMPT ANY FOUR QUESTIONS.
3. SECTION 'C' CONTAINS THREE QUESTIONS CARRYING TEN MARKS EACH AND STUDENTS HAVE TO ATTEMPT ANY TWO QUESTIONS.

**SECTION A**

**Q1: Answer All the Questions briefly:**

- a) What do you mean by primitive data structure?
- b) What are the two operations of Stack?
- c) Construct postfix form of the expression  $A+B-C+D$ ?
  - d) Construct a tree for the given inorder and postorder traversals.  
Inorder : DGBAHEICF ,    Postorder : GDBHIEFCA
- e) What are the features of an efficient algorithm?
- f) Describe how a linear array is represented in memory.
  - g) What is meant by strongly connected in a graph?
  - h) State the importance of dynamic programming.
  - i) Discuss Time and Space complexity?
  - j) Define double circularly linked list?

**SECTION B (Attempt any four questions)**

Q2: Convert infix to postfix notation for solving expression :

$A + (B * C - (D / E ^ F) * G) * H$ . Write various steps for evaluating the same.

Q3: Discuss the algorithmic technique used in Quick sort.

Q4: Evaluate the number of comparisons and the number of Interchanges which alphabetize the n=6 letters in PEOPLE Using bubble sort algorithm using bubble sort algorithm.

Q5: Paraphrase the term LIFO. Also discuss Push and Pop operation and how they are implemented.

Q6: a) Give brief introduction of an algorithm. Also Explain the complexity of an algorithm.

b) Derive the complexity for Big O notation.

**SECTION C (Attempt any two questions)**

Q7: Create a Binary Search Tree for the following data and do Inorder, Preorder and Postorder traversal of the tree. 50, 60, 25, 40, 30, 70, 35, 10, 55, 65, 5

Q8: a) Explain various data types used in data structure with their syntax and applications. Also discuss complexity in each case.

b) Write a function to insert a node at beginning and end in a circular linked list. Write down a sequence of steps to be followed.

Q9: a) What is Hashing? Explain Different Hash function method in detail. Explain each one.

b) Explain the basic two techniques for Collision-resolution in Hashing with example. Also explain primary clustering.

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Roll No.

Total No. of Pages: 02

Total No. of Questions: 09

**B.Tech.(ECE)- Sem.-4  
SIGNALS AND SYSTEMS  
Subject Code: BTEC-403-18**

**Time: 3 Hrs.**

**Max. Marks: 60**

**INSTRUCTION TO CANDIDATES:**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and student shave to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**Q1: Answer All the Questions briefly:**

- a) Give the significance of ROC in Z-Transform.
- b) Define Nyquist rate?
- c) Determine the even and odd components of  $x(t)=\cos(t)+\sin(t)$
- d) State the necessary and sufficient conditions for the existence of Fourier Series.
- e) Determine whether the given system is linear or not  $y(n)=x(n^2)$
- f) What is the difference between time domain and frequency domain representations of signals?
- g) List the merits and limitations of Fourier transform.
- h) Differentiate between Impulse response and step response.
- i) A box contains 3 red, 4 white and 5 black balls. One ball is drawn at random. Find the probability that it is a red ball.
- j) What is the significance of probability density function?

**SECTION-B (Attempt any Four questions)**

**Q2:** Find whether the given signal  $x(n)=(1/3)^n u(n)$  is energy signal/power signal, neither energy or power signal.

**Q3:** Find the convolution of  $X_1(t)$  &  $X_2(t)$  for the following signals  
 $X_1(t)=e^{-at}u(t)$  &  $X_2(t)=e^{-bt}u(t)$

**Q4:** A damped cosine wave is given as  $f(t)=e^{-at} \cos \omega t$ . Find the Laplace transform of this signal.

**Q5:** State and prove the following properties of Fourier transform

- i) Time shifting,
- ii) Frequency shifting

**Q6:** Find the Z transform of the sequence  $X(n)=nu(n)$

**SECTION-C (Attempt any Two questions)**

**Q7:** Consider an LTI system whose input  $x(t)$  and output  $y(t)$  are related by the differential equation  $\frac{d^2y(t)}{dt^2} + 5\frac{dy(t)}{dt} + 6y(t) = 4x(t) + \frac{dx(t)}{dt}$ . The system also satisfy the initial condition at rest. If  $x(t)=e^{-t}u(t)$ .

- Find (i) Natural response for initial conditions  $y(0^+)=3; \frac{dy(0^+)}{dt} = 0$   
(ii) Forced Response  
(iii) Total Response

**Q8:** (a) State and prove the following properties of Laplace transform

- i) Initial value theorem
- ii) Final value theorem

(b) Determine the Fourier transform of the signal  $x(n) = u(n)-u(n-N)$

**Q9:** (a) Write a short note on sampling of bandpass signals.

(b) What is aliasing? How a band limited signal can be sampled without aliasing?

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Roll No \_\_\_\_\_

**Total No of Questions: 09**

**B.Tech. ECE Sem 4 May, 2020 (Minor Degree)**  
**Database Management System**  
**Subject Code: BTCS501-18**

**Time: 3 hrs.**

**Max. Marks: 60**

**Instructions to Candidates:**

1. Section A is compulsory consisting of ten questions carrying TWO marks each.
2. Section B consists of five questions of FIVE marks each. Attempt any four.

**3. Section C consists of three questions of TEN marks each. Attempt any two.**

**Section A**

**Q1: Answer All the Questions briefly:**

- a. What do you mean by DML?
- b. Explain advantages of Normalized database.
- c. What do you mean by hashing?
- d. Define ACID property
- e. Define Primary Key
- f. What is meant by Sparse Index?
- g. What do you mean by Intrusion Detection?
- h. What is meant by Authentication in context of DBMS?
- i. What do you understand by Thomas Write Rule?
- j. Pen down various real-world applications of DBMS?

**Section B**

- Q2. What do you mean by Armstrong's Axioms in Functional Dependency?
- Q3. What do you understand by Access Control and Explain in brief DAC, MAC and RBAC models?
- Q4. What do you mean by Data Integrity Rules? Explain Entity and Referential Integrity rules with examples.
- Q5. Explain in detail various states of transaction processing.
- Q6. Explain various components of DBMS with neat diagram.

**Section C**

- Q7. What do you mean by ER diagram? Discuss the various symbols used in ER diagrams to represent type of information. Also explain following terms: 1. Specialization 2. Generalization 3. Aggregation.
- Q8. What is meant by Database Recovery? Also explain different database recovery techniques.
- Q9. Explain in detail the concept of database storage using Indexing. What do you understand by Ordered and Multilevel Indexing?

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