ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL
School of Engineering & Technology

Subject: IVP		Date: 01-09-2016
Marks: 20		Duration: 01 Hr/s
Class: BE	UT-1	Branch: EXTC

Instructions:
All questions are compulsory.
Figures to the right indicates full marks.

Q. 1. Attempt any five.   (10 marks)

    a) What is an Image?

    b) Define pixel and image resolution.

    c) Write an expression for 1D and 2D-DFT.

    d) What is RGB model and draw its color space?

    e) State different Image representations.

    f) What is HSI model and draw its color space?

Q. 2. Attempt any one.   (5 marks)

    a) Write a short note on Wavelet Transform.

    b) Write a short note on K-L Transform.

Q. 3. Attempt any one.   (5 marks)

    a) Calculate DCT for the given image

$$f(x , y) = \begin{vmatrix} 1 & 2 & 2 & 1 \\ 2 & 1 & 2 & 1 \\ 1 & 2 & 2 & 1 \\ 2 & 1 & 2 & 1 \end{vmatrix}$$

    b) Calculate DFT for the given image

$$f(x, y) = \begin{bmatrix} 1 & 2 & 3 & 2 \\ 4 & 3 & 2 & 1 \\ 4 & 3 & 2 & 4 \\ 3 & 2 & 1 & 4 \end{bmatrix}$$

Subject: DCE	Date:03/09/16
Marks: 20	Duration: 1 Hr/s
Class: BE	Branch: ET

Attempt any Four (5 marks each)

1. Explain Arithmatic coding with examples

2. Explain Temporal masking and frequency masking

3. Explain adaptive Huffman coding with examples

4. Solve Huffman for probabilities a1=0.6, a2=0.3, a3=

5. Solve Iz78 for abracadabraabacadabra

6. Give all measure of performance for compression

7. Explain lossy and lossless compression

Subject: Microwave and Radar	Date:03/09/16
Marks: 20	Duration: 1Hr
Class: BE ET1 & ET2	Branch: EXTC

Q1.Attempt any one   (10 x 1 = 10 Marks)

   a. A load impedance $Z_L = (90 + j60)\Omega$ is to be matched to a 75Ω line using single shunt stub tuner. Find single design using open circuited stub?

<div align="center">OR</div>

   b. Derive expression for field equations for rectangular waveguide in TM mode?

Q2.Attempt any one   (5 x 1 = 5 Marks)

   a. Explain the working and derive s-matrix for a two-hole directional coupler?

   b. A rectangular air filled waveguide of dimensions 7x3.5cm operates in dominant mode at 2.5GHZ frequency, Find
- Cut-off frequency (f_c)
- Guide wavelength (λ_g)
- Phase velocity(v_p)
- Characteristic impedance(z_0)

Q3.Attempt any one   (5 x 1 = 5 Marks)

   a. Write a short note on gyrator?

   b. Why impedance matching required for μwave circuits? Explain various methods of impedance matching?

<div align="center">==============ALL THE BEST==============</div>

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Subject: OCN (ET1)	Date: 02/09/2016
Marks: 20 Marks	Duration: 1 Hr/s
Class: Final Year (Sem-VII)	Branch: EXTC

Instructions:

Attempt any Four of the Following.   (4x5 = 20)

1. Write a note on Optical Fiber communication system.

2. Write the advantages of Optical fiber communication system.

3. Explain the following terms: i) Total internal reflection ii) Acceptance angle iii) Critical angle.

4. A silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index 1.43 and cladding refractive index of 1.35. Determine critical angle, Numerical Aperture and acceptance angle.

5. Explain Outside Vapour Deposition method.

6. Compare MCVD and OVD method.

Subject: OPTICAL COMMUNICATION & NETWORKS   Date: 02/09/16

Marks: 30   Duration: 01 Hr

Class: B.E.E.T.2   Branch: EXTC

Instructions: Question no 1 is cumpolsary attempt any 2 from remaining question.

Q.no.1: Attempt any 03 question.   (10m)

a)Compare Different types of Splicing Technique.

b)What is macrobending losses.Explain with neat diagram.Explain how to minimise macrobending losses.

c)Explain OTDR with neat sketch & mention its advantages & application.

d)Explain different types of fibers with their refractive index profile & mention its dimension.

Q.no.2.   (10m)

 (a) Explain any one fiber fabrication process with neat diagram.Compare the different method of fabrication.

(b)Explain signal attenuation in optical fiber & plot three window.

Q.no.3   (10m)

(a) Explain intermodal & intramodal dispersion in optical fiber.

(b) Draw the block diagram of optical communication & state its advantages & disadvantages.

Subject: Mobile Communication	Date:01/09/16
Marks: 20	Duration: 1Hr
Class: BE ET1 & ET2	Branch: EXTC

Q1. Compulsary question (4 x1 = 4 Marks)

a. A spectrum of 30MHz is allocated to a wireless FDD cellular system which uses two 25KHz simplex channels to provide full duplex voice and control channels,compute the number of channels available per cell if a system uses

    (a) 4-cell reuse

    (b) 7-cell reuse and

    (c) 12-cell reuse.

If 1MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice in each cell for each of the three systems.

Q2. Attempt any two (4 x 2 = 8 Marks)

a. Discuss about frequency reuse in cellular system.

b. With neat diagram explain in detail GSM Network Architecture.

c. Discuss handoff strategies in mobile communications. Explain Hard hand-off and Soft Hand-off.

Q3. Attempt any Two (4 x 2= 8 Marks)

a. Compare 2G, 3G, 4G with respect to speed, application and Bandwidth.

b. Explain Umbrella cell concept in cellular system.

c. Discuss different methods used for improvement of cellular capacity with suitable diagram.

==========================ALL THE BEST==========================