

## B.E. CIVIL ENGINEERING. SECOND YEAR SECOND SEMESTER EXAM. - 2018

Subject: SURVEYING-III

Time: Three Hours

Full Marks: 100 (40 for Part-I)

## Part: Part-I

Use a Separate Answer-Script for Each Part  
Answer any 2 (Two) questions

1. (a) With a neat diagram, explain the following terms related to Aerial Photogrammetry: Ground and Photo Plumb Points, Ground and Photo Principal Points, Ground and Photo Iso-Centres, Plate Parallels and Iso-Metric Parallels. 8
1. (b) With a neat diagram deduce the expression for finding out the height of a cloud from the image of the cloud and its shadow taken from a flight. 12
2. (a) With neat diagrams deduce the expressions to find out the shadow length on a horizontal and an inclined plane (both uphill and downhill) when the angle of solar insolation is  $\Psi$  and the ground slope is  $\lambda$  for inclined plane. 6
2. (b) With neat diagrams deduce the expressions for 'Air Base' In relation to Stereoscopic Study, and 'Displacement in Stereoscopic Pairs. 7 + 7
3. (a) Describe the flight planning to have sufficient air cover of an area during photogrammetry explaining the relation of flight height with reduction factor and ground coverage. Also explain what is meant by the term 'Crabbing' in this regard. 10+2
3. (b) 1:20000 scale photographs with 230 mm  $\times$  230 mm format are taken of a fairly level ground with fore and aft overlap of 60%. Find the minimum number of photographs to give stereoscopic cover of a land 30 km long. If the lateral overlap for the strip is 20% what will be total number of photographs for a ground coverage of 30 km  $\times$  20 km. 4+4

**BACHELOR OF CIVIL ENGINEERING EXAMINATION 2018**  
(Second Year, Second Semester)

**SURVEYING III**

Time: Three Hours

Full Marks 100  
(Part I: 40 Marks  
Part II: 60 Marks)

Use a separate Answer-Script for each part

Question No.	Part II (60 Marks)	Marks
<i>Answer question 1 as compulsory, and any TWO questions from 2, 3, and 4 in this Part</i>		
1	(a) What is FCC? Make a list of the basic information which can be obtained from a FCC. (b) Why the vegetation shows red in FCC?	2+5=7 3
2	(a) Define 'Remote Sensing' and 'Satellite Remote Sensing'. (b) What is the objective of 'Satellite Remote Sensing'? (c) Discuss with a neat sketch about the ranges of 'Electromagnetic Spectrum' applicable for 'Satellite Remote Sensing'. (d) Explain briefly about the different types of 'Energy Interactions in the Atmosphere'. (e) Define 'Spectral Reflectance' and express its quantification.	1+1=2 3 9 9 2
3	(a) "Spectral reflectance data collected by Reflectometer for two different features may be same, and similar features may be different". Explain the correctness of the statement. (b) How do you use GPS in remote sensing work? Write down the utility of the data collected by GPS. (c) What is called Geo-referencing in digital image processing? Why it is essential? How it can be done? (d) What type of data is used to do the Geo-referencing? Which one is appropriate? (e) Indicate the reflectance value (typically) as high, medium or low for the following features: (i) Shallow water; (ii) Shallow water with suspended sediment; (iii) Deep water; (iv) Polluted Water; (v) Dry sand; (vi) New concrete roof; (vii) Mud flat; (viii) Wet sand; (ix) Dense forest with larger leaves tree; (x) Flowing water.	4 2+1=3 3+2+3=8 3+2=5 10x½=5
4	(a) What is the important parameter for digital image classification? What are the different parts of 'image enhancement'? Why the 'image enhancement' is required for satellite image? (b) What is 'Ground Truth Verification (GTV)'? Why it is essential? (c) Why "Contrast Stretching" of a satellite image is required? Draw and discuss the different principles of "Contrast Stretching". (d) Differentiate between 'supervised' and 'unsupervised' classification. Which one is the final production for a complete map preparation? (e) A group of same species of trees existing on both side of a hill. The group of trees on one side of the hill is showing different reddish tone than the trees on other side of the hill. Why? How do you identify that they are of same species?	1+2+2=5 3+2=5 2+5=7 4+1=5 1+2=3