CHAPTER- V: ISSUES FOR CONSULTATION

Stakeholders are requested to provide responses to the following questions with detailed justifications:

Q1. For space-based communication services, what are the appropriate frequency bands for (a) gateway links and (b) user links, that should be considered under this consultation process for different types of licensed telecommunications and broadcasting services? Kindly justify your response with relevant details.

Considering the importance of the space-based communication services for the Earth Observation, ISR & ISTAR, information and broadcasting, disaster relief, PNT and various other applications. Any frequency band which is facilitating such services (in space or earth segment) of strategic importance to a country that aspires to be a global leader in the next-generation technologies like space and wants to inspire its next generation with the initiatives under "आत्मनिर्भर भारत" shall bring all its industry needs for the space related SATCOM spectrum under the administrative allocation process.

Q2. What quantum of spectrum for (a) gateway links and (b) user links in the appropriate frequency bands is required to meet the demand of space-based communication services? Information on present demand and likely demand after about five years may kindly be provided in two separate tables as per the proforma given below:

Type of service	Name of the satellite system	Type of satellite (GSO/ LEO/ MEO)	Frequency range and quantum of spectrum required							
			User Link (Earth to space UL)		User Link (Space to Earth DL)		Gateway Link (Earth to space UL)		Gateway Link (Space to Earth DL)	
			Frequency range	Quantum in MHz	Frequency range	Quantum in MHz	Frequency range	Quantum in MHz	Frequency range	Quantum in MHz
Access										

Internet										
NLD										
ILD										
GMPCS										
VSAT CUG (Commercial)										
Captive VSAT CUG										
Machine to Machine (M2M)										
DTH										
Teleport										
DSNG										
HITS										
IFMC										
Any other relevant service (please specify)										

Indian space Ecosystem is currently in a nascent stage, taking any decision based on the stipulated numbers would not be of any benefit to the ecosystem at this stage.

With the onset of the next generation electronics and advancements in the material sciences new type of technologies are now making to space, creating a whole new set of requirements from the spectrum utilization scenario.

Q3. Whether there is any practical limit on the number of Non-Geo Stationary Orbit (NGSO) satellite systems in Low Earth Orbit (LEO) and Medium Earth Orbit (MEO), which can work in a coordinated manner on an equitable basis using the same frequency range? Kindly justify your response.

Although, there is no practical limit to the number of satellites that can be launched in space which can work on same frequency considering the ample amount of distance between 2 satellites, dynamic frequency switching techniques and other technologies. But with the increasing number of constellations and decreasing orbital slots there might be some interference issues in the future. To assess this, "ITU Radiocommunications Bureau" has started an online process to facilitate application requests and interference reporting. The exact implications of this situation are not yet fully analysed on large scale.

Q4. For space-based communication services, whether frequency spectrum in higher bands such as C band, Ku band and Ka band, should be assigned to licensees on an exclusive basis? Kindly justify your response. Do you foresee any challenges due to exclusive assignment? If yes, in what manner can the challenges be overcome? Kindly elaborate the challenges and the ways to overcome them.

Exclusivity in the spectrum allocation on one hand will result in monopoly in the space-based services through "spectrum hoarding" and on other hand it will supress the magnitude of new innovations in this sector, thereby fundamentally conflicting with the idea of "New India" and the vision of creating $5Tn economy!

Instead of proposing an Idea that (a.) fundamentally goes against the common underlying vision of recently announced policies by other ministries (b.) that paves a pathway full of hurdles for the new players in this innovation driven sector. The authority should rather come up with some friendly guidelines which can help in creating a nurturing environment for the space ecosystem in the country that can further help in solving the "Brain Drain" issue in the technology sector of India by letting the innovation to thrive and by creating an ecosystem where next generation skilled manpower and entrepreneurs get the support of the enabling ecosystem to build the technologies for the New India of tomorrow.

Instead of attracting investments this step would rather act as a doomsday clock for the space sector.

Submitted by: Xovian Aerospace

Q5. In case it is decided to assign spectrum in higher frequency bands such as C band, Ku band and Ka band for space-based communication services to licensees on an exclusive basis,

(a) What should be the block size, minimum number of blocks for bidding and spectrum cap per bidder? Response may be provided separately for each spectrum band.

(b) Whether intra-band sharing of frequency spectrum with other satellite communication service providers holding spectrum upto the prescribed spectrum cap, needs to be mandated?

(c) Whether a framework for mandatory spectrum sharing needs to be prescribed? If yes, kindly suggest a broad framework and the elements to be included in the guidelines.

(d) Any other suggestions to ensure that that the satellite communication ecosystem is not adversely impacted due to exclusive spectrum assignment, may kindly be made with detailed justification.

Kindly justify your response.

For the benefit of the space ecosystem frequency shall be assigned through administrative allocation.

Q6. What provisions should be made applicable on any new entrant or any entity who could not acquire spectrum in the auction process/assignment cycle?

(a) Whether such entity should take part in the next auction/ assignment cycle after expiry of the validity period of the assigned spectrum? If yes, what should be the validity period of the auctioned/assigned spectrum?

(b) Whether spectrum acquired through auction be permitted to be shared with any entity which does not hold spectrum/ or has not been successful in auction in the said band? If yes, what measures should be taken to ensure rationale of spectrum auction and to avoid adverse impact on the dynamics of the spectrum auction?

(c) In case an auction based on exclusive assignment is held in a spectrum band, whether the same spectrum may again be put to auction after certain number of years to any new entrant including the entities which could not acquire spectrum in the previous auction? If yes,

(i) After how many years the same spectrum band should be put to auction for the potential bidders?

(ii) What should be the validity of spectrum for the first conducted auction in a band? Whether the validity period for the subsequent auctions in that band should be co-terminus with the validity period of the first held auction?

Kindly justify your response.

Frequency shall only be assigned through administrative allocation.

Q7. Whether any entity which acquired the satellite spectrum through auction/assignment should be permitted to trade and/or lease their partial or entire satellite spectrum holding to other eligible service licensees, including the licensees which do not hold any spectrum in the concerned spectrum band? If yes, what measures should be taken to ensure rationale of spectrum auction and to avoid adverse impact on the dynamics of the spectrum auction? Kindly justify your response.

As stated in the previous points, Spectrum shall only be assigned via administrative allocation.

For the administrative allocation a robust methodology can be developed with stakeholder consultation process. The process shall provide an equal

opportunity to the industry players based on the criteria agreeable by the industry.

Q8. For the existing service licensees providing space-based communication services, whether there is a need to create enabling provisions for assignment of the currently held spectrum frequency range by them, such that if the service licensee is successful in acquiring required quantum of spectrum through auction/ assignment cycle in the relevant band, its services are not disrupted? If yes, what mechanism should be prescribed? Kindly justify your response.

Frequency shall only be allocated via administrative channel and no secondary lease shall be allowed to any entity obtaining license through the administrative allocation.

Q9. In case you are of the opinion that the frequency spectrum in higher frequency bands such as C band, Ku band and Ka band for spacebased communication services should be assigned on shared (nonexclusive) basis, -

(a) Whether a broad framework for sharing of frequency spectrum among satellite communication service providers needs to be prescribed or it should be left to mutual coordination? In case you are of the opinion that broad framework should be prescribed, kindly suggest the framework and elements to be included in such a framework.

(b) Any other suggestions may kindly be made with detailed justification.

Kindly justify your response.

The spectrum shall be assigned through an administrative allocation approach. A detailed framework for the shared usage can be framed based on the type of services offered through the spectrum, ground station usage, userbase, application-based necessities etc.

Q10. In the frequency range 27.5-28.5 GHz, whether the spectrum assignee should be permitted to utilize the frequency spectrum for IMT services as well as space-based communication services, in a flexible manner? Do you foresee any challenges arising out of such flexible use? If yes, in what manner can the challenges be overcome? Kindly elaborate the challenges and the ways to overcome them.

The spectrum range shall be kept only for satcom applications considering the abundant spectrum (including the recent plans for 24.25-27.5 GHz allocation to IMT services) availability with the IMT services. The authority must also take into consideration the new usecases and sensor type in future.

Q11. In case it is decided to permit flexible use in the frequency range of 27.5 - 28.5 GHz for space-based communication services and IMT services, what should be the associated terms and conditions including eligibility conditions for such assignment of spectrum? Kindly justify your response.

same as point 10

Q12. Whether there is a requirement for permitting flexible use between CNPN and space-based communication services in the frequency range 28.5-29.5 GHz? Kindly justify your response.

28.5 TO 29.5 Ghz shall only be kept for satcom services considering the potential this sector holds for India's growth story. Providing this spectrum for Cellular network/Private networks will severely impact the growth of space sector in India.

Q13. Do you foresee any challenges in case the spectrum assignee is permitted to utilize the frequency spectrum in the range 28.5-29.5 GHz for cellular based CNPN as well as space-based communication services, in a flexible manner? What could be the measures to mitigate such challenges? Suggestions may kindly be made with justification.

Same as point 12

Q14. Whether space-based communication services should be categorized into different classes of services requiring different treatment for spectrum assignment? If yes, what should be the classification of services and which type of services should fall under each class of service? Kindly justify your response. Please provide the following details:

a) Service provider-wise details regarding financial and market parameters such as total revenue, total subscriber base, total capital expenditure etc. for each type of service (as mentioned in the Table 1.3 of this consultation paper) for the financial year 2018-19, 2019-20, 2020-21, 2021-22, and 2022-23 in the format given below:

Type of service: _____				
Financial Year	**Revenue (Rs. lakh)**	**Subscriber base**	**CAPEX for the year (Rs. lakh)**	**Depreciation for the year (Rs. lakh)**
2018-19				
2019-20				
2020-21				
2021-22				
2022-23				

b) Projections on revenue, subscriber base and capital expenditure for each type of service (as mentioned in the Table 1.3 of this consultation paper) for the whole industry for the next five years starting from financial year 2023-24, in the format given below:

Type of service: _____			
Financial Year	**Revenue (Rs. lakh)**	**Subscriber base**	**CAPEX for the year (Rs. lakh)**
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			

If the need for the categorisation of the services arises the categorisation of the services could be done on the basis of the application which the industry plater is targeting eg: internet connectivity, earth observation, broadcasting etc.

Q15. What should be the methodology for assignment of spectrum for user links for space-based communication services in L-band and S-band, such as-

(a) Auction-based (b) Administrative (c) Any other?

Please provide your response with detailed justification.

Administrative allocation is the only way forward for the growth of space sector in India.

Q16. What should be the methodology for assignment of spectrum for user links for space-based communication services in higher spectrum bands like C-band, Ku-band and Ka-band, such as

(a) Auction-based

(b) Administrative

(c) Any other?

Please provide your response in respect of different types of services (as mentioned in Table 1.3 of this consultation paper). Please support your response with detailed justification.

Administrative allocation is the only way forward for the growth of space sector in India.

Q17. Whether spectrum for user links should be assigned at the national level, or telecom circle/ metro-wise? Kindly justify your response.

National Level. Considering the wide scale coverage of the space-based services, it seems to be an efficient way of providing the spectrum at national level.

Q18. In case it is decided to auction user link frequency spectrum for different types of services, should separate auctions be conducted for each type of services? Kindly justify your response with detailed methodology.

Administrative allocation is the only way forward for the growth of space sector in India.

The frequencies for the usage under M2M, VAST CUG and Teleport services are utilised as feeder links within the organisation and administrative approach can easily work.

Q19. What should be the methodology for assignment of spectrum for gateway links for space-based communication services, such as

(a) Auction-based

(b) Administrative

(c) Any other?

Please provide your response in respect of different types of services. Please support your response with detailed justification.

Administrative allocation is the only way forward for the growth of space sector in India.

Q20. In case it is decided to auction gateway link frequency spectrum for different types of services, should separate auctions be conducted for each type of services? Kindly justify your response with detailed methodology.

Allocation of the spectrum shall only be done via administrative means.

Q21. In case it is decided to assign frequency spectrum for space-based communication services through auction,

(a) What should be the validity period of the auctioned spectrum?

(b) What should be the periodicity of the auction for any unsold/ available spectrum?

(c) Whether some mechanism needs to be put in place to permit the service licensee to shift to another satellite system and to change the frequency spectrum within a frequency band (such as Kaband, Ku-band, etc.) or across frequency bands for the remaining validity period of the spectrum held by it? If yes, what process should be adopted and whether some fee should be charged for this purpose?

Kindly justify your response.

Allocation of the spectrum shall only be done via administrative means.

Q22. Considering that (a) space-based communication services require spectrum in both user link as well as gateway link, (b) use of frequency spectrum for different types of links may be different for different satellite systems, and (c) requirement of frequency spectrum may also vary depending on the services being envisaged to be provided, which of the following would be appropriate:

(i) to assign spectrum for gateway links and user links separately to give flexibility to the stakeholders? In case your response is in the affirmative, what mechanism should be adopted such that the successful bidder gets spectrum for user links as well as gateway links.

or

(ii) to assign spectrum for gateway links and user links in a bundled manner, such that the successful bidder gets spectrum for user link as well as gateway link? In case your response is in the affirmative, kindly suggest appropriate assignment methodology, including auction so that the successful bidder gets spectrum for user links as well as gateway links.

Allocation of the spectrum shall only be done via administrative means. The approach for the allocation of spectrum for different links shall be dependent on the use case of the satellite system in space. Some services are meant for end user utilisation via user link terminals whereas some services like earth observation mostly require an earth station and the dissemination of data takes place via internet-based distribution services.

Q23. Whether any protection distance would be required around the satellite earth station gateway to avoid interference from other satellite earth station gateways for GSO/ NGSO satellites using the same frequency band? If yes, what would be the protection distance (radius) for the protection zone for GSO/ NGSO satellites?

Submitted by: Xovian Aerospace

No specific numbers related to the distance shall be given. This guideline can go in accordance with the ITU recommendations and shall also allow the industry players to coordinate with each other and resolve the minimum distance issue with internal/organization to organization coordination.

Q24. What should be the eligibility conditions for assignment of spectrum for each type of space-based communication service (as mentioned in the Table 1.3 of this Consultation Paper)? Among other things, please provide your inputs with respect to the following eligibility conditions:

(a) Minimum Net Worth

(b) Requirement of existing agreement with satellite operator(s)

(c) Requirement of holding license/ authorization under Unified License prior to taking part in the auction process.

Kindly justify your response

The allocation of the spectrum shall only be done via administrative means. A robust mechanism shall be in place providing all the industry players an equal and fair chance of participation in the administrative allocation process irrespective of the availability of any existing license.

Q25. What should be the terms and conditions for assignment of frequency spectrum for both user links as well as gateway links for each type of space-based communication service? Among other things, please provide your detailed inputs with respect to roll-out obligations on space-based communication service providers. Kindly provide response for both scenarios viz. exclusive assignment and nonexclusive (shared) assignment with justification.

The spectrum shall only be allocated through non-exclusive assignment and shall provide equal and fair opportunity to the new industry players.

Q26. Whether the provisions contained in the Chapter-VII (Spectrum Allotment and Use) of Unified License relating to restriction on crossholding of equity should also be made applicable for

satellitebased service licensees? If yes, whether these provisions should be made applicable for each type of service separately? Kindly justify your response.

No, the allocation arrangement shall provide equal and fair opportunity to the new industry players.

Q27. Keeping in view the provisions of ITU's Radio Regulations on coexistence of terrestrial services and space-based communication services for sharing of same frequency range, do you foresee any challenges in ensuring interference-free operation of space-based communication network and terrestrial networks (i.e., microwave access (MWA) and microwave backbone (MWB) point to point links) using the same frequency range in the same geographical area? What could be the measures to mitigate such challenges? Suggestions may kindly be made with justification.

There shall be a fair share of spectrum available dedicatedly for the use of the space-based SATCOM services with the provision of spectrum rollback from the IMT to space based satcom services if required considering the need in the near future. In case of coexistence and shared utilisation a mechanism that includes a transparent coordination mechanism between two licensees could be established alongside an online platform for interference reports and resolution measures if in case it arises.

Q28. In what manner should the practice of assignment of a frequency range in two polarizations should be taken into account in the present exercise for assignment and valuation of spectrum? Kindly justify your response.

The assignment of the spectrum shall only be done via affective administrative measures to implement the fair and equal opportunity measures for the new

players in the ecosystem irrespective of the methodologies followed in the frequency assignment in the opposite polarisations.

Q29. What could be the likely issues, that may arise, if the following auction design models (described in para 3.127 to 3.139) are implemented for assignment of spectrum for user links in higher bands (such as C band, Ku band and Ka band)?

a. **Model #1: Exclusive spectrum assignment**
b. **Model#2: Auction design model based on non-exclusive spectrum assignment to only a limited number of bidders**

What changes should be made in the above models to mitigate any possible issues, including ways and means to ensure competitive bidding? Response on each model may kindly be made with justification.

Allocation of the spectrum shall only be done via administrative means on non-exclusivity basis.

Q30. In your opinion, which of the two models mentioned in Question 29 above, should be used? Kindly justify your response.

NONE

Q31. In case it is decided to assign spectrum for user links using model # 2 i.e., non-exclusive spectrum assignment to limited bidders (n+ Δ), then what should be

(a) the value of Δ, in case it is decided to conduct a combined auction for all services

(b) the values of Δ, in case it is decided to conduct separate auction for each type of service

Please provide detailed justification.

The spectrum allocation shall only be done via administrative means with a non-exclusivity model.

Q32. Kindly suggest any other auction design model(s) for user links including the terms and conditions? Kindly provide a detailed response with justification as to how it will satisfy the requirement of fair auction i.e., market discovery of price.

Administrative allocation only

Q33. What could be the likely issues, that may arise, if Option # 1: (Area specific assignment of gateway spectrum on administrative basis) is implemented for assignment of spectrum for gateway links? What changes could be made in the proposed option to mitigate any possible issues?

The spectrum allocation shall only be done via administrative means with a non-exclusivity model.

Q34. What could be the likely issues, that may arise, if Option # 2: Assignment of gateway spectrum through auction for identified areas/ regions/ districts is implemented for assignment of spectrum

for gateway links? What changes could be made in the proposed option to mitigate any possible issues? In what manner, areas/ regions/ districts should be identified?

The spectrum allocation shall only be done via administrative means with a non-exclusivity model.

Q35. In your view, which spectrum assignment option for gateway links should be implemented? Kindly justify your response.

The spectrum allocation shall only be done via administrative means with a non-exclusivity model.

Q36. Kindly suggest any other auction design model(s) for gateway links including the terms and conditions? Kindly provide a detailed response with justification as to how it will satisfy the requirement of fair auction i.e., market discovery of price?

The spectrum allocation shall only be done via administrative means with a non-exclusivity model.

Q37. Any other issues/suggestions relevant to the subject, may be submitted with proper explanation and justification.

The spectrum allocation shall only be done via administrative means with a non-exclusivity model.

Q38. In case it is decided for assignment of spectrum on administrative basis, what should be the spectrum charging mechanism for assignment of spectrum for space-based communications services

i. **For User Link**
ii. **For Gateway Link**

Please support your answer with detailed justification.

For the administrative allocation could be done by taking multiple things into consideration some of the criteria might include the userbase, bandwidth requirements etc. and some inputs from the internationally successful administrative allocation models can also be taken into consideration.

Q39. Should the auction determined prices of spectrum bands for IMT /5G services be used as a basis for valuation of space-based communication spectrum bands

i. **For user link** ii.

For gateway link

Please support your answer with detailed justification.

The spectrum shall only be allocated through non-exclusive assignment and shall provide equal and fair opportunity to the new industry players.

Q40. If response to the above question is yes, please specify the detailed methodology to be used in this regard?

The spectrum shall only be allocated through non-exclusive assignment and shall provide equal and fair opportunity to the new industry players.

Q41. Whether the value of space-based communication spectrum bands

i. For user link ii

For gateway link

be derived by relating it to the value of other bands by using a spectral efficiency factor? If yes, with which spectrum bands should these bands be related to and what efficiency factor or formula should be used? Please support your response with detailed justification.

No, the spectrum shall only be allocated through non-exclusive assignment and shall provide equal and fair opportunity to the new industry players.

Q42. In case of an auction, should the current method of levying spectrum fees/charges for satellite spectrum bands on formula basis/ AGR basis as followed by DoT, serve as a basis for the purpose of valuation of satellite spectrum

i. For user link ii.

For gateway link

If yes, please specify in detail what methodology may be used in this regard.

The spectrum shall only be allocated through non-exclusive assignment and shall provide equal and fair opportunity to the new industry players.

Q43. Should revenue surplus model be used for the valuation of spacebased spectrum bands

i. For user link ii.

For gateway link

Please support your answer with detailed justification.

The spectrum shall only be allocated through non-exclusive assignment and shall provide equal and fair opportunity to the new industry players.

Q44. Whether international benchmarking by comparing the auction determined prices of countries where auctions have been concluded for space-based communication services, if any, be used for arriving at the value of space-based communication spectrum bands:

i. For user link ii

For gateway link

If yes, what methodology should be followed in this regard? Please give country-wise details of auctions including the spectrum band /quantity put to auction, quantity bid, reserve price, auction determined price etc. Please support your response with detailed justification.

Benchmarking from the already failed auctioning models in the satcom spectrum allocation proves to be of no benefit. The spectrum shall only be allocated through non-exclusive & administrative assignment and shall provide equal and fair opportunity to the new industry players.

Q45. Should the international administrative spectrum charges/fees serve as a basis/technique for the purpose of valuation in the case of satellite spectrum bands

i. For user link ii.

For gateway link

Please give country-wise details of administrative price being charged for each spectrum band. Please specify in detail terms and conditions in this regard.

The fee for the administrative allocation must be formulated considering the scale and state of the new space ecosystem in the country. The allocation of the spectrum shall not be to focus on monetary value creation in short term, but to create a nurturing ecosystem for the new space startups in the country, which will help to derive a sustainable and higher output over a longer period of time.

Q46. If the answer to above question is yes, should the administrative spectrum charges/fees be normalized for cross country differences? If yes, please specify in detail the methodology to be used in this regard?

Same pricing model could be followed all across the country.

Q47. Apart from the approaches highlighted above which other valuation approaches can be adopted for the valuation of space-based communication spectrum bands? Please support your suggestions with detailed methodology, related assumptions and other relevant factors.

The fee for the administrative allocation must be formulated considering the scale and state of the new space ecosystem in the country. The allocation of the spectrum shall not be to focus on monetary value creation in short term, but to create a nurturing ecosystem for the new space startups in the country, which will help to derive a sustainable and higher output over a longer period of time.

Q48. Should the valuation arrived for spectrum for user link be used for valuation for spectrum for gateway links as well? Please justify.

The fee for the administrative allocation must be formulated considering the scale and state of the new space ecosystem in the country. The allocation of the spectrum shall not be to focus on monetary value creation in short term, but to create a nurturing ecosystem for the new space startups in the country, which will help to derive a sustainable and higher output over a longer period of time.

Q49. If the answer to the above is no, what should be the basis for distinction as well as the methodology that may be used for arriving at the valuation of satellite spectrum for gateway links? Please provide detailed justification.

Fee for the administrative allocation must be formulated considering the scale and state of the new space ecosystem in the country. The allocation of the spectrum shall not be to focus on monetary value creation in short term, but to create a nurturing ecosystem for the new space startups in the country, which will help to derive a sustainable and higher output over a longer period of time.

Q50. Whether the value arrived at by using any single valuation approach for a particular spectrum band should be taken as the appropriate value of that band? If yes, please suggest which single approach/ method should be used. Please support your answer with detailed justification.

The value of the spectrum through administrative allocation shall be derived based on the scale and state of the new space ecosystem in the country.

Q51. In case your response to the above question is negative, will it be appropriate to take the average valuation (simple mean) of the valuations obtained through the different approaches attempted for valuation of a particular spectrum band, or some other approach like taking weighted mean, median etc. should be followed? Please support your answer with detailed justification.

No, the value of the spectrum through administrative allocation shall be derived based on the scale and state of the new space ecosystem in the country.

Q52. Should the reserve price for spectrum for user link and gateway link be taken as 70% of the valuation of spectrum for shared as well as for exclusive assignment? If not, then what ratio should be adopted between the reserve price for the auction and the valuation of the spectrum in different spectrum bands in case of (i) exclusive (ii) shared assignment and why? Please support your answer with detailed justification.

The value of the spectrum through administrative allocation shall be derived based on the scale and state of the new space ecosystem in the country.

Q53. If it is decided to conduct separate auctions for different class of services, should reserve price for the auction of spectrum for each service class be distinct? If yes, on what parameter basis such as revenue, subscriber base etc. this distinction be made? Please support your answer with detailed justification for each class of service.

The value of the spectrum through administrative allocation shall be derived based on the scale and state of the new space ecosystem in the country.

Q54. In case of auction based and/or administrative assignment of spectrum, what should the payment terms and associated conditions

for the assignment of spectrum for space-based communication services relating to:

i. Upfront payment
ii. Moratorium period
iii. Total number of instalments to recover deferred payments
iv. Rate of discount in respect of deferred payment and prepayment

Please support your answer with detailed justification.

Payment terms and conditions shall be formulated by keeping in consideration the flexibility to the new players in the ecosystem.