LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

OBJECTIVE QUESTIONS

Name of Course Instructor(s) : Mr. V V Rama Krishna Reg : R20
Course Name & Code : Satellite Technology – 20EC80 Unit : 3
Program/Sem/Sec : B.Tech., IT, V-Sem., Section – A, B, andC A.Y : 2023-24
L-T-P Structure : 3-0-0 Credits: 3

S.No	Question Description	Answer
1.	Which material is most commonly used in commercial solar panels? a) GaAs b) Silicon c) Carbon d) Aluminum	b
2.	Which of the following is an advantage of GaAs solar cells compared to silicon-based cells? a) Lower efficiency b) Greater availability c) Higher cost d) Superior performance in high-temperature environments	d
3.	Which type of battery has been commonly used in space missions due to its high energy density and long cycle life? a) Alkaline batteries b) Nickel-cadmium (NiCd) batteries c) Lithium-ion (Li-ion) batteries d) Lead-acid batteries **Answer**: c) Lithium-ion (Li-ion) batteries	
4.	Why are thermal management systems crucial for batteries used in space? a) To allow the battery to glow in the dark b) To ensure the battery remains within safe operating temperatures c) To increase the battery's weight d) To communicate with ground stations **Answer**: b) To ensure the battery remains within safe operating temperatures	
5.	What challenge do batteries face in deep space missions, such as those traveling to Jupiter or beyond? a) Exposure to extraterrestrial beings b) The inability to utilize solar panels effectively due to distance from the Sun c) Rapid gravitational forces d) A higher risk of asteroid impact **Answer**: b) The inability to utilize solar panels effectively due to distance from the Sun	
6.	Which function of TT&C deals with the monitoring of spacecraft's health and status? a) Tracking b) Telemetry c) Command Control d) Navigation **Answer**: b) Telemetry	
7.	Which component of TT&C is responsible for determining the spacecraft's location and velocity? a) Navigation b) Telemetry c) Command Control d) Tracking **Answer**: d) Tracking	
8.	The ability to send operational instructions to a spacecraft is part of: a) Tracking b) Navigation c) Telemetry d) Command Control **Answer**: d) Command Control	
9.	Ground stations primarily interact with spacecraft using which function to ensure they are on the correct path? a) Command Control b) Navigation c) Tracking d) Telemetry	

	Answer: c) Tracking	
10.	When a satellite sends back data about its onboard temperatures, battery status, or solar panel efficiency, it is utilizing: a) Telemetry b) Tracking c) Command Control d) Navigation **Answer**: a) Telemetry	
11.	Which TT&C function allows operators to correct a satellite's course or orbit? a) Telemetry b) Command Control c) Tracking d) Navigation **Answer**: b) Command Control	
12.	Which function of TT&C would be essential to diagnose a malfunction or anomaly experienced by a spacecraft? a) Command Control b) Navigation c) Telemetry d) Tracking **Answer**: c) Telemetry	
13.	In the context of TT&C, when a command is sent to adjust a satellite's onboard instrument settings, it is part of: a) Telemetry b) Navigation c) Tracking d) Command Control **Answer**: d) Command Control	
14.	Which communication band is often used for deep space communications and has a frequency range around 2.3 to 2.5 GHz? a) L-band b) C-band c) X-band d) S-band **Answer**: d) S-band	
15.	Direct-to-home (DTH) television services primarily use which band? a) L-band b) C-band c) Ku-band d) Ka-band **Answer**: c) Ku-band	

Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Mr. V V Rama Krishna	Mr. V V Rama Krishna	Dr.M.V.Sudhakar	Dr. Y. Amar Babu

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----------DESCRIPTIVE QUESTIONS

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S.No	Question Description	CO	BL

1.	Mention the materials are commonly used for solar cell design?	CO2	L2
2.	List out the microwave frequency bands used in satellite communications and discuss their important applications.	CO2	L2
3.	Outline the power subsystem of a satellite segment with block diagram.	CO2	L2
4.	What is the function of telemetry, tracking & command (TT&C) control and monitoring in a space segment? Describe it.	CO2	L2
5.	Elaborate the significance of power control unit in a satellite bus design.	CO2	L2
6.	Explain the main elements of a telemetry subsystem with block diagram.	CO4	L1
7.	Compare Si based solar cells and Ga As based solar cells with respect to power generation, capacity and efficiency.	CO2	L2
8.	Discuss about the microwave frequency bands used in satellite communications.	CO2	L2
9.	Differentiate various types of Space batteries based on characteristics and efficiency parameters.	CO2	L2
10.	Describe the working principle of Solar cell with a neat sketch.	CO2	L2
11.	Discuss the functions of Onboard computer in satellites.	CO3	L2
12.	Interpret the importance and functioning of ground check out system of satellites.	CO3	L2
13.	Outline the power subsystem of a satellite segment with block diagram.	CO4	L3
14.	Describe about the parameters most commonly monitored in telemetry, tracking and command system.	CO4	L2
15.	Discuss the characteristics and applications of Satellite communication bands.	CO1	L2
16.	Enumerate the working of tracking subsystem with the help of a block diagram.	CO2	L2

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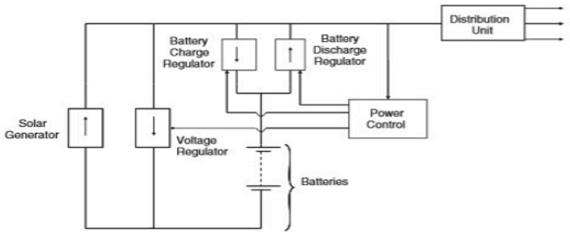
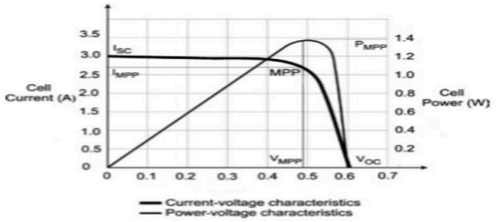
ICT Tools

Name of Course Instructor(s) : Mr. V V Rama Krishna Reg : R20
Course Name & Code : Satellite Technology – 20EC80 Unit : 1
Program/Sem/Sec : B.Tech., IT, V-Sem., Section – A, B, andC A.Y : 2023-24
L-T-P Structure : 3-0-0 Credits: 3

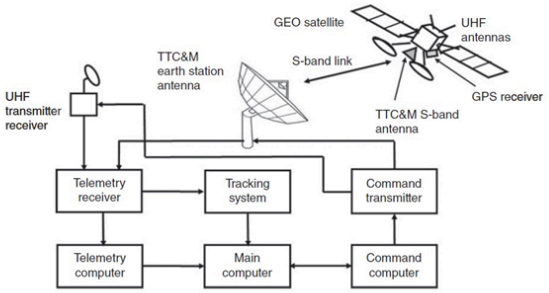
Solar Panel Based Power System – Block Diagram



Current–Voltage & Power–Voltage characteristics



TTC&M



Generally Employed Communication Bands

Traditional	f range(GHz)	New	f range(GHz)
L	1 - 2	D	1 - 2
S	2 - 4	E	2 - 3
C	4 - 8	F	3 - 4
X	8 - 12	G	4 - 6
Ku	12 -18	H	6 - 8
K	18 - 27	I	8 - 10
Ka	27 - 40	J	10 - 20
V	40 - 75	K	20 - 40
W	75 - 110	L	40 - 60
mm	110 - 300	M	60 - 110
sub-mm	> 300		

MICROWAVE RADIO BANDS

Course Instructor	Course Coordinator	Module Coordinator	HOD
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