# J & K BOARD OF TECHNICAL EDUCATION

**MJ23** **ROLL No:_____**

**Semester:-6th (New)** **Branch:- ELECTRONICS & COMM. ENGG**

**Subject:- MICROWAVE AND RADAR ENGINEERING**

**Max Marks:-100** **Time: 03 Hours**

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**Instructions: 1. Attempt any Five Questions. ALL QUESTIONS CARRY EQUAL MARKS**

Q 1(a)Write down the applications of Magic Tee? (05)
Q 1(b) what are applications of microwaves? (05)
Q 1(c) Write down the operation of Travelling wave Tube (10)

Q 2 (a) What is an IMPATT diode explain its operation and applications? (10)
Q 2(b) Give the classification of microwaves in terms of frequency bands? (10)

Q 3(a) Explain in detail why the performance of tubes deteriorate at high frequency? (10)
Q 3(b) Explain TE,TM mode in a waveguide? (10)

Q 4(a) what is cutoff wavelength and guide wavelength of a rectangular waveguide ? (10)
Q 4(b) What is a horn antenna and write down its features? (10)

Q 5(a) Explain the phenomenon of tropospheric Duct propagation. (10)
Q 5(b) what is microwave Isolator ? what is its usein microwave communication? (10)

Q 6(a) Draw block diagram to explain the operation of Microwave communication link system? (10)
Q 6(b) Draw the block diagram and explain the operation of MTI Radar system? (10)

Q 7(a)Write down the radar range equation and explain its various parameters. (10)
Q 7(b) Explain the application of VSAT (5)
Q 7(c) Write down the characteristics of Dish Antenna? (5)

Q 8(a) Explain the operation of radar system? (10)
Q 8(b) Draw the block diagram and explain the operationof basic pulsed radar system? (10)

Q 9 (a) what are microwave junctions? (10)
Q 9(b) What is an antenna and mention different types of antennas used at microwave frequencies? (10)

Q 10 Explain briefly any two of the following
a) Maximum unambiguous range.
b) Troposphere and its properties.
c) Applications of Gunn Diode.
d) Microwave Circulator.

(10*2=20)

J AND K BOARD OF TECHNICAL EDUCATION

ROLL No:_____

MJ23

Semester:-6th (New) Branch:- ALL (Except Civil Engg)

Subject:- BASICS OF MANAGEMENT

Max Marks:-100 Time: 03 Hours

**Note:- Attempt any five Questions. All Questions carry equal marks.**

Q1(a) Explain the term 'Management'. What are the various functions of management? (12)

(b)Explain the importance of departmentalization. (08)

Q2(a) What are the various types of industrial organizations? Explain. (12)

(b)Explain the Hierarchical Management Structure. (08)

Q3(a) State and explain the components of Culture. What is the significance of a healthy work culture in an organization? (15)

(b) Define Individual and group behaviour. (05)

Q4(a) Explain the need of Leadership. What are the qualities of a good leader? (12)

(b) Differentiate between a manager and a leader. (08)

Q5(a)Define motivation and its characteristics. What are the factors that affect motivation. (10)

(b)Explain Maslow's Need Hierarchy Theory of Motivation. (10)

Q6(a)Define wage payment. What are the types of wage payment? (12)

(b) Explain job satisfaction with the help of an example. (08)

Q7(a) Define Purchasing. Explain the procedure followed for purchasing. (12)

(b)Differentiate between marketing and selling. (08)

Q8(a)Explain the processes :Manpower Planning, recruitment and selection. (15)

(b)Define Just in time (JIT). (05)

Q9(a) Explain the terms Income Tax, Sale Tax, Excise duty and Provident Fund. (10)

(b)What is total quality management ? Explain (10)

Q10 Write short notes on any two. (2x10=20)

(a)Intellectual property rights (b)Customer Relationship Management

(c)Minimum Wages Act 1948 (d)Preventive Maintenance

Roll No: 633755

# J & K BOARD OF TECHNICAL EDUCATION

ROLL No:_____

MJ23

**Semester:-6th (New)** **Branch:-ELECTRONICS & COMM. ENGG**

**Subject:- WIRELESS AND MOBILE COMMUNICATION**

**Max Marks:-100** **Time: 03 Hours**

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**Instructions: 1. Attempt any Five Questions. ALL QUESTIONS CARRY EQUAL MARKS**

Q1. a) Draw the frequency spectrum of wireless communication. 07

b) Describe the paging system in cellular communication. 08

c) List four applications of wireless communication. 05

Q2) a) Describe Doppler effect with regard to propagation of a signal in cellular communication. 12

b) what is fading? Explain 08

Q3. a) Give the concept of frequency reuse in cellular mobile communication. 08

b) How does power control help in reducing the interference in cellular communication? 04

c) Define cell splitting.

Q4 a) Explain with example cell sectoring for improvement of coverage and capacity in mobile communication. 13

b) What is co-channel interference? Explain 05

Q5 a) List all types of Multiple Access Techniques. 15

b) Describe Frequency Division Multiple Access Technique in detail.

Q6) a) Give a comparative study of CDMA and FDMA techniques used in mobile communication. 09

b) Define a PN code. 05

c) What function does BTS do? 06

Q7) a) Describe in detail Frequency Hopping Spread Spectrum Technique as used in cellular communication. 15

b) Define Soft Handoff. 05

Q8) a) Explain briefly DTH with regard to mobile communication system. 10

b) List all functions of wi-Fi. 05

c) what does GSM and GPS stand for? 05

Q9) a) Give an introduction of GPRS system 08

b) List daily use applications of RFID 07

c) What is the range of a pager? 05

Q10) Explain any two of the following with regard to wireless communication

a) Cordless Telephone System

b) Adjacent channel interference

c) CDMA technique

d) Advantages of cellular mobile communication 10x2

J & K BOARD OF TECHNICAL EDUCATION

MJ23 ROLL No:_____

Semester:-6th (New) Branch:- ELECTRONICS & COMM. ENGG

Subject:- OPTICAL FIBER COMMUNICATION (ELECTIVE)

Max Marks:-100 Time: 03 Hours

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**Instructions: 1. Attempt any Five Questions. ALL QUESTIONS CARRY EQUAL MARKS**

Q.No 1 a. Draw block diagram of Fiber optic communication System 10

b. What are the advantages, applications of a optical fiber 10

Q.No 2. a.Give the Comparison between step index fiber with graded index fiber. 10

b.What do you mean by an optical light source? How many types of optical light source are there? 10

Q No3. a. Explain working of SOA briefly 10

b. Write short note on Noise in Optical fiber 10

Q.N04. Write note on(any two) 10x2

a. Photo Diode

b. Principle of Penetration

c. Graded Index Fiber

Q.No5. a. What is numerical aperture? What is its significance in fiber optics? 10

b. How can we reduce the scattering losses 10

Q.No6. a. Explain the principle of operation of LASER diode. 10

b.Explain dispersion and its types in detail. 10

Q.No 7 a.Explain the Splicing techniques used in optical Fiber. 10

b.What is the operational difference between LED and LASER 10

Q.No 8 a. What are the different modes of propagation used in optical fiber 10

b.Explain the basic operation of optical amplifier., 10

Q.No 9 a.Explain the operation of Photo Diode 10

b.Explain scattering losses in detail, 10

Q.No. 10 Explain the terms briefly with respect to optical fibers (any Two) 10x2

a. Noise in Detectors

b. Critical Angle

c. Effect of dispersion on the data rate

# J & K BOARD OF TECHNICAL EDUCATION

**MJ23** **ROLL No:_____**

**Semester:-6th (New)** **Branch:- ELECTRONICS & COMM. ENGG**

**Subject:- COMPUTER NETWORKS**

**Max Marks:-100** **Time: 03 Hours**

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**Instructions: 1. Attempt any Five Questions. ALL QUESTIONS CARRY EQUAL MARKS**

Q1. a) Explain LAN, MAN and WAN as used in computer networks. 08
b) List 4 main network topologies? Briefly explain any two 08
c) Define circuit switching 04

Q2) a) Describe the functions of Data-link and Network layer with regard to OSI model. 08
b) Which layer is responsible for reliable connection? Explain 06
c) Explain the need of IP address. 06

Q3. a) Give the concepts of physical and logical addressing with regard to TCP/IP 10
b) Define Sub netting. 05
c) Give an example of one class of IP addressing. 05

Q4 a) Explain the 1000 MBPS Gigabit Ethernet. 08
b) What are the features of ISDN. 07
c) Define Public switching telephone network. 05

Q5 a) List all types of network connectivity devices. 05
b) Describe the functions of MODEMS and Routers. 10
c) Where is multiplexer used? Explain 05

Q6 a) What is Huffman coding and how is it used? 10
b) What is RAID management? Explain 10

Q7 a) Why do we use cryptography? Explain? 08
b) Briefly explain Wi-fi? 07
c) Define a wireless LAN. 05

Q8) a) List all network troubleshooting techniques. 05
b) Describe in detail IPCONFIG and NETSTAT as troubleshooting tools used in network troubleshooting. 10
c) What is a TRACEROOT? 05

Q9) a) Explain the functions of ARC Net 10
b) Describe in detail VOIP 10

Q10) Explain any two of the following
a) IPV6 packet format
b) Server Management
c) Bluetooth Technology
d) Need and function of MODEMS 10x2