

**MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)**

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

**IV B.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, OCTOBER- 2017****SUBJECT: MICROWAVE ENGINEERING**

(BRANCH : ECE)

Time: 3 Hours

Max Marks: 75

**PART-A****I. Answer all questions.****5 x 1=5M**

1. What are degenerate modes.
2. Distinguish between an Isolator and Gyrator.
3. Write the sequence of parts in two cavity klystron.
4. What is the operating frequency of TRAPATT DEVICE?
5. Why Reflectometer is used in microwave measurements?

**II. Answer all questions****10 x 2=20M**

1. Determine the cut-off frequency of the dominant mode for an air filled rectangular waveguide when  $a/b = 2$  with  $a=4\text{cm}$ .
2. What are the applications of Micro waves?
3. What is rectangular cavity resonator, write its cutoff frequency.
4. What is Microwave Junction? Give some examples.
5. What are the applications of Reflex klystron?
6. Write the applications of TWT.
7. Why magnetron is a M-type device.
8. Compare IMPATT and TRAPATT devices.
9. What is the use of slotted line in Microwave bench?
10. What is double minimum method?

**PART-B****Answer any 5 questions.****5 x 10=50M**

1. a) Discuss the Microwave frequency bands and its applications. (3M)  
(b) Obtain the solutions of wave equations in Rectangular wave guide for TE mode. (7M)  
(OR)
2. a) Explain the Microstrip transmission line (7M)  
b) Design a microstrip line on a  $\epsilon_r = 2.25$  substrate of thickness  $b = 0.2\text{ cm}$  to have a characteristic impedance of 50 ohms (3M)

3. a) How a cavity resonator obtained from rectangular wave guide. (5M)  
b) Derive the Q-factor of a rectangular cavity resonator. (5M)

(OR)

- 4.) (a). Derive the scattering coefficients of a three port junction in which  $S_{13}=S_{23}$ . (5M)  
(b). with a neat schematic diagram describe faraday rotation based  $180^\circ$  phase shifter. (5M)

5. a). What are the high frequency limitations of conventional tubes? Explain. (4M)  
b). Draw a neat schematic of a two cavity klystron and explain its working with diagrams. (6M)

(OR)

6. a). Show that maximum electronic efficiency of a two cavity klystron amplifier is about 58%. (5M)  
b). Derive the expression for velocity modulation equation for two cavity klystron amplifier. (5M)

7. a) Explains the Gunn Oscillation modes (5M)  
b) Explain the principle of operation of TRAPATT diode (5M)

(OR)

8. a). Derive the criterion for classifying the modes of operation for GUNN effect diodes. (4M)  
b). Describe in detail the RWH theory (6M)

9. a) In a power measurement setup the micro wave pulse had an average power of 250W and a duration of 5micro sec. If the time interval between pulses were measured 2m/sec. Determine the values of the peak power? (2M)  
b) Derive the S-Matrix of the Magic Tee. (8M)

(OR)

10. Explain the techniques of measuring low power and high power using microwave Bench. (10M)

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IVB.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, NOVEMBER - 2017

SUBJECT: CELLULAR AND MOBILE COMMUNICATIONS

(BRANCH: ECE)

Time: 3 Hours

Max Marks: 75 Marks

## PART-A

**I. Answer all the questions**

**5 x 1=5M**

1. Define Fading.
2. Name the different types of non-co-channel interference
3. What is loss occurred by trees.
4. Define channel assignment
5. What is the advantage of soft handoff over hard handoff.

**II Answer all the questions**

**10 x 2=20M**

1. Draw the block diagram of the cellular mobile system.
2. Define trunking and grade of service.
3. What is near-far effect in cellular communications?
4. What are the different antenna parameters ?
5. State the merits of Lee model.
6. What do you mean by foliage?
7. Define channel sharing and borrowing.
8. What are the various algorithms available for non-fixed channel assignment?
9. Give the illustration of a hand off scenario at cell boundary.
10. Write the advantages of handoff.

## PART-B

**Answer all the questions**

**5 x 10=50M**

1. Write about different techniques used for improving Coverage and Capacity in Cellular Systems.

(OR)

2. a. Draw the frequency reuse pattern for a cluster size of  $N=3$  and  $N=7$ ? (6+4)  
b. List the various techniques used to expand the capacity of a cellular system, Explain briefly

3. a) What are the causes of co-channel and adjacent channel interference? [5+5]

b) Explain near end far end interference of mobile system

(OR)

4. a. Explain design of directional antenna. (6+4)

b. If the antenna heights are varying what are the effects getting at the time of operation of mobile system?

5. What are the antennas used at cell site? Explain them.

(OR)

6. a) Derive the relation for the received power in mobile environment. [5+5]

b) Derive general formula for mobile propagation over water and flat open area.

7. Discuss channel assignment to cell site and mobile unit.

(OR)

8. What are the different types of channel assignment approaches? Explain the channel assignment approach that can be effectively deployed to handle increased traffic situation

9. Why a handoff is delayed? What are the advantages of delaying handoff ?

(OR)

10. Explain the necessity of power difference handoff. Also explain the different conditions based on power difference handoff.

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**IVB.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, NOVEMBER - 2017****SUBJECT: DIGITAL IMAGE PROCESSING**

(BRANCH: ECE)

Time: 3 Hours

Max Marks:75

**PART-A****I. Answer all the questions****5 x1=5M**

1. Define sampling.
2. List the advantages of Walsh transform
3. What is contrast stretching?
4. What are the types of noise models?
5. Define Compression ratio.

**II Answer all the questions****10 x 2=20M**

1. Define Labelling of connected components
2. Write about image formation in the eye.
3. Write the applications of Hotelling transform
4. Explain the need for Image Transformations.
5. Mention various point operators used in image enhancement
6. Give the list the comparison between enhancement in spatial domain and frequency domain.
7. Discuss about HSI color model .
8. Write the important color features
9. Define Gradient operator?
10. Write about linking edge points.

**PART-B****Answer all the questions****5 x 10=50M**

1. a) Explain Connectivity and discuss different types of connectivity  
b) Discuss the basic Image model in terms of illumination and reflectance

**OR**

2. Explain any four relationship between pixels.

3. a) Discuss about Hotelling transform and its role in image processing  
b) Derive the Kernel coefficients for  $N=4$  of DCT

**OR**

4. Find the Kernel coefficient for  $N=8$  of Hadamard transform with procedure.
5. (a) Perform the histogram equalization on a given  $8 \times 8$  image in the following table.

Gray level( $r_K$ )	0	1	2	3	4	5	6	7
No. of pixels( $p_K$ )	8	10	10	2	12	16	4	2

- (b) Discuss about the image smoothing in frequency domain, in detail.

**OR**

- 6.(a) Explain any three point operation of image enhancement.  
(b) Explain the image enhancement and frequency domain with the help of block diagram.
7. With the help of degradation/restoration model explain the process of restoration and hence derive an expression for least mean square error restoration filter.

**OR**

8. (a) Describe the Wiener filtering used for image restoration.  
(b) Write short notes on order-static filters used in restoration.
9. Draw the block diagram of image compression model and explain each block in detail.

**OR**

10. (a) Develop arithmetic code for a given data stream 'ace'.

Symbol	probability
a	0.30
b	0.15
c	0.25
d	0.10
e	0.20

- (b) Distinguish between lossy and lossless compression techniques.

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**IVB.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER - 2017****SUBJECT: OBJECTED ORIENTED PROGRAMMING THROUGH JAVA**

(BRANCH: ECE)

Time: 3 Hours

Max Marks:75

**PART-A****I. Answer all the questions****5 x1=5M**

1. What is Object?
2. What is the purpose of 'final' keyword?
3. What is final method?
4. Compare checkbox and checkbox group.
5. Compare applet and an application

**II Answer all the questions****10 x 2=20M**

1. List the applications of object oriented programming?
2. How java is more secured than other languages
3. Distinguish between abstract class and interface?
4. What is meant by package?
5. What is interthread communication
6. What is the difference between mutable and immutable strings?
7. Explain about gridbag Layout manager.
8. What is the use of repaint method?
9. Discuss swing features.
10. Why are swing components are called light weight components?

**PART-B****Answer all the questions****5 x 10=50M**

1. a) Enumerate the syntactical differences in the coding of java method and class constructor. Give clear examples for both. (6M)
- b) What are objects? How are they created from class? (4M)

**OR**

2. a) Explain the various operators with an example in java.
- b) What is the difference between constructor and a method in java?
3. What are the uses of Packages? How to import packages? Write a program to find ncr value by calling factorial function which is located in another package class

**OR**

4. a) Differentiate Classes and Interfaces. (4M)
- b) What is base class and derived class? Explain with an example. (6M)
5. Is multithreading suitable for all types of applications. If yes explain any such application. If no, explain any application for which multithreading is not desired.

**OR**

6. a) Explain how a new Exception class can be created and used in another java Program. [6M]
- b) Write short note on i) autoboxing ii) annotations [4M]
7. What are advantages of layout managers? Why java prefers layout manager instead of fixing the components by x and y coordinates? What are the different layout managers AWT supports?

**OR**

8. Discuss delegation event model. Explain about events, event sources and event listeners.
9. Explain about JButton class and its methods

**OR**

10. Design an applet to display three buttons "Red", "Green" and "Blue" the color of the background changes according to the button pressed by the user. also write the HTML code to display the Applet.





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## IVB.TECH I SEMESTER REGULAR END EXAMINATIONS, OCTOBER - 2017

SUBJECT: MANAGEMENT SCIENCE

BRANCH: ECE (Readmitted Student)

Time: 3 Hours

Max Marks: 75

### PART-A

#### I. Answer all the questions

5 x 1 = 5 Marks

1. Explain Scalar chain.
2. List the methods of production.
3. Explain Capability Maturity Model (CMM)
4. Write a short note on SWOT Analysis.
5. List the importance of Corporate Vision.

#### II. Answer all the questions

10 x 2 = 20 Marks

1. List the Functions of Management.
2. Explain the Taylor's scientific management theory.
3. Explain Flow process chart.
4. What is Product layout.
5. Explain Line and Staff organization.
6. Enumerate the steps involved in Interview Methods.
7. Explain Critical path method.
8. What is meant by network analysis? State its importance.
9. What is the need for Environmental scanning?
10. Write note on Vision and Mission Statement?

### PART-B

#### Answer all the questions

5 x 10 = 50 Marks

1. Discuss the function of manager with relevant example?  
(OR)
2. Define management state its characteristics?
3. What is plant layout? Explain the advantages of a good layout.  
(OR)
4. Is re-engineering another fad or does it offer something of lasting value?
5. What do you mean by Recruitment and selection?  
(OR)
6. Explain in brief the wage and salary administration.

7. Consider a project which consist of seven jobs along with given average time estimates and previous relations draw a project network, identifying the critical path and the total duration of the project

Activity	A	B	C	D	E	F	G
Time(days)	3	2	4	6	5	9	7
Predecessor	—	—	A	B	B	D,E	C,F

(OR)

8. Draw the network for the following project, identify the critical path, find the project duration?

Activity	1-2	1-3	1-4	2-4	2-5	3-4	3-7	4-6	4-7	5-6	5-7
Time (months)	4	6	12	7	11	7	8	8	13	4	4

9. Explain in brief the value chain analysis.

(OR)

10. Explain the steps in strategy formulation and implementation of an organisation

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**IVB.TECH I SEMESTER REGULAR END EXAMINATIONS, OCTOBER - 2017****SUBJECT: COMPUTER NETWORKS****(BRANCH: ECE)****Time: 3 Hours****Max Marks: 75 Marks****PART-A****I. Answer all the questions****5 x 1M=5M**

1. Draw the frame format of ATM.
2. What is HDLC?
3. Define uni-cast.
4. Give Examples of collision free protocols
5. What do you mean by FTP?

**II Answer all the questions****10 x 2M=20M**

1. Define MESH Topology. For networks with n devices how many links are required in MESH topology?
2. Define fragmentation and reassembly.
3. What is IEEE 802.5?
4. What is Hamming Distance Calculate Minimum Hamming Distance between 000 011 101 110
5. What are the various classes of IP address?
6. Mention two differences between connection oriented and connection less protocols.
7. Why is leaky bucket algorithm is employed?
8. Mention the different types of Integrated Service techniques that improve the Quality of Service.
9. What is the difference between Cryptography and Steganography.
10. Where do we use DNS in internet?

**PART-B****Answer all the questions****5 x 10M=50M**

1. a. Explain Wireless medium briefly in detail.  
b. Discuss about guided and unguided transmission media

**OR**

2. a. Why layered structure is required?  
b. Classify the communication through links.

3. a. Explain HDLC protocol.  
b. What the various channel allocation protocols are available and explain persistent protocols.

**OR**

4. What is channelization .write about TDMA FDMA CDMA

5. Explain internet Routing protocol with an example.

**OR**

6. Discuss about connection less Internetworking.

7. Write about Qos in Switched Networks.

**OR**

8. Write the different techniques to improve quality of service.

9. Explain briefly WWW Architecture.

**OR**

10. Explain in detail how DNS is served for internet.

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**IV B.Tech I Sem Regular End Examinations, NOVEMBER-2017****SUBJECT: EMBEDDED SYSTEM DESIGN****(Branch: Common to EEE & ECE)****Time: 3 Hours****Max Marks: 75 Marks****PART-A****I. Answer all the questions****5 x 1 = 5M**

1. Classify embedded system based on triggering?
2. List various General purpose operating systems
3. Define Oscillator
4. What is a Process?
5. What is Deadlock?

**II Answer all the questions****10 x 2 = 20M**

1. Explain the different classifications of embedded systems?
2. Mention examples of embedded systems
3. What is programmable logic device?
4. What is Masked ROM?
5. Write the steps involved in assembly language programming.
6. What is an ASIC mention any two examples?
7. Define interrupts.
8. Compare the operation of Zigbee and Wi-Fi networks.
9. What is waiting time in task scheduling?
10. What is inter task communication

**PART-B****Answer all the questions****5 x 10 = 50M**

1. Write the history of embedded systems.

**OR**

2. Discuss operational and non operational quality attributes of embedded system.
3. What are different types of PLDs? Explain the role of PLDs in embedded system design?

**OR**

4. Explain components of typical embedded system in detail.

OR

5. Give the examples for situations demanding mixing of C with assembly? Explain the techniques for mixing of C with assembly?

OR

6. Explain the different 'Embedded firmware design' approaches in detail.

7. Explain thread context switch and the various activities performed in thread context switching for user level and kernel level threads?

OR

8. What is task scheduling in the operating system context? Explain the different scheduling algorithms in detail.

9. Explain the interlocked functions for locked based mutual under windows OS?

OR

10. Explain the architecture of device driver, with neat sketch

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**IV B.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, OCTOBER- 2017****SUBJECT: VLSI Design**(BRANCH: Common to **EEE & ECE**)

Time: 3 Hours

Max Marks: 75 Marks

**PART-A****I. Answer all the questions****5 x1=5M**

1. What is the relation between drain to source current  $I_{ds}$  & drain to source voltage  $V_{ds}$ ?
2. What is meant by contact cut and via.
3. What is Fan-in? give an example.
4. What is the function of parity generator's?
5. Difference between PAL & PLA?

**II Answer all the questions****10 x 2=20M**

1. What are the advantages of IC Technology?
2. Define channel length modulation.
3. Discuss the CMOS design style?
4. What is Pass Transistor?
5. Differentiate between gate logic and switch logic.
6. Write the advantages & disadvantages of Pseudo NMOS logic?
7. Draw the architecture of a serial adder ?
8. Give an example based on CMOS ROM ?
9. What is Stuck-at -Fault?
10. What are the types of PLDs?

**PART-B****Answer all the questions****5 x 10=50 Marks**

1. Explain the fabrication process of n-well CMOS technology with neat schematics.  
(OR)
2. Explain the process steps for BiCMOS fabrication in an n-well process.
3. Discuss about the scaling of MOS Circuits in detail.  
(OR)
4. What is the difference between ' $\alpha$ ' and ' $\beta$ ' scaling factors? Give some examples?
5. Explain about various Switch logic circuits.  
(OR)
6. Design a layout diagram for two input NMOS NAND gate?
7. Explain the advantages and disadvantages of NAND ROMs as compared to NOR ROMs.  
(OR)
8. How is the Parity generator designed as a linear column of XOR gates with a Tree routing channel and draw the layout of it?
9. Explain about Boundary scan testing.  
(OR)
10. Explain the manufacturing Test of a Chip with suitable examples?

