Name: Enrolment No:	⳵ UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, July 2020

Course: Digital Image Processing   **Semester: VI**
Program: B. Tech. GIE   **Time (A Section-2hrs. & B Section- 24 hrs.)**
Course Code: GSEG 3001   **Max. Marks: 100**

	SECTION A		
S. No.	**Instruction: Attempt all questions; True/False; Fill in the blanks; Multiple Choices & Numerical**	**Marks**	**CO**
Q1 – Q 44	Quizzes conducted through Black Board (**Section –A questions are listed in annexure, pages 2 - 4**)	60	**CO 1, CO2, CO3, CO4 & CO5**
	SECTION B		
	Instruction: Attempt all questions	**40**	
Q 1	Two digital multi-spectral satellite data sets are provided in a remote sensing project- one MODIS and on IKONOS satellite data. Using one data set you have to prepare fractional thematic information classes. While one data set you have to use suitable image analysis technique for detail thematic mapping. Select appropriate data set in each problem and explain the concept of each applicable image analysis method to be adopted.	**5 + 5**	**CO4**
Q 2	In an agricultural area covers with different types of crops with varying biophysical parameters. How you will use hyperspectral satellite data? What are the digital analysis approaches of HRS data to be use for discrimination different crop types and quantification of biophysical parameters. Discuss in details the analysis processes.	**10**	**CO5**
Q 3	In a given remote sensing image analysis project, 2 sets of data are provided one is a digital land use/land cover map with 30m raster grid size of one time and other period non-rectified multispectral digital satellite data of same area with 20m pixel size. You are asked to prepare digital change map of the area. Explain in details the theory and analysis steps with flow diagram to be followed in this project.	**10**	**CO3**
Q 4	Sometimes the standard FCC generated with proper techniques of contrast stretching using multi-bands spectral data, lacks poor colour saturation. What DIP technique to be apply for improving colour saturation of FCC? Explain the principle of this technique. You are provided with one band (pan chromatic) digital satellite image and after displaying the image you found several pixels DN values are missing. Explain in details how you apply geostatistics to solve this problem.	**5 + 5**	**CO1**

Annexure

(Questions No. 1 – 40 each question carry 1 mark and Questions No. 41 – 44 each question carry 5 marks)

1.	TF	Digital change detection deals with discreate change only	FALSE	TRUE
2.	TF	MNF is also one type of PCA analysis	TRUE	FALSE
3.	TF	Salt and peper effects of an image can be minimized using low pass filter.	TRUE	FALSE
4.	TF	SVM classification is suitable for high spatial resolution RS data	FALSE	TRUE
5.	TF	Mie scattering contributes much in diffuse sky irradiance.	FALSE	TRUE
6.	TF	SI technique is used for selection of best more than three bands of a multi-spectral image	TRUE	FALSE
7.	TF	ASM is an example of GLCM method of analysis	TRUE	FALSE
8.	TF	n-dimentional spectral indices is used for multi-thematic information	TRUE	FALSE
9.	TF	Cubist is a nonparametric classification sofware.	TRUE	FALSE
10.	TF	CART is an digital classification technique	TRUE	FALSE
11.	TF	Resampling methods used in geometric correction of RS image do not affect thematic classification.	FALSE	TRUE
12.	TF	When an image is not Gaussian, histigram equialization stretching is used to improve image contrast.	FALSE	TRUE
13.	TF	Multi-modal training data is good for digital classification	FALSE	TRUE
14.	TF	MNF is useful for finding PPI	TRUE	FALSE
15.	TF	eCognition software used for rule based digital classification	FALSE	TRUE
16.	FIB	The_____ is a digital change detection technique whcich does not require atmospheric corrections of two periods RS data.	cross corretation	
17.	FIB	Generally for digital classification of high spatial resolution RS data_____classification method is used.	obia	
18.	FIB	The_____ atmospheric correction method take care the effect of cloud.	flaash	

No.	Type	Question	Answer			
19.	FIB	The _____ is the modified NDVI which take care both soil background and atmospheric aerosol scattering.	evi			
20.	FIB	Commonly high pass filtering is in _____ thematic application.	geology			
21.	FIB	Agreement of classification accuracy is measured by_____ value.	kaapa			
22.	FIB	The one important vegetation parameter_____is to be consider for digital change detection of forest area.	pheonology			
23.	FIB	The HIS digital analysis method is commonly use to _____high spatial resolution panchromatic RS data with course spatial resolution multi-spectral satellite data	merge			
24.	FIB	For estimation of spatial Zn content of mineral_____learning decision tree rule is uesd.	regression			
25.	FIB	Low frequency components of an image appear_____in FT tranformed image	white			
26.	FIB	The_____ method is use to correct image spatial distortion due to satellite angular velocity and earth surface velocity	deskewing			
27.	FIB	The_____pigments absorb centered at 0.62 micro meter.	phycocyanin			
28.	FIB	The_____index is very effective for assessment vegetation stress using hyperspectral RS data	rep			
29.	FIB	The better characterization of absorption of a spectra can be done by _____ removal analysis.	continuum			
30.	FIB	The analysis method called_____ quantify spatial structure of neibouring data	kriging			
31.	MC	Selective atmospheric absorbtion is a function of water vapor, carbon dioxide,_____ and oxygen	nitrogen	Incorrect	corbonmooxide	In
32.	MC	A Probaility based classification method_____ is use for thematic classification	minimum distance	Incorrect	nearest neighbour	In
33.	MC	The first one or two images of temporal PCA is known as_____ components	unstable	Incorrect	stable	Co
34.	MC	Scale factor is critical for _____digital image classification method.	MXL	Incorrect	Parallelepiped	In
35.	MC	Morans I is used for extraction of _____parameter of image.	shape	Incorrect	compactness	In

No.	Type	Question				
36.	MC	For computation of soil wetness index _____band must required.	SWIR	Incorrect	MIR	Co
37.	MC	The _____is MI based digital classification technique without hidden layer	decision tree	Incorrect	expert system	In
38.	MC	Higher order components of PCA contain _____information of image.	high variance	Incorrect	noise	Co
39.	MC	MTMF is a algorithim used in_____ digital classification technique.	spectral unmixing	Correct	Fuzzy	In
40.	MC	True colour composite the RGB channel relate to _____wavelength bands	BRG	Incorrect	RGB	Co
41.	NUM	What is the calculated value of REP with given data, reflectance values of bands 670,700,740 and 780 are 60,45,100,50,respectively ?	700			
42.	NUM	What is the value of change angle in degree, computed with data of two periods, red band reflectance values of two periods 30 and 35,NIR band values 60 and 100	7			
43.	NUM	What is the computed value of density of an image object with provided value of n 500, variance of pixels in x direction 50 and y direction 40 ?	2			
44.	NUM	What is the the value of cov 1,2 of band1 and band2 of an image with given DN values of band1, 50,55,60,65,70 and band 2, 40,45,50,55,60 ?	62			