SHRI VISHWAKARMA SKILL UNIVERSITY

(A State Skill University, setup by an Act of Legislature in 2016)

188052

Course	:	PGD in Geo Informatics
Subject	:	Digital Image Processing
Subject Code	:	KPSE-102
Semester	:	First
Duration	:	3 Hours
Maximum Marks	:	35

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. **Section A** comprises ten questions of objective type in nature. All questions are compulsory. Each question carries one mark.
3. **Section B** comprises eight essay type questions out of which students need to do any five. Each question carries five marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled.

Roll Number

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SECTION –A (OBJECTIVE TYPE QUESTIONS)

(10x1=10 Marks)

Q1. The radiometric error is

a) random bad pixels
b) panoramic distortion
c) earth rotation
d) platform instability

Q2. Which of the following operation has to be performed to increase the sampling rate by an integer factor I?

a) Interpolating I+1 new samples
b) Interpolating I-1 new samples
c) Extrapolating I+1 new samples
d) Extrapolating I-1 new samples

Q3. Look-Up Table is related to

a) Contrast Stretching
b) Geometric Correction
c) Interpolation
d) Atmospheric Correction

Q4. In contrast stretching, if r1=s1 and r2=s2 then which of the following is true?

a) The transformation is not a linear function that produces no changes in gray levels
b) The transformation is a linear function that produces no changes in gray levels
c) The transformation is a linear function that produces changes in gray levels
d) The transformation is not a linear function that produces changes in gray levels

Q5. What is the output of a smoothing, linear spatial filter?

a) Median of pixels
b) Maximum of pixels
c) Minimum of pixels
d) Average of pixels

Q6. What is the thickness of the edges produced by first order derivatives when compared to that of second order derivatives?

a) Finer
b) Equal
c) Thicker
d) Independent

Q7. Support Vector Machine is a,

a) Mechanical system
b) Supervised Classifier
c) Unsupervised Classifier
d) Image processing technique

Q8. KHAT index is a measure of,

a) agreement or accuracy
b) Signal to noise ratio
c) filter coefficient
d) radiance

Q9. A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization, the output will be zero when and only when the input is:

a) 000 or 110 or 011 or 101
b) 010 or 100 or 110 or 101
c) 000 or 010 or 110 or 100
d) 100 or 111 or 101 or 001

Q 10. Which of the following is not the promise of artificial neural network?

a) It can explain result
b) It can survive the failure of some nodes
c) It has inherent parallelism
d) It can handle noise

SECTION –B (ESSAY TYPE QUESTIONS)

(5x5=25 Marks)

Q1. What is the need of atmospheric correction in image processing? Describe the various methods of atmospheric correction.

Q2. Discuss the various Non-linear Contrast Stretching methods.

Q3. Define the following regarding filtering and multiband enhancement techniques,
(a) Vegetation index
(b) Principal Component Analysis

Q4. Compare the following classifiers,
a) Parametric and Non-parametric classifiers
b) Supervised and Unsupervised classifiers

Q5. Explain any one of the following advanced techniques for image processing and remote sensing,
(a) Hyper spectral remote sensing
(b) Data reduction techniques

Q6. Write short note on the following,
(a) Accuracy assessment
(b) Edge-preserving median filter

Q7. Describe the spatial and spectral interpolation methods of image processing.

Q8. Illustrate the following,
(a) Fuzzy Logic
(b) Image Fusion

------End of Paper------