**Roll No: ----------**

# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

**End Semester Examination, December 2017**

| | |
|---|---|
| **Program/course: B.Tech CS Oil & Gas Informatics** | **Semester – VII** |
| **Subject: Photogrammetry: Remote Sensing, GIS and GPS** | **Max. Marks : 100** |
| **Code : GSEG 304** | **Duration : 3 Hrs** |
| **No. of page/s: 2** | |

**All the Sections are compulsory. All the diagrams should have an explanatory note. Attach the Section C with your answer sheet.**

## Section A

| | | |
|---|---|---|
| **1** | What do you understand by histogram? How histogram help in image enhancement? | **5** |
| **2** | An aircraft is flying at the height of 9500 feet from sea level. What will be focal length of lens if the scale of the image captured is 1:4500? | **5** |
| **3** | An object of height 8 meter is casting a shadow of 15 meters; calculate the angle made by the sun with the perpendicular to earth? | **5** |
| **4** | An aircraft is flying at the altitude of 15000 feet above a building, which is 2000 feet from sea level. In the two conjugate images, the difference between the top and bottom of the building from PP is 2.55" and 2.319" and the difference between the PP and CPP is 3.41". Find out the height of the building. | **5** |

## Section B

| | | |
|---|---|---|
| **5** | With the help of stereo-pair diagram, state the derivation for calculate height of the object using stereoscopic parallax. | **10** |
| **6** | What do understand by contrast stretching? What are the various techniques for Image enhancement? | **10** |
| **7** | What do you understand by Trilateration? What are the various segments of in GPS, explain with specifications of each segments? | **10** |

**8** What are the tertiary and higher order of element of image interpretation, Explain with example? **10**

## Section C

**9** Write a short note about the following: **20**
a) Wien's displacement law **Or** Kirchoff's radiation law
b) Scattering **Or** Diffusion
c) Thermal Remote sensing
d) Density Slicing

**10** a) What do you understand by Radiometric and Geometric corrections? How geometric correction can be performed using Empirical Line Calibration? **20**

b) What do you understand by GIS system? Design a topological model for UPES bidholi campus?

**or**

c) Illustrate the concept of classification with respect to the remote sensing? Distinguish the concept of clustering from classification

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## Section A

| | | |
|---|---|---|
| 1 | What do you understand by Urban Heat Island? | 5 |
| 2 | An Aircraft is flying at a height of 12000 feet above the sea level. The focal length of sensor is 15 inches and the aircraft crossed the hill with minimum height 150 feet, average height of 500 feet and maximum height 1200 feet. What will be the scale of the Image captured? | 5 |
| 3 | What are the various type of raster data model? | 5 |
| 4 | What are the do understand by color composition? How color composition is used to predict image? | 5 |

## Section B

| | | |
|---|---|---|
| 6 | What are the various element of Visual Image interpretation that can predict cultivation land? | 10 |
| 7 | What are the various type of atmospheric interaction undergone by EM radiation? Define various method that can be used to correct atmospheric distortion? | 10 |
| 8 | What is the purpose of designing NSDI? What are the various component of NSDI? | 10 |
| 9 | What do you understand by diurnal temperature cycle of material? | 10 |

## Section C

10 a) What do you understand by contrast stretching? What is the difference between linear contrast stretch and equalized contrast stretch? **20**

b) Analyze the various components of NavStar system and define how one can locate the location of any object

**or**

c) What are the various component of remote sensing system? Design coverage model for stadium?

11 Write a short note about the following: **20**

a) Remote sensing **Or** Photogrammetry

b) Atmospheric Window **Or** Image Interpolation

c) UTM Grid

d) Projection