



# Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC2101

**II B.Tech I Semester Supplementary Examinations, May-2018.**

**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.

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## PART-A

1. (a) Define Elasticity of Demand
- (b) List out the features of Market Structure
- (c) Define Financial Accounting
- (d) What are the activities of Management?
- (e) Define Production Management?
- (f) What is mean by Working Capital?

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

## PART-B

4 X 12 = 48

2. (a) Define Demand Forecasting.
- (b) Explain different demand forecasting methods that are used widely.
3. (a) Define Market Structure.
- (b) Explain the features of Perfect Competition. Discuss, with the help of diagram, how the price is determined in perfect competition in case of firm and industry?
4. (a) What are the differences between double entry and single entry system of book keeping?
- (b) Briefly explain branches of accounting?
5. (a) What is meant by motivation?
- (b) Explain Douglas McGregor's Theory X and Theory Y.
6. (a) What is Marketing Management?
- (b) Describe the Marketing functions of a company.
7. (a) What is PERT?
- (b) Explain PERT and its importance in network analysis. What are the requirements for applicatios of PERT techniques?

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**Subject Code: R16EC2102**

**II B.Tech I Semester Supplementary Examinations, May-2018.**  
**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.

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**PART-A**

1. (a) Define Mass action law.
- (b) Explain law of junction.
- (c) What is Zener breakdown?
- (d) What is early effect in BJT?
- (e) What is thermal runaway in BJT?
- (f) Define transconductance of FET?

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

**PART-B**

**4 X 12 = 48**

2. (a) Explain quantitative analysis of Hall effect and its applications. [6 M]
- (b) Explain the Fermi level in extrinsic semiconductors. [6 M]
3. (a) Explain operation of P-N diode under forward and reverse bias using V-I characteristics. [6M]
- (b) Define static, dynamic and reverse resistance of P-N junction diode. [6 M]
4. (a) Explain the V-I characteristics of the Tunnel diode and also discuss the negative resistance of tunnel diode. [6 M]
- (b) A full wave bridge rectifier having load resistance of 800 ohms is fed with 220 V, 50 Hz through step-down transformer of turns ration 10:1. Assume ideal diodes and find peak inverse voltage and rectifier efficiency. [6 M]
5. (a) Explain input and output characteristics of Common Base configuration. [6 M]
- (b) Compare CB, CE and CC amplifiers with respect to different parameters. [6 M]
6. (a) Explain DC load line and AC load line. Also difference between them. [6 M]
- (b) Derive the condition for thermal stability of BJT used in a biasing circuit. [6 M]
7. (a) Explain working principle and characteristics of JFET. [6 M]
- (b) Explain negative resistance property of UJT and application of UJT. [6 M]

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Subject Code: R16EC2103

II B.Tech I Semester Supplementary Examinations, May-2018.

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

- (a) Define convolution and correlation?  
(b) Define sampling and classify sampling techniques?  
(c) What is the relationship between bandwidth and rise time.  
(d) How can you derive Fourier transform from Fourier series?  
(e) Write some Dirichlet's conditions.  
(f) What do you mean by orthogonality.

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

## PART-B

4 X 12 = 48

- (a) What are the basic operations on signals. Explain each with one example. [6M]  
(b) For an energy signal  $x(t)$ , prove that the total energy is the sum of the total energy of the even part of  $x(t)$  and the total energy of the odd part of  $x(t)$ . [6M]
- (a) Explain various properties of Fourier series in detail. [6M]  
(b) Find the Fourier series coefficients of the signal  $x(t)=\text{Cos}(w_0t)$ . [6M]
- (a) A signal  $x(t)$  has the Fourier transform  $X(w)=(3-jw)/(3+jw)$ . [6M]  
(i) Sketch the magnitude spectrum of the signal.  
(ii) Sketch the phase spectrum of the signal.  
(iii) Find the signal  $x(t)$  by using properties of Fourier transform.  
(b) Explain various properties of Fourier transform in detail. [6M]
- (a) Define LTI system. And explain various types of systems in detail. [6M]  
(b) Compute the signal  $x(t)$  corresponding to [6M]  
(i)  $X(s) = (5s+4)/(s^3+3s^2+2s)$   
(ii)  $X(s) = e^{-4s}(s+1)/(s^3-s)$
- (a) State & explain sampling theorem in detail. [6M]  
(b) How can you reconstruct the signal from sampled signal. [6M]
- (a) Write short notes on the following [6M]  
(i) Energy density spectrum,  
(ii) Parseval's theorem,  
(iii) Power density spectrum.  
(b) State and explain the properties of auto correlation function. [6M]

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Subject Code: R16EC2104

II B.Tech I Semester Supplementary Examinations, May-2018.

**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**

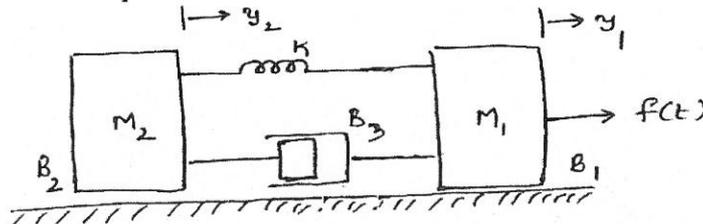
1. (a) What are the differences between Open loop and Closed loop control systems?
- (b) Write the transfer function of AC servo motor.
- (c) Define delay time, peak time and rise time.
- (d) What do you mean pole and zero in the context of a control system.
- (e) Define resonant peak and bandwidth.
- (f) What is meant by Diagonalization?

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

**PART-B**

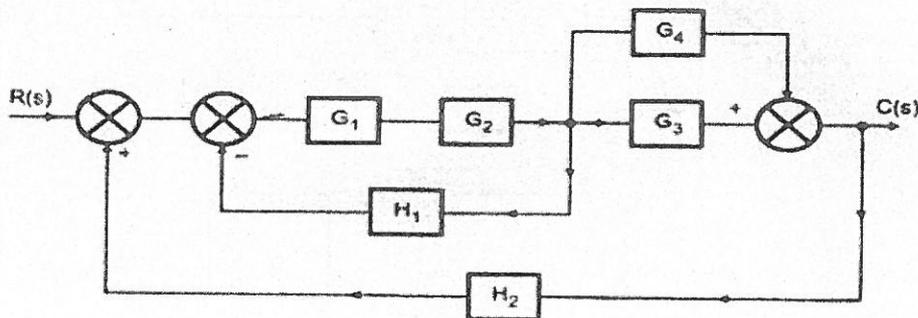
4 X 12 = 48

2. (a) Write the force equations of the linear translational system shown in figure. Draw the equivalent electrical network using force-voltage analogy, with the help of necessary mathematical equations. [8M]



- (b) In detail explain about feedback and its effects. [4M]

3. (a) Define transfer function. Find transfer function for armature controlled DC motor. [6M]
- (b) Find the transfer function for the following figure. [6M]



4. (a) Draw the response of second order system for critically damped case, when input is unit step. **[6M]**
- (b) For a unity feedback control system has a open loop transfer function  $G(s)=10(s+2)/s^2(s+1)$   
Find position, velocity and acceleration error constants. **[6M]**
5. (a) Using Routh criterion, determine stability of the system whose characteristic equation  $s^4+8s^3+18s^2+16s+5=0$  **[6M]**
- (b) Find the angles of departure and arrival for all complex poles and zeros of the open loop transfer function of  $G(s)H(s)= \frac{K(S^2+3S+5)}{S(S^2+4)}$   $K>0$ . **[6M]**
6. (a) Plot the bode plot for the following transfer function. Obtain gain and phase crossover frequencies.  $G(s)= 10/s(1+0.4s)(1+0.1s)$  **[6M]**
- (b) Find resonant peak, resonant frequency and bandwidth of the unity feedback system **[6M]**  
whose open loop transfer function is as follows:  $G(s)= \frac{0.5}{S^2+3s+2}$
7. (a) The state equation of a linear time invariant system is represented by **[6M]**  
 $A= \begin{bmatrix} 3 & 0 \\ 0 & -3 \end{bmatrix}$  ,  $B= \begin{bmatrix} 0 \\ 1 \end{bmatrix}$  . Find the state transition matrix and the eigen values of A.
- (b) Draw the electrical circuit diagram that represents the Lag Compensator and explain in detail. **[6M]**

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**Subject Code: R16EC2105**

**II B.Tech I Semester Supplementary Examinations, May-2018.**

**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) What is Abstract Data Type?
- b) Explain about Merge sorting?
- c) What is the advantage of Queue?
- d) Explain about Memory allocation.
- e) What is the Depth of a tree?
- f) What are methods of representations of Graph?

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

**PART-B**

**4 X 12 = 48**

2. a) What is Data structure? Explain basic Operations on Data structures. [6M]  
b) Give a brief notes on GCD implementation. [6M]
3. a) Explain about Binary Search technique with an example [6M]  
b) Sort the following data using Insertion Sort [6M]  
45, 21, 8, 15, 6, 9, 13, 33, 1.
4. a) Write a C code to represent Queue as an array and perform insertion and deletion on it. [8M]  
b) Explain about applications of Stacks. [4M]
5. a) Write short notes on Traversing a Linked List. [6M]  
b) Write an Algorithm for deletion of a node from Circular Linked List. [6M]
6. a) What is Binary Search tree? Explain operations on BST? [6M]  
b) Explain about Binary tree Traversing methods? [6M]
7. Explain about Graph Traversal algorithms? [12M]

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Subject Code: R16EC2106

II B.Tech I Semester Supplementary Examinations, May-2018.

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

- (a) What are the applications of DC shunt generator?  
(b) Define slip and what is its value in starting of an Induction motor.  
(c) What is the need of Deflecting and Damping torques in indicating instruments?  
(d) Explain brazing and soldering in brief  
(e) Define Natural Convection  
(f) What is velocity ratio in belt drives

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

## PART-B

4 X 12 = 48

- (a) What are the different methods of speed control of DC shunt motor. Explain them in detail. [6M]  
(b) A single Phase 50 Hz transformer has 20 primary turns and 273 secondary turns. The net cross sectional area of core is  $400\text{cm}^2$ . If the primary winding is connected to 230V supply, find (i) peak value of flux density in the core (ii) Voltage induced in the secondary winding. [6M]
- (a) Derive the torque equation of a three phase induction motor. [6M]  
(b) Explain the constructional features and operation of Alternator [6M]
- (a) With a neat diagram explain Moving Iron attraction instrument. [6M]  
(b) Discuss in detail about the Construction of CRO. [6M]
- (a) Explain the Principle of Arc Welding process with its Advantages and Disadvantages. [6M]  
(b) Explain the principle of 'Rolling' with a neat sketch. Also state its applications [6M]
- (a) Discuss in detail the classification of fins with neat sketches [6M]  
(b) Define Conduction, Convection and Radiation and Explain about Radiative properties in brief. [6M]
- (a) Explain briefly about the types of belt drives [6M]  
(b) Classify gears and write applications [6M]

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