



Subject Code: R16CC2101

II B.Tech I Semester Regular Examinations, Nov-2017.

BUSINESS MANAGEMENT CONCEPTS FOR ENGINEERS

(Common to ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Principle of Demand
- (b) Definition of Market
- (c) Define Ledger
- (d) List out the functions of Management
- (e) Define Marketing
- (f) What is a project?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain in detail the nature of Managerial Economics
- (b) Explain in detail the scope of Managerial Economics
3. (a) Define Production Function
- (b) What are different types of Internal and External economies of large scale production?
4. (a) What are the types of account & rules governing each account?
- (b) Who are the users of accounting information?
5. (a) Explain the Henry Fayol's 14 principles of Management?
- (b) Explain Levels of Management?
6. (a) Define Human Resource Management?
- (b) Explain the various functions of HRM?
7. (a) What is Network Analysis?
- (b) Explain the objectives and applications of network analysis?



Subject Code: R16EC2102

II B.Tech I Semester Regular Examinations, Nov-2017.

ELECTRONIC DEVICES AND CIRCUITS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define Drift and diffusion Currents?
- (b) Draw the V-I characteristics of the diode?
- (c) Write the applications of Zener Diode.
- (d) Give the 2 comparisons of CE, CC, and CB configurations?
- (e) Define Stability Factor?
- (f) Draw the characteristics of the UJT?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Explain about Hall Effect and mention its applications? [12]
3. (a) Explain the formation of the PN -junction diode? [6]
(b) A germanium diode has a reverse saturation current of $3\mu\text{A}$. Calculate the voltage at which 1% of the rated current will flow through the diode, at room temperature if diode is rated for 1A. [6]
4. (a) Derive Ripple factor and Efficiency of Full wave rectifier? [6]
(b) Explain the V-I characteristics of Zener diode? [6]
5. (a) Explain input and output characteristics of common emitter configuration. [6]
(b) Derive the relationship between α and β Given $I_E = 2.5 \text{ mA}$, $\alpha = 0.98$ and $I_{CBO} = 10\mu\text{A}$. Calculate I_B and I_C ? [6]
6. (a) Draw the circuit diagram for Self biasing and derive its stability factor? [6]
(b) Discuss about D.C load line of a transistor? [6]
7. (a) Explain the operation of p-channel enhancement type MOSFET with the help of V-I characteristics. [6]
(b) Explain the construction and working of UJT. [6]

Subject Code: R16EC2103

II B.Tech I Semester Regular Examinations, Nov-2017.
SIGNALS AND SYSTEMS
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Define Signal
- (b) Write the Expression for Fourier series
- (c) Write the Expression for Fourier Transform
- (d) Explain ROC properties of Laplace transform
- (e) Define sampling theorem
- (f) Define Convolution Theorem

[2+2+2+2+2+2]

PART-B

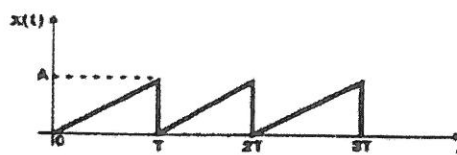
4 X 12 = 48

2. (a) Explain all classification of signals with Examples.
- (b) State and prove the following operations on signals:
 - (i) Time shifting
 - (ii) Time reversal.

[6M]

[6M]

3. (a) Determine the trigonometric Fourier series for the following signal



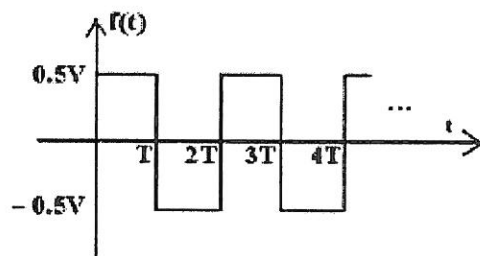
[6M]

- (b) State and prove the following properties of Fourier series:
 - i. Linearity
 - ii. Parseval's relation

[6M]

4. (a) State and prove time and frequency differentiation property of Fourier transform. [8M]
- (b) Find the Fourier transform of $\cos \omega_0 t$? [4M]

5. (a) Obtain the Laplace transform of the square wave shown.



[6M]

(b) Explain all classification of systems with Examples for Each Category.

[6M]

6. (a) A continuous time signal is $X(t) = 8\cos 200\pi t$

(i) Determine the minimum sampling rate.

(ii) If $f_s = 400$ Hz, what is discrete time signal obtained after sampling?

[8M]

(b) Discuss the types of sampling?

[4M]

7. (a) Write the Relation between auto correlation function and energy/power spectral density function

[6M]

(b) State and prove properties of cross and auto correlation function.

[6M]

Subject Code: R16EC2104

II B.Tech I Semester Regular Examinations, Nov-2017. CONTROL SYSTEMS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from **Part-B**

All questions carry equal marks of 12.

PART-A

1. (a) Write about Classification of control systems
- (b) What is transfer function of a system?
- (c) Define step, ramp, impulse and parabolic signals?
- (d) What is the importance of root locus in control system?
- (e) Write the equation of phase and gain margin?
- (f) Discuss types of compensation techniques?

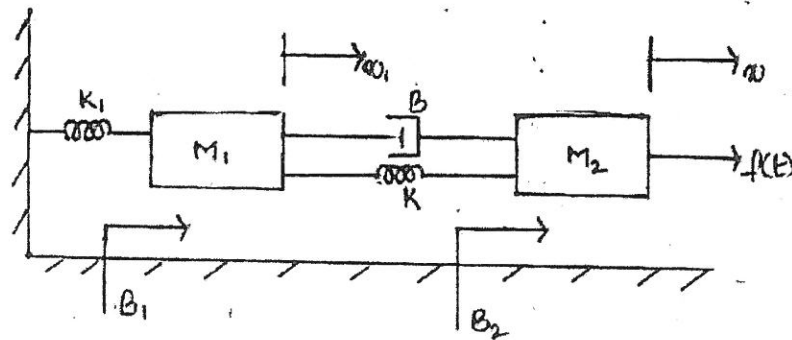
[2+2+2+2+2+2]

PART-B

4 X 12 = 48

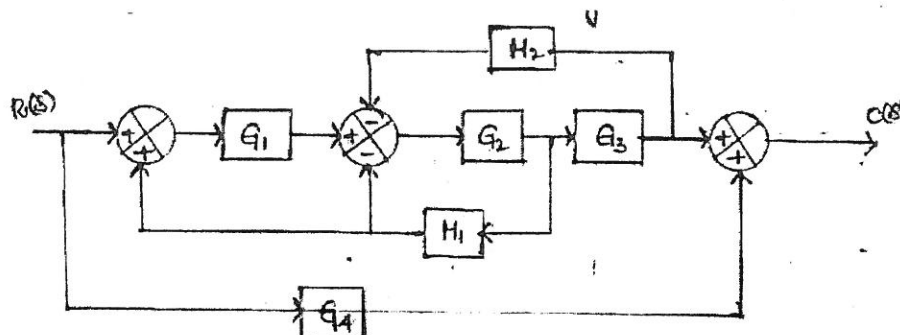
2. (a) Compare open loop and closed loop control systems?
- (b) Determine the transfer function of the following mechanical system?

[6+6]



3. (a) Derive the expression for transfer function of field controlled DC servo motor?
- (b) Determine the transfer function of the block diagram shown in figure?

[6+6]



4. (a) Explain the effect of PD controllers.

(b) Determine the step error constant of the following unity feedback system whose open loop transfer function is given

$$G(S) = \frac{500}{1+5s(1+10s)} \quad [4+8]$$

5. Using Routh-Hurwitz criterion, determine the stability of the closed loop system that has the following characteristic equation and also determine the number of roots that are in the right half s-plane and on the imaginary axis [12]

$$s^4 + s^3 + 3s^2 + 2s + 5 = 0$$

6. (a) Find resonant peak, resonant frequency and bandwidth of the unity feedback system whose open loop transfer function is as follows:

$$G(s) = \frac{0.5}{(s^2 + 3s + 2)}$$

(b) Explain Stability Analysis techniques in Frequency Domain [8+4]

7. (a) The state equation of a linear time invariant system is represented

$$\frac{dx(t)}{dt} = Ax(t) + Bu(t) \quad A = \begin{bmatrix} 3 & 0 \\ 0 & -3 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$

Find the state transition matrix and the Eigen values of A.

(b) Discuss the concept of controllability and observability [6+6]



Subject Code: R16EC2105

II B.Tech I Semester Regular Examinations, Nov-2017.

DATA STRUCTURES

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a) Write an Algorithm for Computation of GCD.
b) Explain about Insertion sorting?
c) What is the advantage of Stacks?
d) Explain about Circular Linked List.
e) List out types of trees with an example?
f) What are methods of representations of Graph?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. a) What is an Abstract Data Type (ADT)? Explain with an example. [6M]
b) Explain Recursive Algorithm for factorial of a given number? [6M]
3. a) Explain about Linear Search technique with an example? [6M]
b) Sort the following elements using the merge sort.
34, 76, 54, 12, 38, 29, 11, 89, 8, 3, 6, 27 [6M]
4. a) Define Queue? Explain Queue operations using Array? [6M]
b) Write an algorithm to convert infix expression to prefix expression.
Give a suitable example. [6M]
5. a) Explain Single Linked List and Operations on Single Linked List? [6M]
b) Write an Algorithm for deletion of a node from Doubly Linked List? [6M]
6. Explain about the following [12M]
a) Pre-order Traversal
b) In-order Traversal
c) Post-order traversal
7. a) Write an algorithm for DFS? [6M]
b) Write an algorithm for BFS? [6M]



Subject Code: R16EC2106

II B.Tech I Semester Regular Examinations, Nov-2017.
ELECTRICAL AND MECHANICAL TECHNOLOGY
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) How do you reduce eddy current losses in a transformer?
- (b) Classify types of alternators based on rotor construction.
- (c) What are the types of torques associated for the working of measuring instrument?
- (d) Define Extrusion process.
- (e) Describe natural convection in brief
- (f) State two advantages of chain drive over belt drives

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the constructional details of DC machine with a neat sketch. [6M]
(b) Derive an EMF equation of a Single Phase Transformer. [6M]
3. (a) Explain how the rotating magnetic field is developed in a 3-Phase Induction motor. [6M]
(b) Explain the synchronous impedance method for determining the regulation of alternator. [6M]
4. (a) Explain the construction and principle of operation of Moving coil instrument. [6M]
(b) With a neat sketch explain in detail moving iron repulsion type instrument. [6M]
5. (a) Explain Soldering & Brazing Techniques. Also write their applications and advantages over Welding. [6M]
(b) Explain the principle of 'Rolling' with a neat sketch. Also state its applications [6M]
6. (a) Differentiate natural convection and forced convection in brief [6M]
(b) Define Conduction, Convection and Radiation and Explain about Radiative properties in brief. [6M]
7. (a) Derive equation for power transmitted by belt drive [6M]
(b) Classify gears and write applications [6M]
