



Kafrelsheikh University - Faculty of Engineering

Course	Satellite Communications	Date	17/1/2019
Time	3 Hours	Mark	90
Students	4 <sup>th</sup> Year Electronics and Electrical Communications		

This Exam measures ILOs: a.4, a. 8 ,b.2, b.3, b.5 ,c3 , d7

Answer all the following questions:

Clarify your answer with the suitable diagrams.

Q.1 Prove that the relation between the frequency of the rotation and the radius of the

satellite orbit equals  $r = \left( g \cdot \frac{R^2}{(2\pi f)^2} \right)^{1/3}$ . (10 Marks)

Q2. State the three Laws of Kipler for Satellite Communications. (10 Marks)

Q3. Calculate the average length of the civil year in Gregorian calendar. (10 Marks)

Q.4 Calculate time in days, hours, minutes and seconds for epoch day 11.2019. (10 Marks)

Q.5 Compare between the following orbits (10 Marks)

a- Geostationary orbits (GEO).

b- Low Earth orbit (LEO).

Q.6 What are the main features of TDMA? (10 Marks)

Q.7 Explain How to protect the satellite from : (10 Marks)

a) Small Debris less than 1 CM.

b) Large Debris

Q.8 Explain with Drawings the following: (10 Marks)

a- Cassegrain Antennas .

b- Gregorian Antennas.

Q.9 Explain the difference between Distributed single Channel Per Carrier and Centralized single Channel Per Carrier in FDMA. (10 Marks)

Good Luck and Best Wishes

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