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5G SPECTRUM AUCTION 2022

Why In News?

- Union Cabinet Gave A Green Signal For **India's First Auction Of The 5G Spectrum**, Which Powers Ultra-high Data Speeds With A Total Of **72 GHz (Gigahertz)** Of Radio Waves Worth At Least **₹4.3 Lakh Crore Up For Bidding**.

The Indian EXPRESS

5G spectrum auction enters Day 3; 10th round of bidding underway

As many as five rounds of bidding were conducted on Wednesday, and Telecom Minister Ashwini Vaishnaw said "good competition" was seen in almost all bands on offer.



THE ECONOMIC TIMES

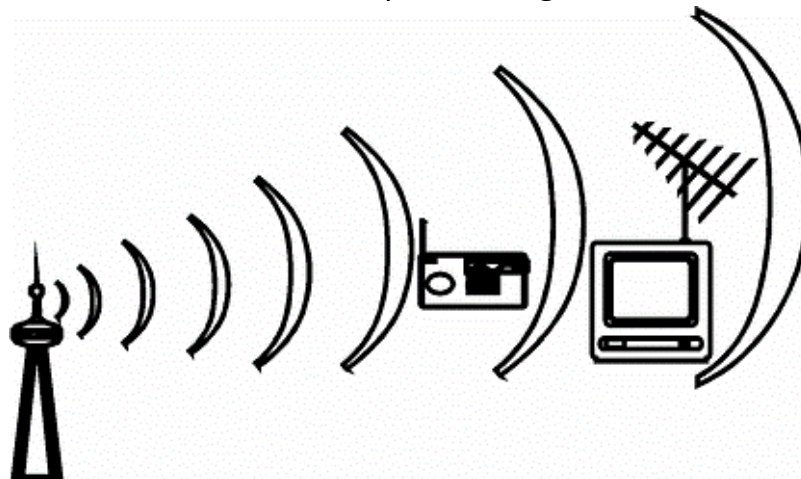
Day 6 of spectrum sale: 5G bids cross Rs 1.5-lakh crore milestone



The action was focused on the key Uttar Pradesh (East) market, where the competition heated up again, after a day's lull, for airwaves in the 1800 MHz band.

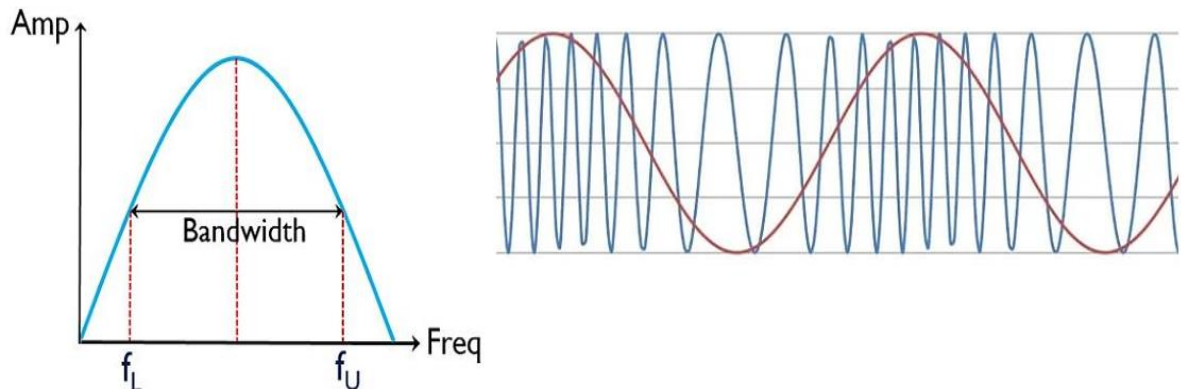
How Mobile Communication Works?

- Cell Phones Use **Radio Waves To Communicate**. Radio Waves Transport **Digitized Voice Or Data In The Form Of Oscillating Electric And Magnetic Fields**, Called The **Electromagnetic Field (EMF)**.
- The **Rate Of Oscillation Is Called Frequency**. Radio Waves **Carry The Information And Travel In Air At The Speed Of Light**.



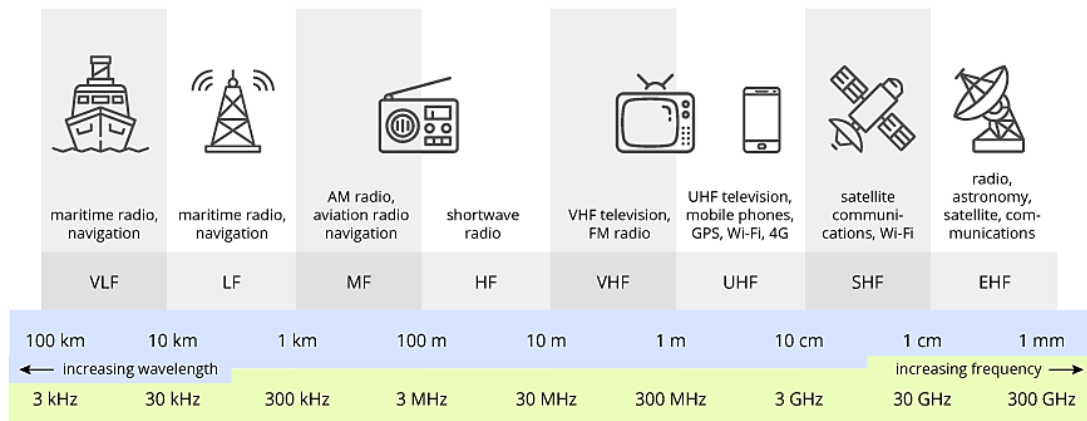
What Are Bandwidth And Frequency?

- **Bandwidth Is A Range Of Frequencies** Within A Given Band, Particularly Used For **Transmitting A Signal**. **Frequency**, On The Other Hand, Is The Number Of **Cycles Or Oscillations** That Occur **In A Signal Per Second**. **Frequency Helps To Calculate Bandwidth**.



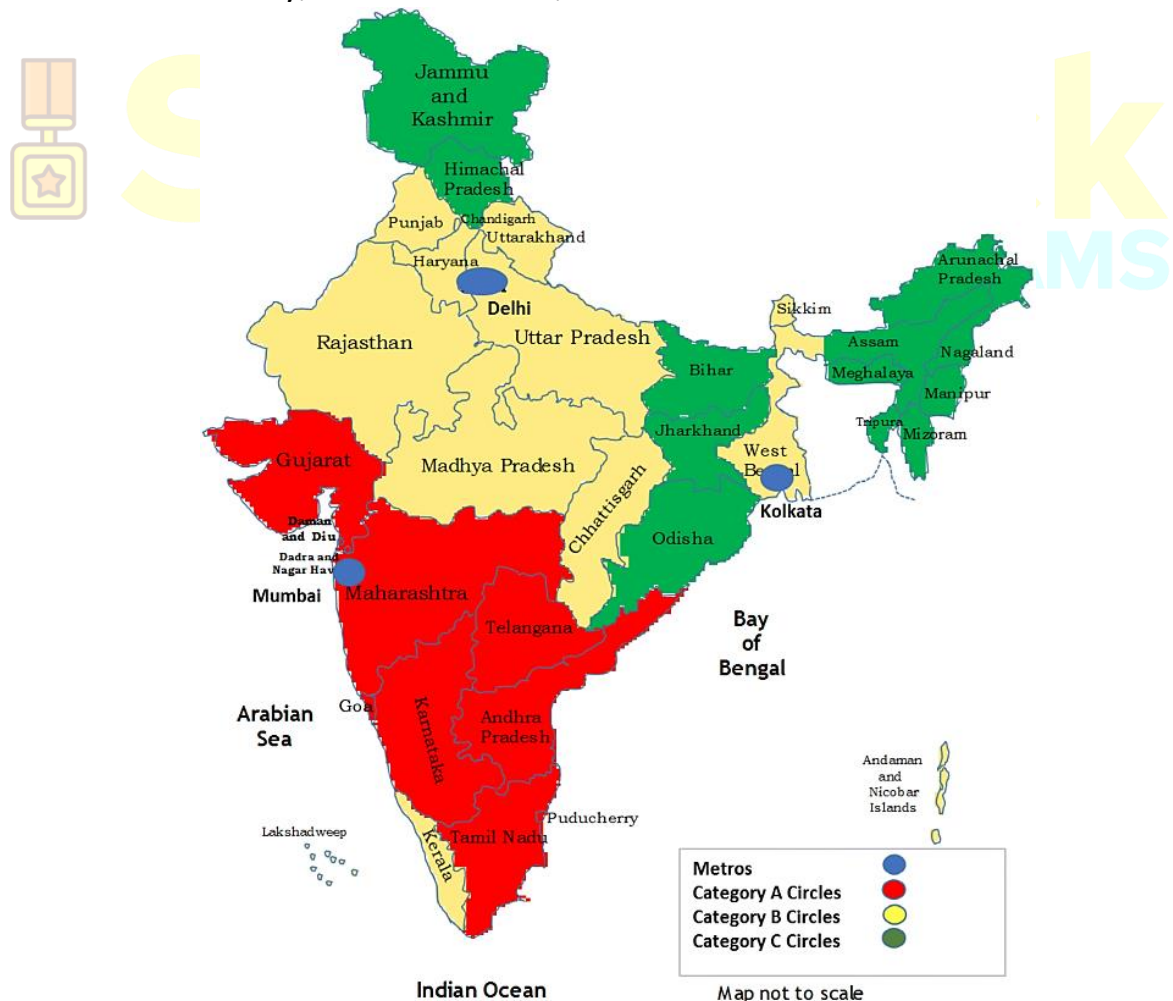
What Is A Spectrum?

- The Word **Spectrum** In This Context Refers To **A Range Of Radio Waves** That Are Used For **Communication Purposes**.
- This Includes The **FM Or AM Radio Broadcasts** That You Listen To On The Way To Work, And Even Other Wireless Forms Of Communication Like **Bluetooth And Wi-fi**.
- The **Smartphone** You're Using Also Uses These **Same Radio Waves** To Transmit Data, And The Difference Really Lies In The **Specific Frequencies In Use**, Of Course, The **Technology Used To Convert** Those Waves Into Something Useful (Whether That's The Voice On The Radio, The SMS You Read, Or The Webpage).
- Spectrum Is Divided Between Different Types Of Technology - Your **AM And FM Channels** Are All Spread Around **100mhz - 200mhz**.
- Telecom Spectrum Starts From **800mhz And Goes Up To 2300mhz**.
- Commonly Used Bands For **Cellular Communication** Are **800mhz, 900mhz, 1800mhz, 2100mhz, And 2300mhz**.
- According To The **GSM Alliance**, The Most Suitable Spectrum For Telecommunication Is In The **400mhz To 4ghz Range**, And These Bands Are Used **Globally For Various Telecommunications Purposes**.



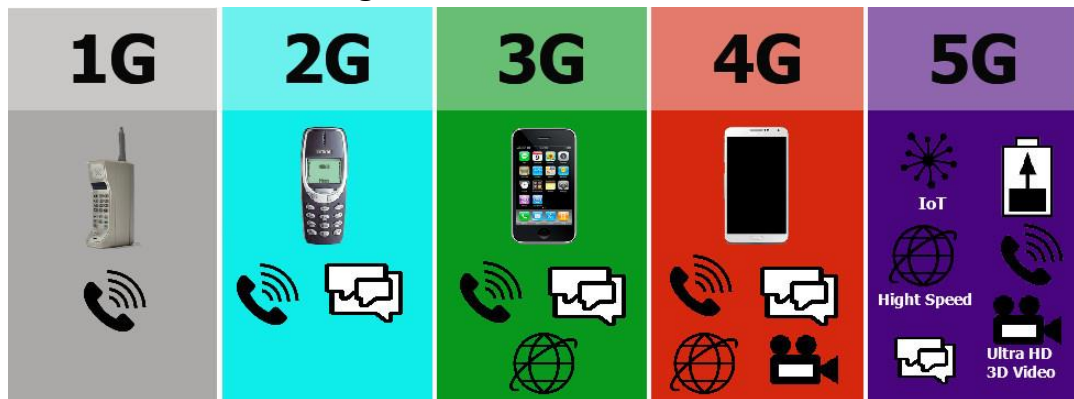
What Is A Circle?

- Just As You Have Different Countries **Managing Spectrum** In Their **Geographies**, You Also Have Different **Telecom Circles**.
- This Was A Way For The Government To **Manage The Spectrum** Effectively Across The Country, And As A Result, India Was Divided Into **22 Circles**.



What Is A Generation?

- **2G, 3G, 4G, 5G:** All These Numbers Refer To The **Generation Of The Technology** Being Used For Communication. These Technologies Were Developed To Take Advantage Of **Different Bands**, So That It Can Connect To All The Bands, And Transmit Your **Voice, Messages, And Data**.



What Is 5G Technology?

- It Enables A New Kind Of Network That Is Designed To **Connect Virtually Everyone And Everything** Together Including Machines, Objects, And Devices. Internet Speeds In The High-band Spectrum Of 5g Has Been Tested To Be As High As **20 Gbps (Gigabits Per Second)**, But **4G** Has Been Recorded At **1 Gbps**.

What Is A Spectrum Auction?

- The **Union Government Owns All The Publicly Available Assets** Within The Geographical Boundaries Of The Country, Which Also Include **Airwaves**. With The Expansion In The Number Of Cellphone, Wireline telephones, And Internet Users, The Need To **Provide More Space For Signals** Arises From Time To Time.
- To **Sell These Assets To Companies** Willing To Set Up The **Required Infrastructure To Transport These Waves** From One End To Another, The Central Government Through The **Department Of Telecom** (Ministry Of Communications) **Auctions These Airwaves** From Time To Time.
- **These Airwaves Are Called Spectrum**, Which Is **Subdivided Into Bands** Which Have **Varying Frequencies**. All These Airwaves Are Sold For A **Certain period**, After Which Their Validity Lapses, Which Is Generally Set At **20 Years**.
- The **First Spectrum Auction** Was For The **900mhz Band, In 1994**. Soon After, **MTNL And BSNL** Entered The Picture, And There Were Auctions In **1997, 2000, 2001, And 2016**.

- In **December 2020**, The Union Cabinet Cleared The **Sale Of 2251.25 MHz Of Spectrum (For 4G)** Across Seven Frequency Bands At A Reserve Price Of Rs. **3.92 Lakh Crore**.



5G Spectrum Auction 2022:

- The Government Invited Applications From Potential Bidders For Spectrum Auctions In **July 2022**, Taking The First Step Towards **Rolling Out 5G Services** In The Country. The Union Cabinet Cleared A Proposal To Auction **72,097.85 MHz Of Airwaves**.
- A Total Of **72,097.85 MHz Of Spectrum** With A Validity Period Of **20 Years** Was Put On Auction On **July 26**. The Auction Will Be Held For Spectrum In The Frequencies Of **600 MHz, 700 MHz, 800 MHz, 900 MHz, 1,800 MHz, 2,100 MHz, 2,300 MHz, 3,300 MHz, And 26 GHz Bands**.
- A Total Of **37 Rounds Of Bidding** Have Been Completed So Far And The Union Government Has Received Bids Worth Over **₹1,50,130 Crore**. The First Day Of The Auction Started On Tuesday.
- The Four Major Participants In The Race To Bid For The 5G Spectrum Are - **Mukesh Ambani's Reliance Jio, Sunil Mittal-led Bharti Airtel, Vodafone Idea, And A Unit Of Gautam Adani's Flagship Adani Enterprises**.



What Are Private Captive Networks?

- The Government Has Also Cleared The Path For Tech Companies To Acquire **Spectrum Directly** From It To **Test And Build Industry 4.0 Applications** Such As **Machine-to-machine Communications, Internet Of Things, AI**, Etc. Companies Such As **Tata Consultancy Services (TCS)** Have Expressed Interest.
- Earlier In Building These **Non-Public 5G Networks** To Develop Such Solutions. These **Networks Will Not Be Accessible To The General Public**. DoT Said It Will Undertake Demand Studies And Thereafter Seek **TRAI Recommendations** For Direct Assignment Of Spectrum To Such Enterprises.



SSBCrack
EXAMS

REVIEW QUESTIONS

1. Which Country Deployed The First 5G Network?

- A. Japan
- B. China
- C. South Korea
- D. USA

ANSWER: C

2. G In 5G Technology Stands For

- A. Grade
- B. Generation
- C. Guide
- D. Geography

ANSWER: B

3. 5G Is Designed To Deliver Peak Data Rates Up To

- A. 50 Gbps
- B. 20 Gbps
- C. 100 Gbps
- D. 5 Gbps

ANSWER: B

4. Where Will Be 5G Used?

- A. Enhanced Mobile Broadband
- B. Massive IoT
- C. Mission Critical Communications
- D. All The Above

ANSWER: D

5. How Is 5G Better Than 4G?

- A. 5G Is Significantly Faster Than 4G
- B. 5G Has Significantly Lower Latency Than 4G
- C. 5G Has More Capacity Than 4G
- D. All The Above

ANSWER: D

6. Challenges For 5G Roll-Out?

- A. Frequency Band And Availability Of Spectrum Challenges
- B. Approach For 5G Network Deployment
- C. Need For Skilled Professionals
- D. All The Above

ANSWER: D

7. Future Possibilities With 5G Are

- A. Enhanced Connectivity
- B. Smart Cities And Industry
- C. Internet Of Things (IoT)
- D. All The Above

ANSWER: D

8. What Are The 5G Security Concerns?

- A. Lack Of Encryption Early In The Connection Process
- B. More Bandwidth Will Strain Current Security Monitoring
- C. Decentralized Security
- D. All The Above

ANSWER: D

9. The First Smartphone Which Supports 5G Is

- A. Google Pixel 5A
- B. Samsung Galaxy S20
- C. iPhone 12
- D. Redmi Note 14 Pro

ANSWER: B

10. In India, The Spectrum Auction Is Done By

- A. Department Of Telecommunications (DoT)
- B. Telecom Regulatory Authority Of India (TRAI)
- C. Bharat Sanchar Nigam Limited (BSNL)
- D. NITI Aayog

ANSWER: A

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