Hajee Mohammad Danesh Science and Technology University, Dinajpur
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering
Semester Final Examination 2016 (Jul-Dec)
Level 4 Semester II, Course Code: CSE 461, Credit: 3.0 .
Course Title: Communication Engineering

Time: 3 Hours

Full Marks: 90

[N.B. The figure in the right margin indicates the marks for respective question and split answer of any question is unacceptable]

Section-A

Answer any 3 (three) questions

1.	(a)	Define transponder of satellite. What are the common elements of a transponder?	1+4
	(b)	Derive the radius of a parking orbit of geo-stationary satellite.	5
	(c)	Write short note on path loss.	2
	(d)	What are the advantages and disadvantages of satellite communication over terrestrial communication system?	3
2.	(a)	Describe radar classification based on the primary function.	5
	(b)	How the performance of a radar system can be measured?	5
	(c)	Derive the radar equation to determine the maximum range at which a target can be detected.	5
3.	(a)	Define call drop. Differentiate between 2G and 3G cellular network systems.	1+3
	(b)	Describe network subsystem of GSM architecture.	5
	(c)	Write GSM security features. Describe the authentication process in GSM with figure.	3+3
4	(a)	Define fiber optics. Write the advantages of fiber optic communication over copper wire based communication system.	1+4
	(b)	Describe the components required to design a simple point-to-point optical link with diagram.	5
	(c)	Describe the classification of losses in fiber optic communication.	5

Section-B

Answer any 3 (three) questions

1.	(a)	Define orbital inclination. Why the uplink frequencies are different from downlink frequencies in satellite communication.	1+3
	(b)	Explain the functional elements of a basic digital earth station with figure.	6
	(c)	What is footprint? why multiple access techniques are used in satellite communication	1+2
	(d)	What are the factors that vary the position and orientation of a geo-stationary satellite?	2
2.	(a)	Define radar blind speed. Differentiate between MTI radar and PD radar.	1+4
	(b)	Explain the block diagram of a simple CW radar.	5
	(c)	What is super heterodyne receiver? Describe a simple MTI delay line canceller.	1+4
3.	(a)	Define handoff. Describe the parameters required for service quality of cellular networks.	1+3
	(b)	What do you mean by frequency reuse in cellular network? Describe the process of mobile unit initialization.	1+4
	(c)	Describe the types of optical fiber used in fiber optic communication with appropriate figures.	6
4	(a)	Define quantum efficiency. Which of the photodetector is used for high speed fiber optic communication? Why?	1+1+1
	(b)	Describe the design criteria to design a fiber optic link.	5
	(c)	Explain intermodal dispersion. How intermodal dispersion problem can be solved?	2+2
	(d)	What is numerical aperture? Write the features of good connector design.	1+2