Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EC-7002 (CBGS)

B.E. VII Semester

Examination, November 2018

Choice Based Grading System (CBGS)

Satellite Communication

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) State and explain Keplers three laws of planetary motion.

   b) Define the terms apogee, perigee, ascending node, Descending node, subsatellite path.

2. a) Calculate the radius of a circular orbit for which the period is one day. https://www.rgpvonline.com

   b) Describe briefly the main effects of the earth's equatorial bulge on a satellite orbit.

3. a) Explain what is meant by the Geostationary orbit. How do the Geostationary orbit and a Geosynchronous orbit differ?

   b) Explain what is meant by the earth eclipse of an earth-orbiting satellite? Why is it preferable to operate with a satellite positioned west, rather than east, of earth station longitude?

4. a) What is meant by sun transit outage? Explain.

   b) What is meant by cross polarization discrimination? Briefly describe the factors which mitigate against good cross polarization discrimination.

5. a) Briefly describe the equipment sections making up a transponder channel. https://www.rgpvonline.com

   b) With the aid of block schematic, briefly describe the functioning of the indoor receiving unit of a satellite TV/ FM receiving system intended for home reception.

6. a) Describe and compare MATV (master antenna TV system) and CATV (community antenna TV system).

   b) Calculate the gain in decibels of a 3m paraboloidal antenna operating at a frequency of 12GHz. Assume an aperture efficiency of 0.55.

7. a) Explain what is meant by EIRP.A satellite downlink at 12 GHz operates with a transmit power of 6W and an antenna gain of 48.2 dB. Calculate the EIRP in dBW.

   b) Derive the general link equation. Find out expression for C/N and G/T ratio. Explain the importance of these ratio's in satellite link design. https://www.rgpvonline.com

8. a) Describe the operation of a typical VSAT system. State briefly where VSAT systems find widest application.

   b) Explain what is meant by DBS service? How does this differ from the home reception of satellite TV signals in the C band?