

R B Sahajpal
Counter Comments

On CP¹ PR^{2,3}

ISSUES FOR CONSULTATION

Introduction:

1. The current CP⁴ appears to be an effort to alienate by auction of **SPECTRUM** in frequency bands identified for IMT/5G, a limited natural resource, available with GOI in various **bands** with justification/justifications based on references, '207' in total⁵ mentioning **inter-alia** ITU, 3GPP documentation.

1. It may be noted that:

(i) STAR LINK has submitted comments for consideration by TRAI⁶.

(ii) "It has come to notice that M/s Starlink has started pre-selling/booking of the satellite based Starlink Internet Services in India. The same is also evident from the website of Starlink." (www.starlink.com) wherein satellite based internet services can be booked by users in Indian territory."⁷

(iii) "Department of Telecommunications, Ministry of Communications, Government of India, has pointed out that 'Starlink Internet Services' is not licensed to offer satellite-based internet services in India being advertised to the public."⁸

2. Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellite constellations operational over India can access the subscriber from satellite both for **uplink/downlink**.

(i) "the Department of Space (DoS) had invited comments on Draft Spacecom Policy liberalizing space segment for private sector participation to provide commercial communication services in India. This includes the Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellite constellations operational over India."

2.1 In respect of space-based communication:

(a) The use of foreign satellite and its use has been provided where ever needed for a specific purpose for example:

(i) For broadcasting use of foreign satellites is permitted for uplinking of Television Channels From India to Indian as well as foreign satellites by MoIB Ministry.

(ii) "The IFMC service provider shall be permitted to use either Indian satellite system or foreign satellite system capacity duly authorised through the Department of Space."⁹

(b) Some service providers, for example Netflix is blocking content country wise¹⁰. **Inter-alia** the reason given is that "Each country has a different set of laws applying to content licensing."¹¹

3. ITU **inter-alia** has given the definitions¹² where in (Fixed)Telephone Line¹³ & Wireline¹⁴ words are occurring.

4. In Annual Report¹⁵ 2020-2021 of DoT(MoC) GOI word Fixed line¹⁶ & Wireline¹⁷ have been used at several places.

(i) MTNL has over 50 lakh fixed lines capacity but only over 30 lakh in use.¹⁸

(ii) MTNL has over 16 lakh Broadband capacity but only over 7 lakh in use.¹⁹

(iii) Whether FTTH to the cabinet or pillar or curb or to premises and final access to user is OFC or line or wireless is not clear is not clear from the data available for MTNL.²⁰

4. 526-698MHz band considered for auction²¹ forms part of RR5-58 460-890MHz band²².

(a) Footnotes 5.298 & 5.313A²³ are relevant to INDIA for the current CP.

(i) 526-617MHz band considered for auction²⁴ forms part of RR5-58 460-890MHz band.²⁵

(ii) 526-582 MHz²⁶ in all the LSAs in coordination with Ministry of information & Broadcasting. The use will be coordinated with minimum keep out distance from MIB transmitters."²⁶

(iii) MIB has provided location of DD transmitters in this band along with suggestive keep out distance from IMT.²⁷

(iv) However there is a rider that keep out distance however may vary as per actual site study reports.²⁸

(b) “2 to encourage administrations to take into account results of the existing relevant ITU Radiocommunication Sector studies, when implementing IMT applications/systems in the frequency bands 694-862 MHz in Region 1, in the frequency band 470-806 MHz in Region 2, in the frequency band 790-862 MHz in Region 3, in the frequency band 470-698 MHz, or portions thereof, for those administrations mentioned in No. 5.296A, and in the frequency band 698-790 MHz, or portions thereof, for those administrations mentioned in No. 5.313A²⁹.”

3 that administrations should take into account the need to protect existing and future broadcasting stations, both analogue and digital, except analogue in the GE06 planning area, in the frequency band 470-806/862 MHz, as well as other primary terrestrial services;.

4 that administrations planning to implement IMT in the frequency bands mentioned in resolves 2 shall effect coordination, as required, with all neighbouring administrations prior to implementation;”³⁰.

5. Out of 526-698MHz band considered for auction³¹ only band 698-790 MHz, or portions thereof is mentioned in Footnote No. 5.313A³².

6. Inter-alia RR2020 1³³ has been referenced for CP³⁴.

(i) Notwithstanding the fact that although INDIA participated in WRC2019 but was not signatory. NFAP 2018 of INDIA³⁵ has not been revised in accordance with RR2020 I³⁶.

Answers to Questions

Q.1. Whether spectrum bands in the frequency range 526-617 MHz, should be put to auction in the forthcoming auction? Kindly justify your response.

Ans.1. In view of conclusion drawn in para “’5’, ‘6’ of introduction 526-617 MHz band may be dropped for auction.

Q.2 If your answer to Q1 above is in affirmative, which band plans and duplexing configuration should be adopted in India? Kindly justify your response.

Ans.2. No comments in view of negative answer to **Q.1**.

Q.3 In case your answer to Q1 is in negative, what should be the timelines for adoption of these bands for IMT? Suggestions to make these bands ready for adoption for IMT may also be made along with proper justification.

Ans.3. Kindly refer para ‘6’ of introduction:

(a) NFAP 2018 may be updated keeping in view RR 2020 1.

(b) Necessary documentation after due process for consideration of WRC 2023, which is round the corner, so that the necessary foot notes relevant to INDIA find a place in RR.

(c) Kindly refer para 4(iii) of introduction:

(i) MIB may kindly complete the site studies to firm up as the present keep out distance from IMT indicated by MIB is only suggestive.

(d) Kindly refer para 4(i) of introduction:

(i) DOS may kindly make final Space Policy available as the present Space Policy of DOS is only a DRAFT one.

(e) Further consideration of the proposed band for IMT may be kept on hold till (a),(b),(c),(d) above is available.

(f) The optimistic time line- after WRC 2023.

Q.4 Do you agree that 600 MHz spectrum band should be put to auction in the forthcoming auction? If yes, which band plan and duplexing configuration should be adopted in India? Kindly justify your response.

Ans.4. Question 4 is not clear. 600 MHz spectrum band **per se** does not convey much for present CP where in no range of band has been provided and a 'band' always has a range. Stand alone 600 MHz means only a signal of frequency 600 MHz.

(i) Notwithstanding this the band is US 600 MHz(617MHz-698MHz)band (n71)³⁷ and 3GPP band 28(703MHz-803MHz)^{38,39}.

(ii) forms part of RR5-58 460-890MHz band^{40,41}.

(a) Footnotes 5.298 & 5.313A⁴² are relevant to INDIA for the current CP.

(b) Foot Note 5.313A covers only 698MHz-790MHz.

(i)"5.313A The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, the Dem. People's Rep. of Korea, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-19)".

(c) NFAP2018 has not been revised.

(d) Footnote 5.313A needs a revision to cover full band (703MHz-803MHz)

Accordingly **600MHz band** may not be put **to Auction:**

(i) action may be taken:

(a) to revise NFAP2018 keeping in view **RR2020 1**.

(b) for necessary action for a suitable revision to Footnote 5.313A in forth coming **WRC-2003**.

Q.5 For 3300-3670 MHz frequency range, which band plan should be adopted in India? Kindly justify your response.

Ans.5. Kindly refer to para (d)(i) of **Ans.3.** as allocation of 3300-3670 MHz for IMT will result in reduction of the guard band between C band Satellite services and IMT. So no comments for band plan.

Q.6. Do you agree that TDD based configuration should be adopted for 24.25 to 28.5 GHz frequency range? Kindly justify your response.

Ans.6. It may please be noted that:

(a) 24.25-28.5GHz frequency range:

(i) is spread in two bands 22-24.75GHz,24.75-29.9GHz in RR 2020 I.

(ii) Bands in this format are not available in NFAP2018.

(iii) Use of 24.25-24.75GHz for IMT is subject to foot note “5.532A” The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution RESOLUTION 224 (REV. WRC-19) applies. (WRC-19)⁴³”.

(b)RESOLUTION 224⁴⁴ has been revised in WRC-2019 NFAP2018 may be revised keeping in view RR2020 1(WRC-19) before taking further action in the matter please.

Q.7 In case your response to Q6 is in affirmative, considering that there is an overlap of frequencies in the band plans n257 and n258, how should the band plan(s) along with its frequency range be adopted? Kindly justify your response.

Ans.7. No comments in view of **Ans.6.**

Q.8 Whether entire available spectrum referred by DoT in each band should be put to auction in the forthcoming auction? Kindly justify your response.

Ans.8. Answer is ‘No’. Availability of SPECTRUM, a limited natural resource, with GOI may not be a sufficient justification for its auction for commercial use. Moreover:

(a) NFAP 2018 may be updated keeping in view RR 2020 1 issue preferably before WRC 2023.

(b) Various issues in various available bands may be resolved.

(c) The bands for which there were no takers in March 2021 may not be put to auction without establishing the need for the same now.

(d) New bands included may not be put to auction without establishing the suitability for INDIA need for the same before after due studies. Precedent Of their use in other countries and other ITU regions may not be a sufficient criterion.

(e) Kindly refer to **Ans.1. Q.1.** also.

Q.9 Since upon closure of commercial CDMA services in the country, 800 MHz band is being used for provision of LTE services,

- a. Whether provision for guard band in 800 MHz band needs to be revisited?
- b. Whether there is a need to change the block size for 800 MHz band? If yes, what should be the block size for 800 MHz band and the minimum number of blocks for bidding for existing and new entrants? (Kindly justify your response).

Ans.9. It may please be noted that:

- (i) 800MHz(790MHz-862MHz)⁴⁵ is GPPB20⁴⁶ and is 790MHz-862MHz⁴⁷ RR2020 1⁴⁸.
- (ii) Foot Notes 296A,5.313,317A are regarding this band.

Q.10 Do you agree that in the upcoming auction, block sizes and minimum quantity for bidding in 700 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands, be kept same as in the last auction? If not, what should be the band-wise block sizes and minimum quantity for bidding? Kindly justify your response.

Ans.10. No comments. In view of answers to various other questions proposed **AUCTION** is not supported.

Q.11. In case it is decided to put to auction spectrum in 526-698 MHz bands, what should be the optimal block size and minimum quantity for bidding? Kindly justify your response.

Ans.11. No comments in view of **Ans.1. to Q.1.**

Q.12. What should be optimal block size and minimum quantity for bidding in 3300-3670 MHz band? Kindly justify your response.

Ans.12. No comments in view of **Ans.1. to Q.1.**

Q.13 What should be optimal block size and minimum quantity for bidding in 24.25-28.5 GHz? Kindly justify your response. Issues related to Eligibility Conditions for Participation in Auction

Q.14 Whether any change is required to be made in the existing eligibility conditions for participation in Auction as specified in the NIA for the spectrum Auction held in March 2021, for the forthcoming auction? If yes, suggestions may be made in detail with justification.

Q.15 In your opinion, should the suggested/existing eligibility conditions for participation in Auction, be made applicable for the new spectrum bands proposed to be auctioned? If not, what should be the eligibility conditions for participating in Auction? Kindly justify your response. Issues related to Interference mitigation in TDD bands.

Q.16 Is there a need to prescribe any measure to mitigate possible interference issues in 3300-3670 MHz and 24.25-28.5 GHz TDD bands or it should be left to the TSPs to manage the interference by mutual coordination and provisioning of guard bands? Kindly provide justification to your response.

Q.17 In case your response to the above question is in affirmative, a. whether there is a need to prescribe provisions such as clock synchronization and frame structure to mitigate interference issues, as prescribed for existing TDD bands, for entire frequency holding or adjacent frequencies of different TSPs? If yes, what should be the frame structure? Kindly justify your response. b. Any other measures to mitigate interference related issues may be made along with detailed justification. Issues related to Roll-out Obligations.

Q.18 Whether the roll-out obligations for 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz as stipulated in the NIA for last auctions held in March 2021 are appropriate? If no, what changes should be made in the roll out obligations for these bands?

Q.19 What should be associated roll-out obligations for the allocation of spectrum in 526-698 MHz frequency bands? Should it be focused to enhance rural coverage? Kindly justify your response.

Q.20 What should be associated roll-out obligations for the allocation of spectrum in 3300-3670 MHz frequency band? Kindly justify your response.

Q.21 What should be associated roll-out conditions for the allocation of spectrum in 24.25 to 28.5 GHz frequency range? Kindly justify your response.

Q.22 While assessing fulfilment of roll out obligations of a network operator, should the network elements (such BTS, BSC etc.), created by the attached VNO, be included? If yes, kindly suggest the detailed mechanism for the same. Kindly justify your response. Issues related to Spectrum Cap

Q.23 Whether there is a need to review the spectrum cap for sub-1 GHz bands? If yes, what should be the spectrum cap for sub-1 GHz bands. Kindly justify your response.

Q.24 Keeping in mind the importance of 3300-3670 MHz and 24.25- 28.5 GHz bands for 5G, whether spectrum cap per operator specific to each of these bands should be prescribed? If yes, what should be the cap? Kindly justify your response.

Q.25 Whether there should be separate spectrum cap for group of bands comprising of 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands together? If yes, kindly suggest the cap along with detailed justification.

Q.26. Whether overall spectrum cap of 35% requires any change to be made? If yes, kindly suggest the changes along with detailed justification.

Q.27 For computation of overall spectrum cap of 35%, should the spectrum in 3300-3670 MHz and 24.25-28.5 GHz bands be included? Kindly justify your response.

Q.28 Any other suggestion regarding spectrum cap may also be made with detailed justification. Issues related to Surrender of Spectrum.

Q.29 What should be the process and associated terms and conditions for permitting surrender of spectrum for future auctions? Kindly justify your response.

Q.30 What provisions may be created in the spectrum surrender framework so that any possible misuse by the licensees, could be avoided? Kindly justify your response.

Q.31. In case a TSP acquires spectrum through trading, should the period of 10 years to become eligible for surrender of spectrum, be counted from the date of original assignment of spectrum or from the date of acquisition through spectrum trading? Kindly justify your response.

Q.32. Whether provision for surrender of spectrum should also be made available for the existing spectrum holding of the TSPs? If yes, what should be the process and associated terms and conditions? Kindly justify your response.

Q.33. Whether spectrum surrender fee be charged from TSPs? If yes, what amount be levied as surrender fee? Kindly justify your response. 119 Issues related to Valuation and Reserve price of Spectrum

Q.34 Which factors are relevant in the spectrum valuation exercise and in what manner should these factors be reflected in the valuation of spectrum? Please give your inputs with detailed reasoning.

Q.35. In what manner, should the extended tenure of spectrum allotment from the existing 20 years to 30 years be accounted for in the spectrum valuation exercise? Please support your response with detailed rationale/ inputs.

Q.36. What could be the likely impact of the following auction related telecom reforms announced by the Government in September 2021 on the valuation of various spectrum bands? (a) Rationalization of Bank Guarantees to securitize deferred annual spectrum payment instalments in future auctions (b) No spectrum usage charges (SUC) for spectrum acquired in future auctions (c) Removal of additional SUC of 0.5% for spectrum sharing (d) Provision for surrender of spectrum In what manner, should the above provisions be accounted for in the valuation of spectrum? Please support your response with detailed justification.

Q.37. Whether the auction determined prices of March 2021 auction be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA? Should the prices be indexed for the time gap (even if less than one year or just short of one year)? If yes, please indicate the basis/ rate at which the indexation should be done, with reasons.

Q.38. If the answer to the above question is in negative, whether the valuation for respective spectrum bands be estimated on the basis of the various valuation approaches/methodologies being followed by the Authority in the previous recommendations, including for those bands (in an LSA) for which either no bids were received, or spectrum was not offered for auction?

Q.39. Whether the method followed by the Authority in the Recommendations dated 01.08.2018 of considering auction determined prices of the auctions held in the previous two years be continued,

or the prices revealed in spectrum auctions conducted earlier than two years may also be taken into account? Kindly justify your response.

Ans. 13.-39. No comments please in view of **Ans.10.** to Q.10. above

Q.40. Whether the valuation exercise be done every year in view of the Government's intention to have an annual calendar for auction of spectrum? Please support your response with detailed justification.

Ans.40. Assuming that 'intention to have an annual calendar for auction of spectrum' has not been translated into:

a circular/notification/circular/press release/gazette notification on any other communication in public domain the following is submitted for consideration as SPECTRUM is a limited natural resource:

- i) it may not be alienated by GOI unless a need has been fully established to do so.
- ii) some unforeseen circumstance/circumstances may crop up needing some spectrum band/bands on immediate priority.
- iii) it may lead to evolve species of spectrum squatters who may corner some spectrum band/bands for the sole purpose of trading spectrum as a commodity for monetary gains only.
- iv) a detailed analysis of past trading of SPECTRUM to arrive at a considered decision in the matter please.

Q.41. Whether there is a need to bring any change in the valuation approaches/ methodologies followed by the Authority for spectrum valuation exercises in view of the changing dynamics in the telecom sector largely due to the usage of various spectrum bands by the TSPs in a technologically neutral manner? If yes, please provide suggestions along with a detailed justification about the methodology.

Ans.41.No comments please.

Q.42. In your opinion, what could be the possible reasons for the relative lack of interest for the spectrum in the 2500 MHz band? Could this be attributed to technological reason(s) such as development of network/device ecosystem or availability of substitute spectrum bands or any other reasons(s)? Please support your response with detailed justification.

Ans.42.If the past has shown that there are no takers for 2500 MHz band (a single frequency does not define a band!) there is no need to put this to auction.

Q.43 Whether the March 2021 auction determined prices be used as one possible valuation for the spectrum in 2300 MHz band for the current valuation exercise? If yes, should these prices be indexed for the time gap and at what rate? Please justify your response.

Q.44 Whether auction determined prices of October 2016 (i.e. for the auction held earlier than two years) be used as one possible valuation for the spectrum in 2500 MHz band for the current valuation exercise? If yes, should these prices be indexed for the time gap and at what rate? Please justify.

Q.45 Whether the value of the spectrum in 2300 MHz/ 2500 MHz bands should be derived by relating it to the value of spectrum in any other band by using technical efficiency factor? If yes, which band and what rate of efficiency factor should be used? If no, then which alternative method should be used for its valuation? Please justify your response with rationale and supporting studies, if any.

Ans. 43-45.No comments.

Q.46 In your opinion, what could be the possible reasons for the relative lack of interest for the spectrum in the 700 MHz band? Could this be attributed to technological reason(s) such as development of network/device ecosystem or availability of substitute spectrum bands or any other reasons(s)?

Ans.46.If the past has shown that there are no takers for 2500 MHz band (a single frequency does not define a band!) there is no need to put this to auction.

Q.47 Whether the value of spectrum in 700 MHz band be derived by relating it to the value of other spectrum bands by using a technical efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your views with rationale and supporting studies, if any.

Q.48 If your response to the above question is in negative, what other valuation approach(es) be adopted for the valuation of 700 MHz 122 spectrum band? Please support your response with detailed methodology.

Q.49 Whether the valuation of the 3300-3670 MHz spectrum band should be derived from value of any other spectrum band by using technical efficiency factor? If yes, what rate of efficiency factor should be used? If no, which other method(s) should be used for its valuation? Please justify your response with rationale and supporting documents, if any.

Q.50. In case you are of the opinion that frequencies in the range 526- 698 MHz should be put to auction in the forthcoming spectrum auction, whether the value of 526-698 MHz be derived by using technical efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your suggestions.

Q.51. If your response to the above question is in negative, which other valuation approach(es) should be adopted for the valuation of these spectrum bands? Please support your suggestions with detailed methodology, related assumptions and any other relevant factors.

Q.52. Whether the value of spectrum in 24.25 – 28.5 GHz band be derived by relating it to the value of other bands by using technical efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your suggestions

Q.53. If your response to the above question is in negative, which other valuation approaches should be adopted for the valuation of these spectrum bands? Please support your suggestions with detailed methodology, related assumptions and other relevant factors.

Ans. 47-53. No comments please.

Q.54. Whether international benchmarking by comparing the auction determined price in countries where auctions have been concluded be used for arriving at the value of these new bands? If yes, then what methodology can be followed in this regard? Please explain.

Q.55. For international benchmarking, whether normalization techniques be used for arriving at the valuation of these new bands in the Indian context? If yes, please justify your response with rationale /literature, if any.

Ans. 54-55. International benchmarking may not be a practical approach due to:

i)NFAT/NFAP for Spectrum are different for each country.

ii)The topography is not the same for all countries.

iii) Constitutional/ Regulatory/Legal framework is different in all countries.

iv)Large number Footnotes in NFAT RR 1 ITU corroborate (i)-(iii)

Q.56. Whether a common methodology/ approach should be used for valuation of all sub-1 GHz bands, which are currently planned for IMT? If yes, suggest which methodology/ approach should be used. Please give your views along with supporting reasoning and documents/ literature, if any.

Q.57. Whether the extrapolated ADP based on a time-series analysis, may be considered as the valuation itself or some normalization may be performed taking into account the financial, economic and other parameters pertaining to a particular auction? If yes, which factors should be considered and what methodology should be followed?

Q.58. 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 justify your response.

Q.59. 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 justify your response.

Q.60. Is there any valuation approach other than those discussed above or any international auction experience/ approach that could be used for arriving at the valuation of spectrum for 700 MHz/ 800 MHz/ 900 MHz/ 1800 MHz/ 2100 MHz/ 2300 MHz/ 2500 MHz/ 3300-3670 MHz/ 24.25 – 28.5 GHz/ 526 – 698 MHz bands? Please support your suggestions with a detailed methodology and related assumptions.

Q.61. Should the reserve price be taken as 80% of the valuation of spectrum? 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 and why?

Q.62. Whether the realized/ auction determined prices achieved in the March 2021 auction for various spectrum bands can be directly adopted as the reserve price in respective spectrum bands for the forthcoming auction? If yes, should these prices be indexed for the time gap since the auction held in March 2021 and at which rate the indexation should be done?

Q.63. Should the method followed by DoT in the previous auction in respect of collecting bid amount from the successful bidder in case spectrum is not available in a part of the LSA be followed in the forthcoming auction? Please justify your response in detail.

Ans.56-63. No comments.

Q.64. What percentage rate of upfront payment should be fixed in case of each spectrum band?

Ans.64. Upfront payment of 25% irrespective of spectrum band.

Q.65. What should be the applicable period of moratorium for deferred payment option?

Ans.65. “Government has announced a moratorium/ deferment for up to four years on the dues for the spectrum purchased in past auctions (excluding 2021 auction)”⁴⁹.

(i) Apparently excluding 2021 auction is discriminatory likely leading to litigation.

(b) For consideration:

(i) The period of ‘four years’ of moratorium for deferred payment option may be uniformly applicable to all future Spectrum Auctions.

Q.66. How many instalments should be fixed to recover the deferred payment?

Ans.66. The deferred payment is a ‘notional’ loan so should be treated as such.

(i) The period of recovery may be made up to period when surrender is permitted minus ‘4’ years the period of moratorium. Presently surrender of spectrum is after ‘10’ years. So period of recovery of deferred payment comes to ‘6’ years.

(ii) Instalments of recovery to be made monthly (EMI) come to ‘6’ equal annual instalments which is possible due to Digitalisation of Operations.

Q.67. What rate of discount should be used while exercising prepayment/deferred payment option, in order to ensure that the net present value of payment/ bid amount is protected?

Ans.67. The net present value of payment/ bid amount can be protected if value of money annual rate= $x\%$ and number of instalments are defined in license conditions. For example say the deferred payment the Capital Recovery Factor (CRF) for 'Re '1' to be recovered in '6'' end of the period equal annual instalments at ' x '='10' will be $=.22961$.

CRF value can be taken from Discrete Rate-of-Return Factors Tables or can be easily worked out by using formula of CRF for other value/values of money value annual rate $=x\%$ and number of instalments for repayment.

(Please support your suggestions for Q64 to Q67 with proper justifications.) Done above.

Q.68. To facilitate the TSPs to meet the demand for Private Cellular Networks, whether any change(s) in the licensing/policy framework, are required to be made. If yes, what changes are required to be made? Kindly justify your response. **Q.69.** To meet the demand for spectrum in globally harmonized IMT bands for private captive networks, whether the TSPs should be permitted to give access spectrum on lease to an enterprise (for localized captive use), for a specific duration and geographic location? Kindly justify your response.

Q.70. In case spectrum leasing is permitted, i. Whether the enterprise be permitted to take spectrum on lease from more than one TSPs? ii. What mechanism may be prescribed to keep the Government informed about such spectrum leasing i.e., prior approval or prior intimation? iii. What timeline should be prescribed (in number of days) before the tentative date of leasing for submitting a joint request by the TSPs along with the enterprise, for approval/intimation from/to the Government? iv. Whether the spectrum leasing guidelines should prescribe duration of lease, charges for leasing, adherence of spectrum cap provisions, roll out obligations, compliance obligations. If yes, what terms and conditions should be prescribed? v. What other associated terms and conditions may be prescribed? vi. Any other suggestion relevant to leasing of spectrum may also be made in detail. (Kindly justify your response).

Q.71. Whether some spectrum should be earmarked for localized private captive networks in India? Kindly justify your response.

Q.72. In case it is decided to earmark some spectrum for localized private captive networks, whether some quantum of spectrum be earmarked (dedicatedly) from the spectrum frequencies earmarked for IMT services and/or spectrum frequencies earmarked for non-IMT services on location-specific basis (which can coexist with cellular-based private captive networks on shared basis)? Kindly justify your response with reasons.

Q.73. In case it is decided to earmark some quantum of spectrum for private captive networks, either on exclusive or shared basis, then a) Spectrum under which band(s) (or frequency range) and quantum of spectrum be earmarked for Private Network in each band? Inputs may be provided

Country? Kindly provide detailed response with rationale. considering both dedicated and shared spectrum (between geographically distinct users) scenarios. b) What should be the eligibility conditions for assignment of such spectrum to private entities? c) What should be the assignment methodology, tenure of assignment and its renewal, roll-out obligations? d) What should be the pricing mechanism for assignment of spectrum in the band(s) suggested for private entities for 127 localized captive use and what factors should be considered for arriving at valuation of such spectrum? e) What should be the block size and spectrum cap for different spectrum band(s) suggested in response to point (a) above. f) What should be the broad framework for the process of (i) filing application(s) by enterprise at single location, enterprise at multiple locations, Group of companies. (ii) payment of spectrum charges, (iii) assignment of frequencies, (iv) monitoring of spectrum utilization, (v) timeline for approvals, (vi) Any other g) Any other suggestion on the related issues may also be made with details. (Kindly justify your response with reasons).

Ans.68-73.It may kindly be noted that:

(i)The issues in these **(68-73) questions** relate to Spectrum Management whereas TSP acronym represents a Telecom Service Provider.

(ii) Allowing the work of leasing a spectrum to a TSP under any pretext will amount to entrusting Spectrum Management of SPECTRUM acquired for its own use for use by another entity (Private Cellular Networks).

(iii) Such demand for SPECTRUM may come from many types of entities like:

a)The private sector consists of:

(i) all privately owned, for-profit businesses.

(ii)Private sector businesses in collaboration with government run agencies in arrangements called public-private partnerships.

(iii)Types of Private Sector Businesses:

(x)Sole proprietorships.

(y)Partnerships.

(z)Small and mid-sized businesses.

(xx)Large corporations and multinationals.

(yy)Professional and trade associations.

(zz)Trade unions.

(iv)The private sector can also be classified into the subcategories:

(i)for-profit and not-for-profit, formal and informal, domestic and foreign. The subcategories represent a wide spectrum of entities with very different attributes and purposes.

(a) To meet such wide range of demand of SPECTRUM it is recommended that:

(i) The Spectrum Management & Monitoring of **localized captive Private Cellular Networks** may be taken away from **WPC Wing {DoT(MoC)}**.

(b) For consideration that a separate entity for the limited purpose of a(i) above may be created under another **Ministry** preferably under **Ministry of Railways**.

Q.74. What steps need to be taken to facilitate identification, development and proliferation of India specific 5G use cases for different verticals for the benefit of the economy and citizens of the of the Country? Kindly provide detailed response with rationale.

Ans.74.

1. Unlicensed Satellite based ‘Starlink Internet Services’ are being advertised to public in India in the form of booking/pre-selling on their website www.starlink.com as per information contained in paras 1(i),(ii),(iii). This amounts to cyber violation of space-segment over the Indian Territory. Enabling constitutional/Legal Framework/Regulatory Framework may be invoked to take immediate action form deleting of this link from Internet as far as it concerns INDIA.

2. In view of paras 2,2(i),2.1,2.1(a),(i),(ii) of introduction any changes in the licence, issue of adequate legal frame work/regulatory framework for uplinking /downlinking may be firmed up.

3. Service provider is already blocking content depending on country provider and “proliferation of India specific 5G use” will likewise increase of proliferation of ISP including IoT based services resulting in massive proliferation of different types of user content. So present **content law** if any of INDIA may also evolve accordingly so that envisaged proliferation in services not limited to IoT, OTT is not detrimental to “**the economy and citizens of the of the Country**”.

4. In view of paras 4,1(i)4.1 of introduction efforts may be be made to support wireline in INDIA for those who want, internet but not full range of possibilities of 5G related to content issue.

5. In view paras 4,4a(i),(ii),(iii),(iv),4(b),5,6 the justification of auction of 526-6617 is not satisfactorily made out.

6. There has been difficulties in roll of 5G^{50,51}. For consideration:

(i) Appropriate action may be taken to avoid difficulties in roll out.

References

1. https://www.trai.gov.in/sites/default/files/CP_30112021.pdf

2. https://www.trai.gov.in/sites/default/files/PR_No.54of2021.pdf

3. https://www.trai.gov.in/sites/default/files/PR_No.62of2021_0.pdf

4. supra’1’.

5. *ibid*.

6. https://www.trai.gov.in/sites/default/files/Starlink_21122021.pdf
7. https://dot.gov.in/sites/default/files/Press%20ReleaseStarlink2_0.pdf?download=1
8. *ibid.*
9. Section '12' G.S.R. 1211(E). New Delhi, the 14th December, 2018 GOI(DoT).
10. <https://www.slashgear.com/why-netflix-blocks-content-in-your-country-15423349/>
11. *ibid.*
12. DEFINITIONS OF WORLD TELECOMMUNICATION/ICT INDICATORS Final Version (April 2007).
13. ITU CODE '112' '65' times in *ibid.*
14. '1' time in *supra* '12'.
15. Annual Report 2020-2021 of DoT
16. Word 'Fixed line' occurs '19' times in *ibid.*
17. Word 'wireline' occurs '18' times in *supra* '15'.
18. page '119' of *supra* '15'.
19. *ibid.*
20. *ibid.*
21. para2.1 *supra* '1'. 'Q'.
22. page '92' of RR 2020 I.
23. page '94' of RR 2020 I.
24. *supra* '22'
25. *ibid.*
26. page '22' *supra* '1'.
27. Letter No. l-14oo6/01/2021/-NTG(Part) date 02.12.2021 from WPC(DoT) to Secretary TRAI.

28. *ibid.*
29. page '260' of RR 2020 III.
30. *ibid.*
31. para 2.1 page '22' of *supra* '1'.
32. *supra* '29'.
33. RR2020 I.
34. *supra* '1'.
35. <https://dot.gov.in/sites/default/files/NFAP%202018.pdf?download=1>.
36. RR2020 1.
37. 71 n71 663-698 617-652 FDD 5, 10, 15, 20 5, 10, 15, 20 600 MHz band North America
(<https://awt-global.com/wp3/resources/lte-e-utran-bands>)
38. 28 FDD 703 – 748 758 – 803 700 MHz (Asia Pacific) Asia-Pacific
(<https://www.qorvo.com/design-hub/design-tools/interactive/3gpp-frequency-bands>)
39. Chart 2.1 page 24 of *supra* '1'.
40. *supra* '22'.
41. RR5-57 of RR2020 I
42. *supra* '23'
43. *ibid.*
44. pages 257-260 of RR2020 III.
45. page '22' of *supra* '1'.
- 46.
- 20 n20 832 MHz - 862 MHz 791 MHz - 821 MHz FDD 5, 10, 15, 20 5, 10, 15, 20
47. *supra* '22'.
48. RR 2020 I

49. page '65' supra '1'.

50. <https://edition.cnn.com/2022/01/19/tech/airlines-5g-flights-canceled-explainer/index.html>

51. <https://edition.cnn.com/2022/01/19/business/5g-aviation-safety-europe/index.html>