

GUJARAT NATIONAL LAW UNIVERSITY
GANDHINAGAR
 Course: Space Science and Communication Technology
 Semester-VI (Batch: 2016-21)

End Semester Examination: April-May 2019

Date: 11th May, 2019

Duration: 2 hours

Max. Marks: 40

Instructions:

- Read the questions properly and write the answers in the given answer book.
- The respective marks for each question are indicated in-line.
- Do not write anything on the question paper.
- Indicate correct question numbers in front of the answers.
- No questions or clarifications can be sought during the exam period, answer as it is, giving reason, if any.

	Part-A	Marks
Q.1	Answer the following: (a) An electronic engineer plans to fabricate a capacitor in a circuit. Refresh him with the information on whether the capacitor offers high impedance to a low frequency signal or a high frequency signal. (b) In the Chandrayaan-I mission undertaken by India, while the Chandrayaan was revolving around the earth which one was kept nearly constant – apogee or perigee? (c) Write the meaning of ballistic coefficient to a company into the space industry.	(3x1=03)
Q.2	As you are aware that India is planning to undertake solar mission in near future. Assist your friend, who is facing an interview, with the following information related to the Sun: (a) What is limb darkening? (b) The sunspot has two parts. Name and explain any one part.	(02)
Q.3	The anemometer is one of the instruments used to measure the speed of the oceanic wind. Name the two platforms that are used to place the anemometer. Write one advantage and one disadvantage of the platform over the other.	(1+2=03)
Q.4	An organisation into the space activities plans to tie up with an educational institute so as to enable it to send a satellite manufactured by it into space. In order to construct a satellite, the institute is preparing details of different types of satellite communication systems. Provide the institute with names and details of any three different types of satellite communication systems.	(03)
Q.5	India is planning to undertake manned mission to Space in near future. In this regard, to work upon the difficulties that may be faced in space, list and explain any three characteristics of space and one difficulty that may be faced due to the particular characteristics.	(03)
Q.6	In the remote sensing after the capture of the signals, the information is converted into the image for the easy understanding of the common man. Enlist and explain any three types of images that are being formed using different methodologies.	(03)

- Q.7 A company is into manufacturing of GPS instruments. Provide it with the information regarding full form of DGPS and explain its working. Write any two errors or effects that are being reduced or corrected by the DGPS to enable it for future planning. (03)
- Q.8 An architect intends to utilize the GIS to ensure that the plan of the town made by him is adjudged the best in a town planning competition. Enlist and explain the major elements of the GIS for a better understanding of the architect to use the facility. (03)
- Q.9 A customer is facing difficulty in communication and so calls the local office of the telecommunication company to rectify the same. The local office responds that there is attenuation taking place in the optical fibre and it is due to this that the problem is being faced. It will take them more than a week to rectify the same. The customer plans to sue the company and approaches you for help. The first question you plan to pose before the company is to provide information on the source of attenuation. In this regard, to be ready beforehand, prepare a list of six sources of attenuation alongwith its explanation so that it helps you while taking up the matter with the company. (03)
- Q.10 The satellite launched by a company gets destroyed due to being hit by a space debris. The company plans to investigate the cause of the damage. Enlist and explain any four types of sources of space debris with examples. (04)
- Q.11 Enlist and explain any five propagation factors that are being observed in case of frequencies above about 3 GHz so that it helps the company which is into the activities of radio wave propagation, to plan for its further activities. (05)

Part-B

- Q.12 Explain the concept of frequency allocation for mobile communication and its broad categories. (02)
- Q.13 Explain the signal propagation in detail with the help of a diagram. (03)
