Total No. of Printed Pages:2

SUBJECT CODE NO:- P-517
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CSE/IT) Examination MAY/JUNE-2016
Digital Image Processing
(Revised)

[Time: Three Hours] **[Max Marks:80]**

"Please check whether you have got the right question paper."

N.B i) Q.No.1 and Q.No.6 are compulsory.
ii) Attempt **any two** questions from the remaining questions in each section.
iii) Assume suitable data, if necessary.

Section A

Q.1 Answer the following **(Any five)** 10

a) What is meant by illumination & reflectance?
b) What is image sensing & digitization?
c) Specify objectives of image enhancement technique.
d) What is the need of image transform Define DFT?
e) What is instantaneous uniquely decodable code?
f) What is compression ratio & relative data redundancy?
g) Give the mask used for high boost filtering.
h) Write four applications of digital Image processing.

Q.2 a) With the neat diagram, explain the fundamental steps involved in digital image processing. 08
b) Explain histogram equalization with example. 07

Q.3 a) Explain image compression model with neat diagram. 08
b) What is connectivity in digital Image processing? Explain different types of connectivity. 07

Q.4 a) Explain in brief about noise models with their principles of working. Give suitable example. 08
b) Calculate the efficiency of Huffman code for the following symbol whose probability of occurrence is given below. 07

Symbol	Probability
a_1	0.9
a_2	0.06
a_3	0.02
a_4	0.02

Q.5 Write short notes **(Any three)** 15

a) Spatial domain filters
b) Run length coding
c) Sampling & Quantization
d) MSE & PSNR

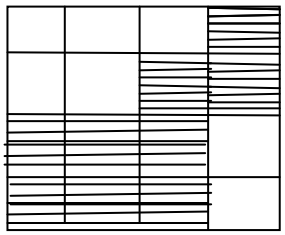
Section B

Q.6 Answer the following **(Any five)** 10

a) What is an edge?
b) What are the major effects in the erosion process?
c) Define gradient operator.
d) Define chain code.
e) What is boundary descriptor?
f) Write applications of segmentation.
g) What is hue and saturation?
h) How a point can be detected?

Q.7 a) How edge detection is done using first and second order derivative? 08

b) Specify the steps involved in split & merge technique segment the given image using split & merge technique. 07

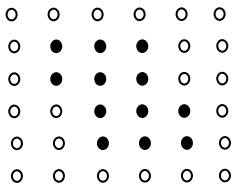
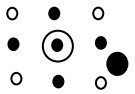


Q.8 a) Explain RGB color model. 08

b) What is representation? What is role of chain code and signatures in representation process? 07

Q.9 a) Explain dilation process with example. 08

b) A binary image 'X' and structuring element 'B' are given below. 07

X=  B= 

Calculate 1) X^C 2)$Y_1=X \oplus B$ 3) $Y_2= X^C \ominus B$ 4) $Y_3=X \ominus B$ 5) $Y_4=X^C \oplus B$

Q.10 Write short notes **(Any three)** 15

a) Color slicing
b) Multivariable thresholding
c) Hit or miss transform
d) Regional descriptors
e) HIS color model.