



UPPSC MAINS 2024 - CRASH COURSE

Generic Booklet

Test Name/Code/No. : 7712239

S&T Section Test

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Mobile No.		Date	14/6/25

Allotted Time : 90 Minutes

Instructions to Candidates -

- There are 10 Questions in this Question paper.
- All Questions are Compulsory.
- Answers must be attempted in the QCA Booklet only.

Q. No.	Grade/Score
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Overall Grade/Score	

Q.1) Critically evaluate the national Science, Technology and innovation policy (NSTIP) 2013. How far it has succeeded in fostering innovation-driven growth in India?

Ans:- NSTIP 2013 have led to transform Indian science and technology field with innovation, development of new technology and make India leader in it.

Success of NSTIP 2013

↳ Huge development in Biotechnology with current value of \$125 Bn will reach >\$300 Bn by 2030.

Eg- Stem cell therapy, CAR-T cell therapy, Biofortification of Rice, GM Crops.

↳ Successful space sector - Chandrayaan-3 land and more of Lunar surface. Mangalyan mission with other no.

of satellite like NAVIC, GAGAN system.

↳ Leadership in Information technology - Best of world's IT & BPO service provided by Indian companies.

↳ Agriculture sector → Precision agriculture, verticle farming, and drone services.

Need improvement - Challenges

↳ Highly depend on defence import → Not able to develop own fighter craft.

↳ High end technology - AI/ML, Cloud computing, Nuclear reactor etc..

↳ Waste management and recycling techniques

Thus India progressed but need more focus on R&D and dedication to excel and self reliance in S&T.

Overall Grading (✓)

Poor			Average			Good		
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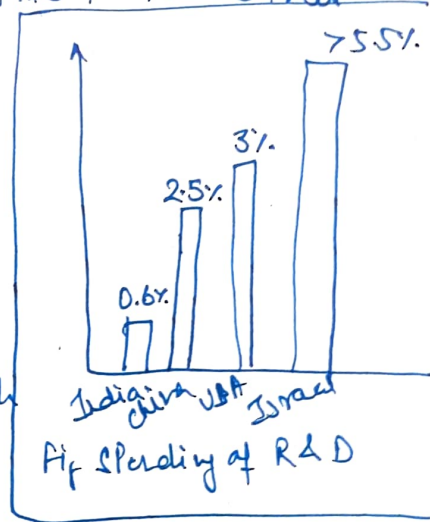
Q.2) What are the major constraint faced by Indian R&D institution in translating research into scalable innovations? suggest remedial measures.

Any Indian Research & Development Sector is poorly funded with just 0.67% of GDP, need govt. support and private sector push for innovation.

Major Constraint

(1) Poor funding in comparison to other nations.

(2) Low level of Research work and less focus on high value research work.



(3) Time taking process - Research required

long time to prove any thing.

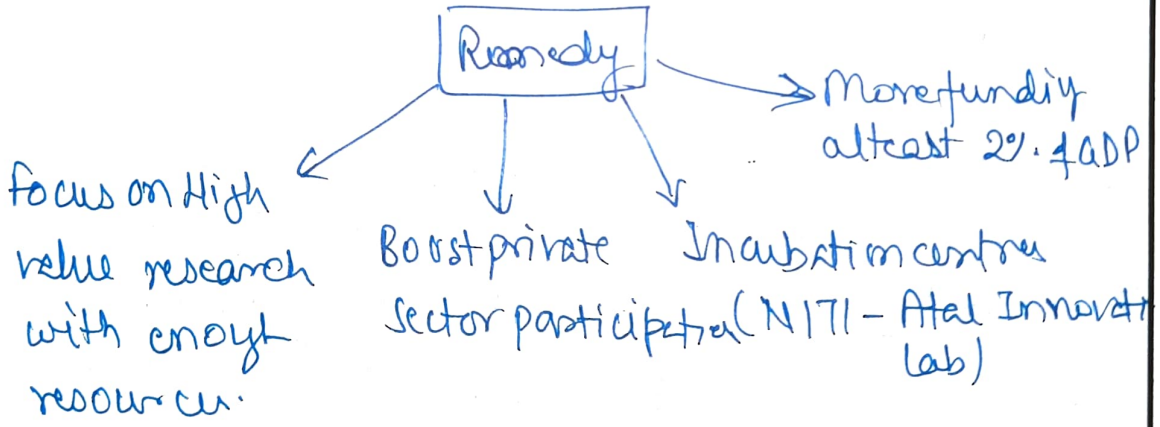
(4) Inadequate IPR mechanism → long time for IPR filing

Eg - > 300 days while in Japan ~ 150 days. (WIPO)

(5) Inadequate infrastructure support →

Incubation lab, poor monitoring and evaluation.

(6) Plagiarism and Copyright violation.



Thus Innovation could make India leader in the New age technology and foster true ~~and~~ *atma nirghanta*.

Overall Grading (✓)

Poor			Average			Good		
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7:18

Q.3) Discuss the role of precision farming and GIS based technologies in transforming Indian agriculture. How can they help in ensuring food and income security?

Ans:- Indian Agriculture have been transforming with the penetration of New age technologies and reducing the litigation for land by digitalising of land records. (DILRMP)

Role of Precision and GIS based technologies

↳ Targeted approach → pest management, fertiliser and water use.

Eg- Micro irrigation

↳ Boost efficiency of Resource → zero waste → reduce wastage and contamination Eg- Huge fertiliser

run off due to over use.

(3) Digitalisation of Record → easy accessibility of land → Reduce litigation and improve mapping of resource.

(4) Monitoring and evaluation → Soil moisture, soil profile, Crops profile using GIS mapping.

How they help in improve income?

(1) Resources efficiency and reduce misutilization
Eg. Micro irrigation use 70-80% of water

(2) Using crop suitable for soils - better yield → more income

(3) Waste reduction → More yield

(4) Pest management and increase shelf life.

Thus Precision and GIS technology have helped farmer but need capital to utilize these for more farmers

Overall Grading (✓)

Poor			Average			Good		
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9.12

Q.4) Analyse the potential of digital health infrastructure in addressing rural-urban disparities in healthcare access. Illustrate with examples from initiative like Ayushman Bharat digital abhiyan/mission.

Ans:- Indian govt initiated Ayushman Bharat Digital health mission under the National health policy 2017 for effective and better healthcare facilities to citizens.

Potential of digital health infrastructure

- Digitalisation of Record with sharing through the Digi health services.
- Registry of hospitals and their available facilities - labs, beds, ventilators.
- Digital Record of Medical professionals. Doctors, Nurses and lab technician.
- Telehealth services

- 24x7 availability of health profession with tele service
- Eg - E-Sanjivani

Challenges

- Rural-Urban divide due to digital infra and internet availability.
Eg - Rural (~50%) Urban (>70%) internet access.
- Remote areas and connectivity issue
to → No digital penetration Eg Hill, Naxal hit areas and North East
- Cyber crime and Data theft → India among top 10 in Cyber crime.
- Skill manpower deficiency.

Thus NDHM need focus on data safety and wider user accessibility for success.

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8:20

Q.5) Evaluate the role of institution and startup in fostering biotechnology innovation in India. What policy intervention are needed to strengthen this sector?

Ans Indian rank in World Innovation Index improved from >70 to currently 38 rank shows the govt effort and other institution greater effort in this field.

Role of institution and startup in fostering biotechnology innovation

- (1) Dedicated Mission → National Biotechnology policy and BIRAC for Biotech innovation.
- (2) Huge skilled manpower → Indian in Biotech field >1.5 Mn qualified manpower available.

(3) Push innovation → Govt of India policy of Startup India → foster more innovation and active support by experts.
Eg Tax and duties exemption for initial 7 year.

(4) Success of Regulation → GEAC for Genetic modification organism

What more need to successful

↳ Push for R&D budget

↳ More incubation lab and handholding

↳ Improve IPR regime.

↳ Predictable policy for Private investor & FDI attract.

Biotechnology need to be strengthen by Industry - academia linkage and policy formulation to better regulate.

Overall Grading (✓)

Poor			Average			Good		
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Q.6) What are key wind and solar energy projects underway in UP. How they can contribute to the state's economic and environmental goals?

Ans:- UP govt releasing the policy on solar energy 2017 and pushing to generate more clean energy through the adoption of wind and solar energy projects.

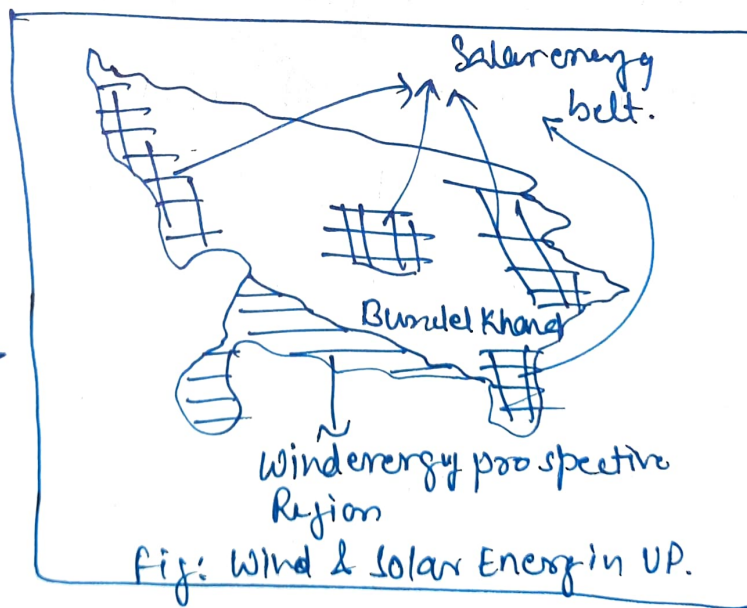
Prospects:-

Solar Energy

Aim of 22GW

Solar energy

by 2027

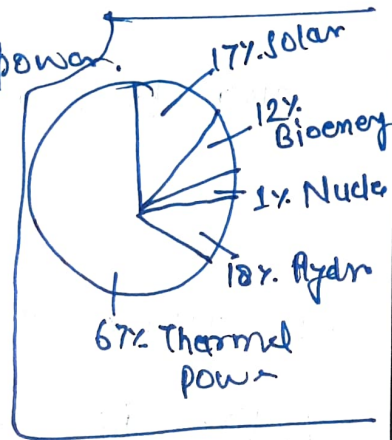


Wind Energy:- still areas are being marked to invest in this field as Bundelkhand is suitable for it

Role in State economic and environmental goal:-

(1) Target to achieve \$1 Trn economy by 2027
with clean energy production.

(2) Reduce dependency on fossil based
energy → >65% of Thermal power.



(3) Boost GDP efficiency and
fuel efficiency

(4) Help in fulfilling target of
Net zero by 2070 and Panchamrit goal.

(5) Provide employment in Solar energy
sector

(6) Boost innovation and Research →
as solar project viability on
water bodies in progress.

- CHALLENGES**
- Low R&D budget and Central support
 - Inadequate skilled manpower
 - MoU's not turned into reality.
 - Loss of valuable agricultural and Natural fish → delay in land acquisition.
 - Bureaucratic delay → corruption by IAS officer Abhishak Prakash asking Bribe by investors

- DRAGS**
- Digitalisation of procedure.
 - Active Bureaucracy redressal.
 - Single window clearance → Nivesh Mitra Parkh.
 - Community participation → PM Kusum + PM Surya ghar Yojana.
 - Boost R&D and expertise from NITI

Thus UP can reduce its dependency on fossil fuel and transform into clean energy state by active efforts.

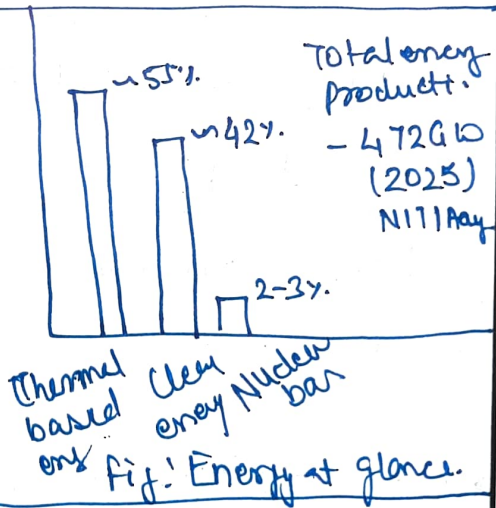
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Q.7) How do clean energy technologies enhance India's energy security and environmental sustainability. Substantiate with examples.

Ans:- India's clean energy generation reached > 40% of its total energy basket with govt active push for transforming India in Netzero by 2070 and adhering the goal of Paris climate deal.

Role of clean energy technology in India's energy security and environmental sustainability



(1) Boost for sustainable

sources → Solar, wind, Bio energy, waste to energy, biofuel and mini + large hydro projects.

- (2) Reduce import dependency → ₹200 Bn
force spending on fuel import. (2024)
- (3) Preserve the National biodiversity and ecosystem → Reduce pollution and contamination of Air & water.
Eg - New Delhi yearly pollution
- (4) Resources efficiency → Using unused land in Rajasthan, Karnataka, Gujarat etc.
- (5) Consumer as prosumer → with PM Surya Ushar and PM Kusum scheme → consumer producing energy and transferring through Smart grid
- (6) Improve resiliency and affordability → Reduce cost of solar & wind energy per unit
~ 2-3 Rs/unit.

Challenges in Sustainability

- ↳ Infrequent supply → Solar only in daytime
→ wind mostly in Monsoon time.
- ↳ Spatially not viable in all over India → based on few state and coastal area only
- ↳ High initial capital burdens.
- ↳ Broken supply chain → Monopoly on Rare earth element by China.
- ↳ High infrastructure need for grid connectivity.

W/F

- Boost Grid connectivity.
- Boost storage facilities
- Reduce import on Solar by Manufacture in India only
- Collaboration with Australia, Japan → Supply chain Resiliency.

Thus India need to proactively focus on transforming on clean energy to reduce dependence on fossil and develop Hydrogen based fuel.

Overall Grading (✓)

Poor			Average				Good	
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Q.8) How has digital India enhanced e-governance in sectors like education, healthcare and public administration? provide examples.

Ans:- Digital India program started by GoI in 2015 to boost digitalisation of govt offices, panchayats and provide E-governance service for better delivery of services in health, education and public Admini

Various platform/^{Initiati-} of digital India

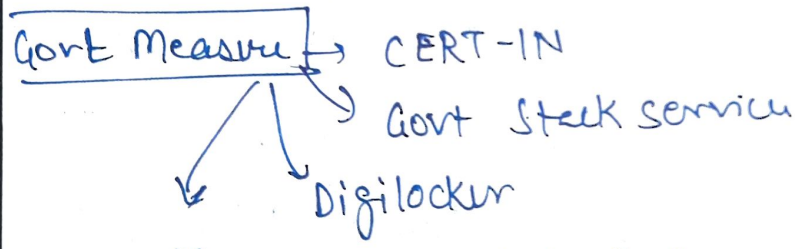
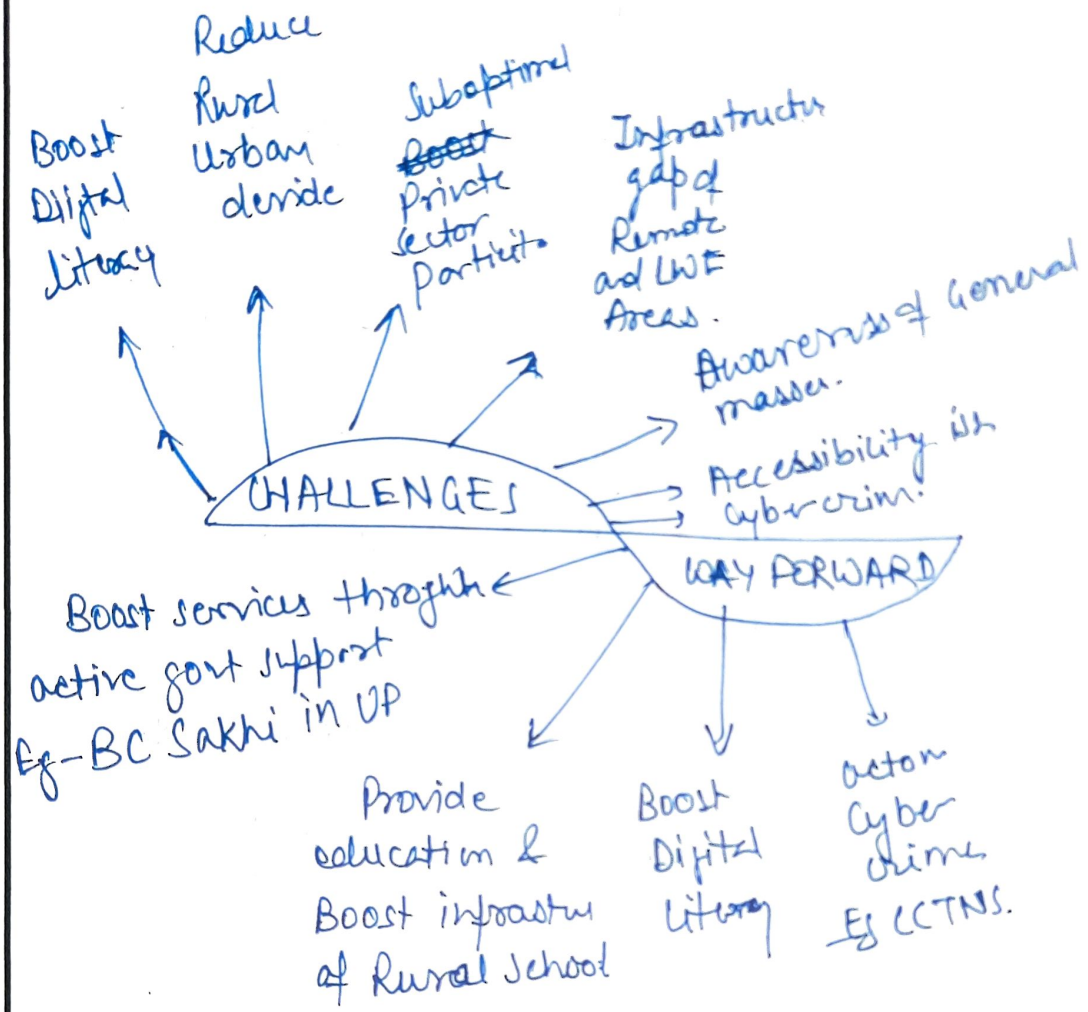
- BharatNet scheme
- National e-governance plan
- Services through Jan Seva Kendras.
- E-District.
- Digitalisation of Land record.
- Telehealth and digi locker for record management, E-Sanjivani.
- UMANG App

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→ PM e Vidya and MOOC.

Enhancement of Gov, Healthcare, education by Digitalisation

- (1) Providing cost effective services to all users.
- (2) Proactive fibreisation and digital drive → > 2.5 lakh panchayat fibre connectivity under Bharat Net
- (3) Boost Digital infrastructure in medical field → Digital health record through National digital health Id (ABHA)
- (4) Online education and interactive learning → smart classroom and enabling infra for better learning Eg PM Shri School, National Education policy 2020.
- (5) Provide financial inclusion → for reducing middlemen and corruption → DBT to farmer. PM-Kisan.



Thus Digital India can bridge the gap of Bharat and India through better connectivity and service delivery

Overall Grading (✓)

Poor			Average				Good	
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15:15

Q.9) How is the UP ICT policy promoting investment entrepreneurship and technological growth in the state? Discuss with examples.

Any Uttar Pradesh govt. have adopted the mandate of National govt to boost startup and entrepreneurship in state under Startup India, Stand India and boost manufacturing to achieve \$1 Trn GDP by 2027.

Role of ICT policy in promoting investment entrepreneurship and Technological growth

- (1) Boost economic growth → Sustainable growth with all regions in sync with state govt.
- (2) Single window clearance → online made on Niveshmitra and Nivesh

Bandh postal

Eg. Attracted >40lcr investment in 2024.

(3) Streamline procedure and ease of doing business → ICT reduces the corruption and online tendering boost transparency.

(4) Boost infrastructure reduce delay in decision making → Data based decision

(5) Enabling infrastructure → Online clearance of Environmental and land acquisition through the digitalisation of Record
Eg. Bhulekh Portal.

(6) Faster growth → UP became the 3rd largest state in GDP and faster growth with >10% annual growth.

- CHALLENGES**
- Infrastructure gap → Bundelkhand regions.
 - Corruption case → Bureaucratic resistance
 - Financial fundit issue.
 - MOVIS not materialised into reality.
 - lack of skilled manpower
 - Law & Order issues → Highest Crime in India

- DRIVERS**
- Continuous push for infrastructure development
Eg - Boosting connectivity of Bundelkhand
 - High Budgetary allocation → 22% annual increase
 - Ease of doing business → land acquisition
 - Quality education → Industry Academia link
National Apprenticeship promotion scheme

Thus IET can transform the UP's entrepreneurial landscape and create an positive spiral of growth, innovation and development.

Overall Grading (✓)

Poor			Average			Good		
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13:33

Q.10) What steps has the govt of UP taken to enhance the digital transparency and citizen engagement through its digital platforms?

Ans:- UP Govt proactively pushing the digital governance to improve transparency and accountability through the policy initiative and digital tool adaptation.

EG:- UMANG App.

Steps taken by UP Govt - enhance digital transparency and citizen engagement

(1) Digitalisation of Land Record → Bhulekh app for farm digitalisation using GIS, Drone survey.

(2) Online Services delivery → E-district app and Jam Seva Kendras to

provide wider services in time bound manner

Eg Caste, Income, Domicile, Birth certificates.

(3) Jansunwai portal and Grievance redressal to foster accountability.

(4) Right to information → proactive delivery in information

(5) Boost investment → Invest UP through the Nimesh Mitra portal.

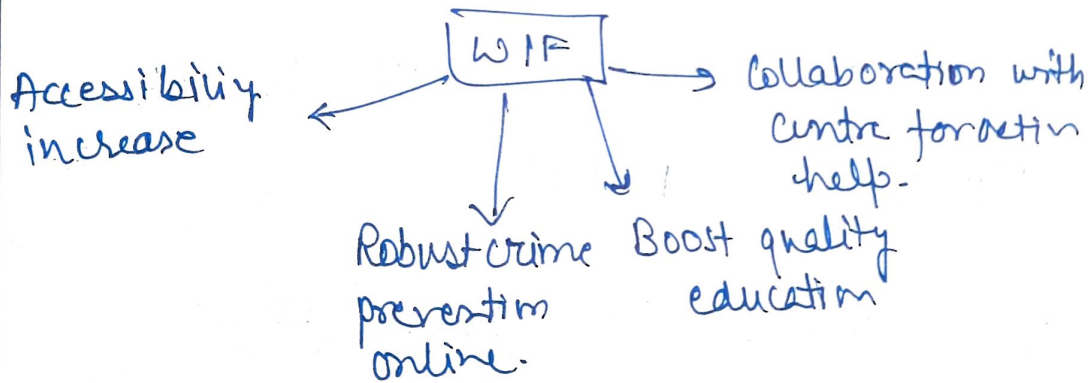
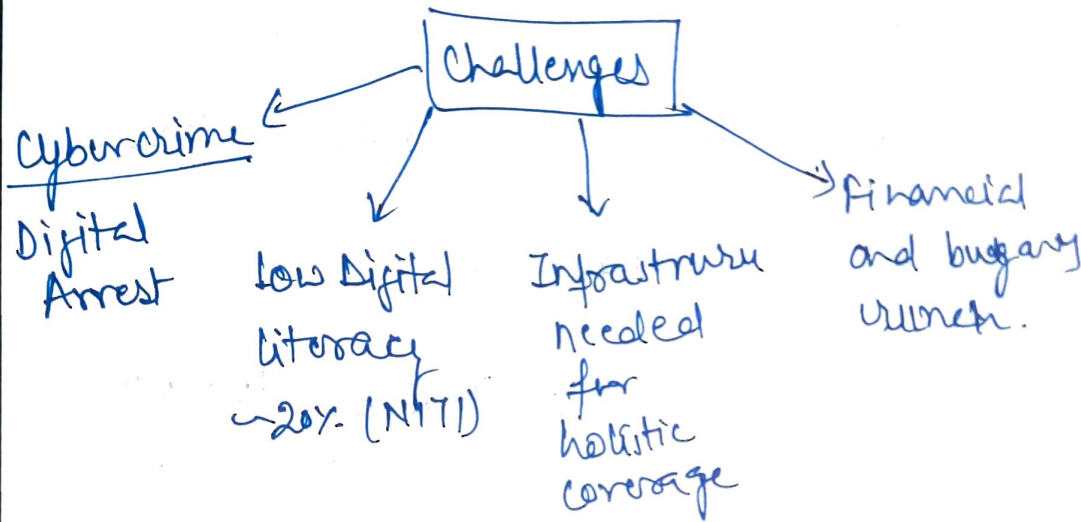
(6) Digital financial help through DBT → financial inclusion under Jandhan A/c.

(7) Agriculture extension services → digital app Mausam.

(8) Digital education for skill development

using AI and new technology.

(9) Surveillance and crime activities → check using AI powered CCTV in Kumbha Mela



This UP govt rapidly transforming state's image from BIMARU state to top runner in digitalisation.

Overall Grading (✓)

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12:49