

**M. SC. (COMPUTER SCIENCE) SEM – I (CHOICE BASED
CREDIT & GRADE SYSTEM) : SUMMER - 2018**

SUBJECT : ELECTIVE – I: c) DIGITAL IMAGE PROCESSING

Day : **Wednesday**
Date : **18/04/2018**

Time : **03.00 PM TO 06.00 PM**
Max. Marks : 60

S-2018-0921

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.

Q.1 Name different types of image segmentation techniques. Explain the splitting and merging techniques with the help of an example. **(15)**

OR

Explain three basic types of functions for image enhancement in spatial domain. **(15)**

Q.2 A) Answer **ANY ONE** of the following: **(08)**

- a) Explain the three principal ways of estimating the degradation function in brief.
- b) State equations for 2-D DFT and its inverse. Explain any two properties of 2-D DFT.

B) Answer **ANY ONE** of the following: **(07)**

- a) Explain any two non-linear filters with examples.
- b) Explain image acquisition using sensor arrays.

Q.3 Answer **ANY THREE** of the following: **(15)**

- a) What is bit-plane slicing? Mention any one of its application.
- b) Give co-ordinates of $N_4(P)$ and $N_D(P)$ if point 'P' is at (50, 50) position.
- c) Explain region splitting and merging process in image segmentation.
- d) Explain the following with respect to pixel:
i) Adjacency ii) Boundaries iii) Connectivity iv) Regions
- e) Explain the process of thinning and thickening.

Q.4 Write short notes on **ANY THREE** of the following: **(15)**

- a) Boundary approximation using MPP.
- b) Chain codes
- c) Thresholding
- d) Log transformations
- e) Wiener filtering

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