University of Mumbai

Examinations Summer 2022

Time: 2 hour 30 minutes Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Kepler's second law is known as
Option A:	The Law of Orbits
Option B:	The Law of Areas
Option C:	The Law of Periods
Option D:	The Law of Gravity
2.	The quality of space link is measured in terms of _____ratio.
Option A:	C/N
Option B:	S/N
Option C:	G/T
Option D:	EIRP
3.	What is meant by EIRP?
Option A:	Equivalent Isotropic Radiated Power
Option B:	Energy Isotropic Radiated Power
Option C:	Equivalent Isotropic Resonance Power
Option D:	Equivalent Intermodulated Radiated Power
4.	The distance of a Geo synchronous satellite from Earth's surface is _____ km.
Option A:	300
Option B:	10000
Option C:	35900
Option D:	5
5.	The satellite subsystem that monitors and controls the satellite is the
Option A:	propulsion subsystem
Option B:	power subsystem
Option C:	communications subsystem
Option D:	telemetry, tracking, and command subsystem
6.	At the beginning of each burst, certain time slots are used to carry timing & synchronization information, these time slots are collectively known as _____
Option A:	Preamble
Option B:	Guard time
Option C:	Frame efficiency
Option D:	Decoding quenching
7.	The point where the orbit crosses the equatorial plane going from north to south is called _____.
Option A:	Ascending node
Option B:	Descending node
Option C:	Line of nodes
Option D:	Line of apsides
8.	To make antenna more directional, either its size must be increased or
Option A:	the number of its feed horns must be increased
Option B:	the frequency of its transmission must be increased

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Option C:	its effective isotropic radiated power (EIRP) must be increased
Option D:	its footprint must be increased
9.	DAMA stands for
Option A:	Data accessibility master aerial
Option B:	Digital attenuators microwave antenna
Option C:	Dual accessibility mode antenna
Option D:	Demand assigned multiple access
10.	The direct equivalence between noise factor and noise temperature:
Option A:	Te= (F +1) T_0
Option B:	Te= (F -10) T_0
Option C:	Te= (F-1) T_0
Option D:	Te= (F -1)/ T_0

Please use either of the 3 option given below while setting up the subjective/descriptive questions

Q2	**Solve any Four out of Six** **5 marks each**
A	Explain different orbital parameters.
B	Define and explain reliability in satellite.
C	Explain design considerations of Earth Station.
D	What is EIRP and [G/T] ratio. For a satellite circuit the carrier-to-noise ratios are uplink 23dB, downlink 20dB, intermodulation 24 dB. Calculate the overall carrier- to-noise ratio in decibels.
E	Compare: TDMA & FDMA.
F	Explain GPS.

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Explain SPADE system.
B	Derive satellite link budget equation.
C	Explain VSAT.

Q4	
A	**Solve any Two** **5 marks each**
i.	State and explain Kepler's laws with the help of diagram.
ii.	Explain input back off and output back off.
iii.	Explain Laser satellite system.
B	**Solve any One** **10 mark each**
i.	Explain TT&C system with the help of block diagram.
ii.	With the help of block diagram explain transmit receive type of earth station.

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