

To be filled by the Candidate



Time allowed : Three Hours

GEOGRAPHY

Sectional Test -4

Maximum Marks : 250

Industrial Geography

DIR-GEO-JULY-07-2023

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Time - 4 hrs

General Instructions

This Question-Cum-Answer (QCA) Booklet contains 76+4 pages. Immediately on receipt of the Booklet, please check that this QCA Booklet does not have any misprint or torn or missing pages or items, etc. If so, get it replaced by a fresh QCA Booklet. Candidates must read the instructions on this page and the following pages carefully before attempting the paper. Candidates should attempt all questions strictly in accordance with the specified instructions and in the space prescribed under each question in the Booklet. Any answer written outside the space allotted may not be given credit. Question Paper in detachable form is available at the end of the QCA Booklet and can be removed and taken by the candidates after conclusion of the exam.

Question 1 and 5 are compulsory.

In Total FIVE Questions are to be attempted.

Selecting atleast one question from ONE Section.

DO'S :

1. Read the instructions on the cover page and the specific instructions to this Question Paper mentioned on the next page of this Booklet carefully and strictly follow them.
2. Write your Roll number and other particulars, in the space provided on the cover page of the Question-Cum-Answer-Booklet.
3. Write legibly and neatly in ink. Pencil may be used for drawing diagrams, sketches, etc.
4. For rough work, blank pages provided at the end of this booklet should be used. The rough work should be crossed through afterwards.
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Ques. No	Marks	Ques. No	Marks
Section A		Section B	
Q1.		Q5.	
a	— 10	a	05 10
b	05 10	b	06 10
c	00 10	c	— 10
d	— 10	d	05 10
e	06 10	e	07 10
Q2		Q6	
a	08 20	a	12 20
b	10 15	b	10 15
c	10 15	c	12 15
Q3		Q7	
a	/ 20	a	09 20
b	/ 15	b	10 15
c	/ 15	c	09 15
Q4		Q8	
a	/ 20	a	/ 20
b	/ 15	b	/ 15
c	/ 15	c	/ 15

To be filled by Examiners only

Question No	<p>Robin add examples & update the content policies to <u>update</u> diagrams as much</p>
Grand Total	
	<p>keep it up</p>

Write Short notes, within 150 words each, on the following :

10x5=50

Que. 1.(a)

What is Flow theory?

Candidate should not
write anything in the margin

Ques 10b)

What are environmental effects of oil and natural gas?

10marks

Ans 5)

According to UNEP the average carbon footprint is 4.5 tonnes/year globally.

Environmental effects

→ Global economic activities are heavily dependent upon oil & natural gas. During recent CoP27 UNFCCC their gradual phase down has been proposed.

① exploration
exploitation
transportation
utilization

Environ.
effects

→ Global warming - gases like CO_2 , CH_4 from fossil fuel have high GWP warming potential leading to increased global temperature.

→ Weather patterns - are getting transformed like - Indian Monsoon (Indian ocean dipole)
- Jet Stream ubiquities.

Candidate should not write anything in the margin

Q. 1(c)

Explore the consequences of fossil fuels as primary energy source in world.

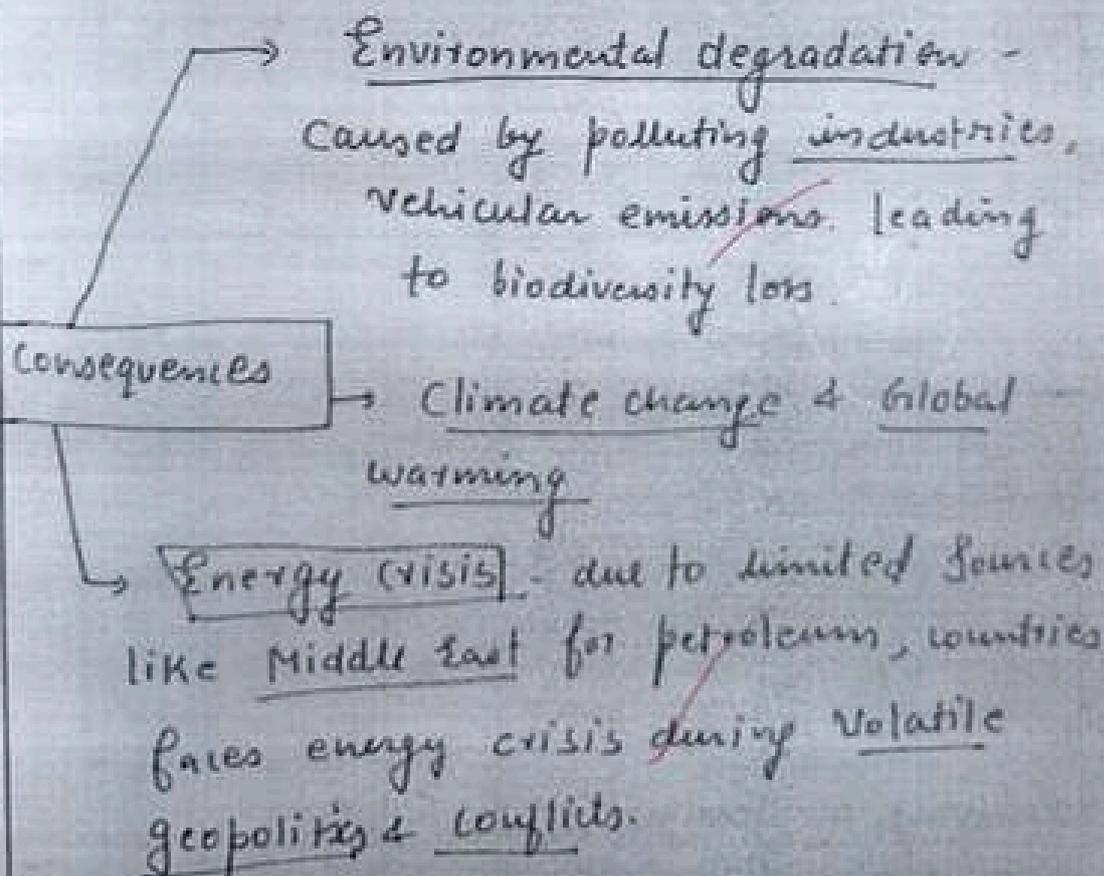
10 marks

According to Emission Gap report the global GHGs emission is 6.5 tonnes CO₂ equivalent with huge regional variations like India 2.4 (t CO₂e), China 15 (t CO₂e).

Fossil fuels as primary source

- Health Categories

→ Derived from hydrocarbons, the global supply chains are heavily dependent on these polluting fossils.



Candidate should not write anything in the margin

Q. 1(c)

Explore the consequences of fossil fuels as primary energy source in world.

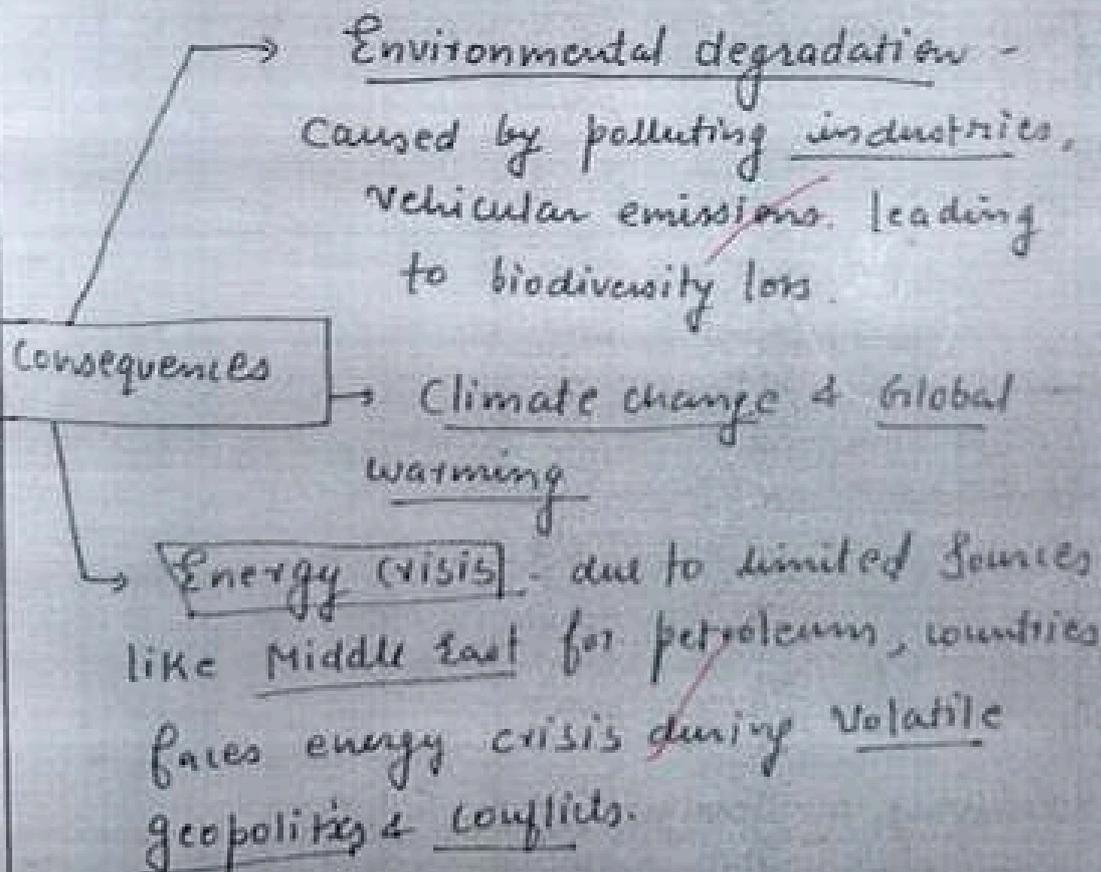
10 marks

According to Emission Gap report the global GHGs emission is 6.5 tonnes CO₂ equivalent with huge regional variations like India 2.4 (t CO₂e), China 15 (t CO₂e).

fossil fuels as primary source

- Key
Categories

→ Derived from hydrocarbons, the global supply chains are heavily dependent on these polluting fossils.



Candidate should not
write anything in the margin

→ Energy poverty - Developing countries have to pay huge bills in form of their forex reserves. Still the gap in accessibility is huge. with huge domestic demand like in India.

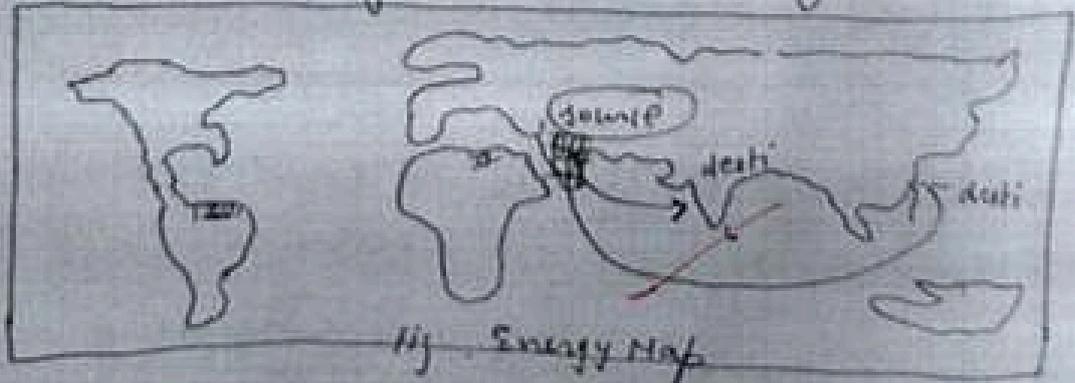
Colts
INCCD

WAY FORWARD

→ Diversifying energy pool - by investing heavily in Renewable sources - solar grid - one sun, one grid
↳ International solar alliance.

→ Institutional Interventions to avoid lobbying by oil producing countries
↳ Oil like OPEC by UN body.

↳ Fair pricing of enr fossil with competitive pricing to help developing countries.



Diversifying the energy sources is the way forward.

Ques 117) Outline the merits and demerits of recycling.

10 marks

The presence of Global "Pacific garbage patch" and micro beads from deep oceanic trenches to Himalayan top necessitates to focus on recycling.

Waste as major environmental challenge — quantity, types, sources

Merits of recycling

→ It involves transforming the waste material to usable products.

- Merits
- ① Environment friendly - sources of pollution to be curbed that leads to environmental degradation.
 - ② Resource use efficiency - It promote better utilisation of limited resources (Club of Rome - limits to growth)
 - ③ Employment generation - the recycling has huge potential to curb disguised unemployment.
 - ④ Economic growth - with reuse of recycled products the input cost will be lesser.

Candidate should not write anything in the margin

- Demerits
- ① Cause pollution - use of old & pollution technologies in landfill sites like Dhalsu, Gafipur sites etc.
 - ② Informal Jobs - more than 90% of it is unstructured & leads to many problems.
 - ③ Health hazards - Unscientific ways & unaware about handling electrical & radio-active & medical waste causing Cancer, minamata & diseases etc.

* Circular economy: A way forward

- The scientific utilisation of waste or end of cycle products in the production process as intermediate goods can help curb issues of pollution, management of waste. e.g. in Road making of plastic.

Thus, recycling has to be integrated into the production processes to effectively deal with its consequences.

2. (a) Distinguish between the concepts of growth and development.

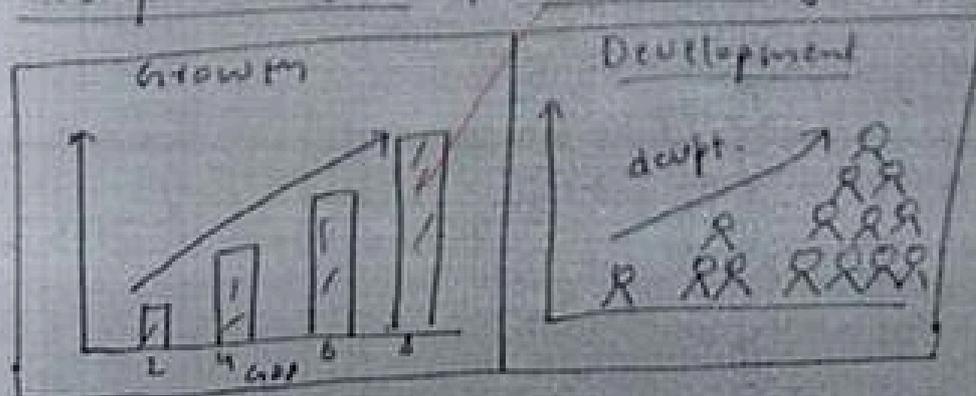
20 marks

Amartya Sen says - Development is the process of removing various types of 'unfreedom' that leave people with little choice & opportunities to utilise their reasoned agency. (The capabilities approach).

Development v/s Growth

→ "Growth" is a quantitative dimension of measurement. It involves absolute growth of numbers. e.g. GDP, GNP etc. are utilised to measure growth.

→ while Development is a "qualitative" dimension that includes the overall & impacts of growth on society & in human development. e.g. Human Development Index, outcome budgeting etc.



→ "Limits to Growth" - released by Club of Rome that projects the growth of human population & consequent utilisation of natural resources & depletion. Similarly, Paul Erlich in his "Population Bomb" propounds $I = PAT$ equation which measures the impact of human agency on ecosystem.

Issues with Growth

① Measures absolute numbers - Like the GDP growth numbers does not reflect the true nature of impacts on living Standard.

Example - India faces "Jobless growth" since last decade with poverty number huge.

② Regional Disparity

→ Growth of wealth is concentrated in few regions while others are neglected in the process.

→ The recent Oxfam report highlights the glaring inequalities. top 1% having 40% of wealth & bottom 50% only in single digit.

* The idea of cornucopians or frontier Ethics does not hold good for development.

* Paradox of plenty - regions face extremely low growth with high resource potential due to lack of development.

Sustainable Development: The way Ahead

→ Put forward by Brundtland commission as "our common future" - to utilise resources as per our needs & leaving for future generations.

→ sustainable Ethics & Sustainable Development Goals (15) to guide development till 2030.

Environmental Ethics & Climate Justice

can be the guiding values for future development rooted in the principles of sustainability.

Candidate should not write anything in the margin

deviated

HDI

OS

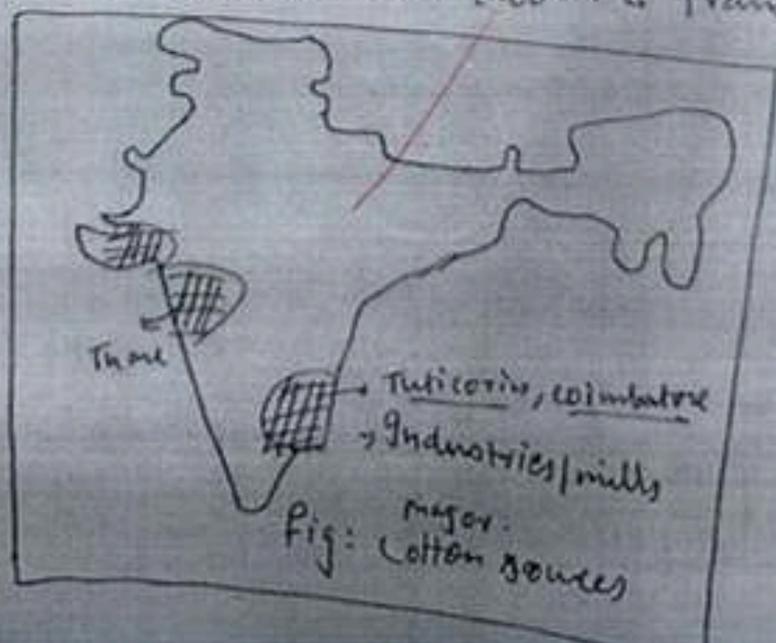
Que. 2. (b) Elaborate on Indian Textile sector status. Also specify the major development programs. 15marks

India textile sector is the 2nd largest employer after agriculture. It has huge potential to curb disguised unemployment.

Status of Textile sector

① Resources footloose Industry -
this sector has decentralised sources like cotton but does not involve weight gain or weight loss (Weber's locational triangles)

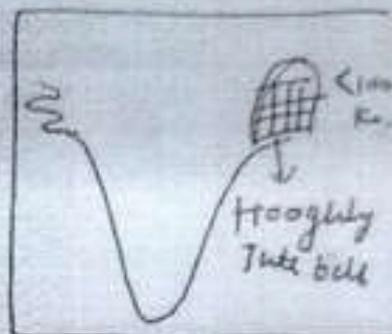
→ Thus their location depend not only on raw material but labour & transportation



② Resource location

→ As depicted states like Gujarat, Maharashtra (cotton soil of deccan trap), & Tamil Nadu accounts for 50% of cotton resources.

→ The 90% of jute textile come from a small <100 km from the Hooghly region.



③ Exports & trade :

→ Atto India accounts for 90% of global jute production but 75% is domestic consumption. with huge potential to add to forex reserves.

Major development programmes

MITRA

PLI

① Revamped technological upgradation fund scheme (RTUFs) :

→ to remove infrastructural bottlenecks with focus on regional development like woolen textile development in Jammu & Kashmir.

- (2) Scheme for Integrated textile parks (SITPs) to enhance the export capacity in a given year.
- (3) Market Interventions
- ↳ (a) Imposing quantitative restriction on heavily subsidised cheap Chinese products.
 - (b) developing markets for branded wearing apparel.
- (4) Technical textile development that cater to the needs of modern industries. sports, aviation etc.
- (5) Development of Mega cluster for decentralised development (regional aspect) and developing Indian Brands like Block printing, madhubani paintings etc.

Based on Resource base theory Indian textiles can have competitive advantage based on availability of huge locally available resources (raw material, labour) etc. Can help in poverty alleviation & regional development

Q. 2(c) What are the sustainability Challenges Faced by the Cement Industry?

15 marks

India is the 2nd major cement producer after china, producing four grades of cement.

Sustainability Challenges

① "Huge environmental cost" -

Categorised under most polluting industries of CPCB under Env'tal protection Act, 1986

→ Rudimentary & old technology is utilised in the production.

→ Releases huge pollutants particularly particulate matters.

② & unsustainable production process -

→ Resource extraction like limestone, dolomite is pollution causing.

→ Managing resource by products like sludge, waste as it is a "weight loosing industry" is unsustainable.

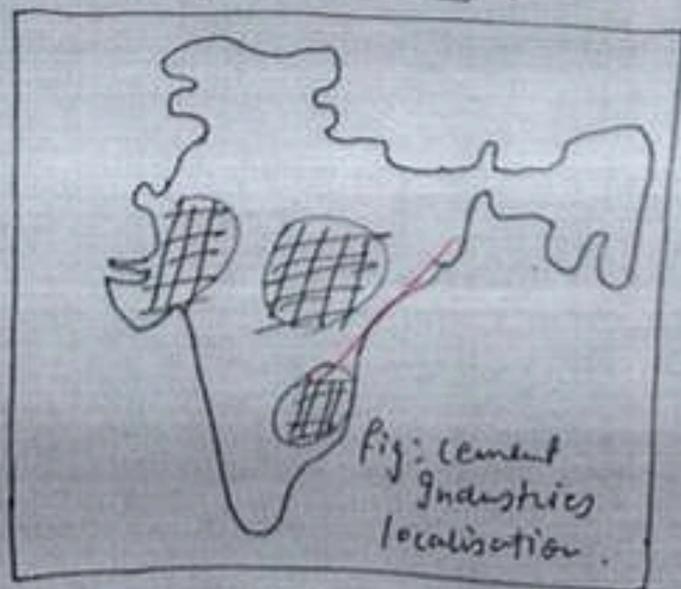
③ Resources & Raw materials:

- ↳ Limited availability of fuernace oil (for oil furnace cement).
- ↳ Coal shortage in monsoonal season (linked to energy security)
- ↳ Drastic cut in power.

Health
climate

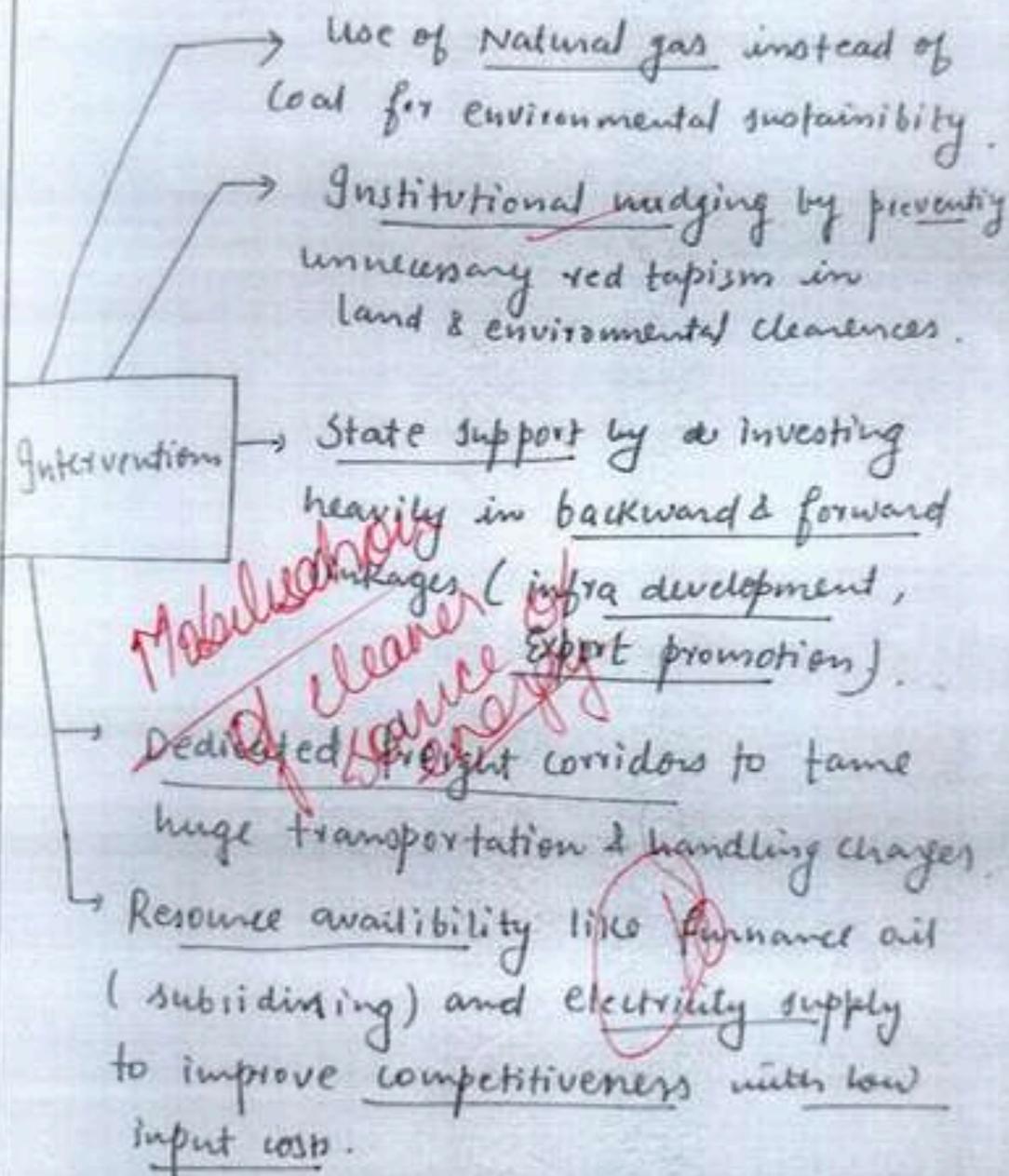
④ High handling charges →

- due to lack of infrastructure development which is accentuated by both weak backward & forward linkages (N. Smith)
- transportation cost is huge (Isotims are not in favour - Weber)
- poor storage facilities



Bridging the Gaps

→ Due to huge infrastructural needs & employment generation sector it needs attention.



With the growth story of India cement industry has equal role & opportunities to grow.

Write notes, within 150 words each, on the following :

10x5=50

Que. 5 (a) Write note on profile of nuclear power in India.

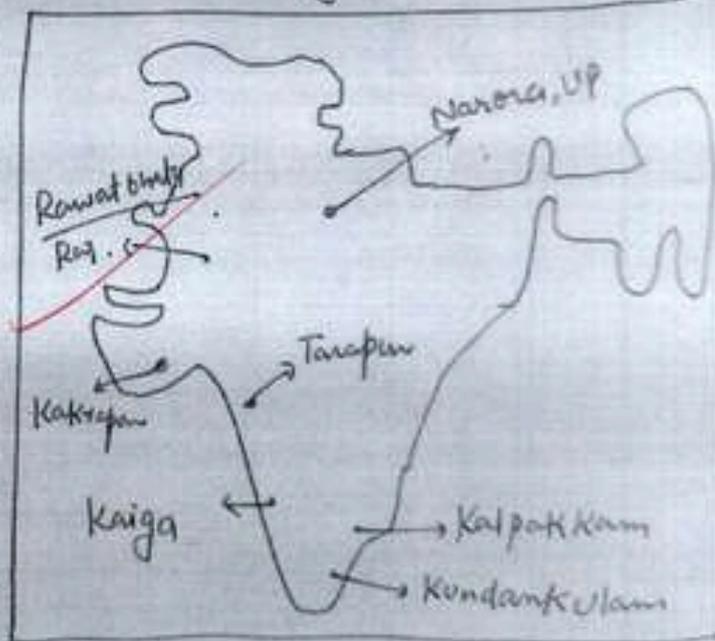
10marks

Nuclear energy is the fifth largest sources of energy with ~3% contribution in the pool.

Nuclear power profile

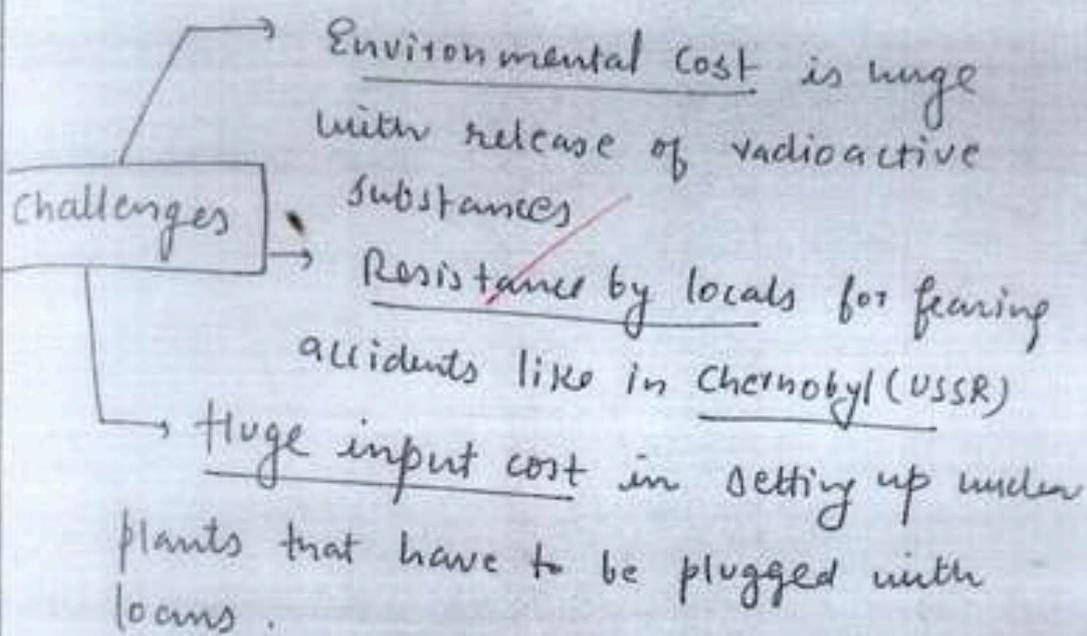
① localisation of the power plants is scattered across the country

→ largely located near sources of water like Rawat bhata in Kota district on banks of Chambal river.



→ water is utilised for power cooling purposes.
Energy — Other Uses

② Technology - India is planning 22 heavy water reactors (PHWRs) across the country. Recent one in Gorakhpur Haryana.



Developing a Environment friendly power source

- Nuclear power is largely pollution free like to fossil fuel emissions in thermal plants.
- Thus with proper communication with locals, Investing by innovative instruments like equity investments.

By building capacity through research & development India can achieve its Net zero emission by 2070.

Que. 5. (b) Examine potentials of aluminium Industries in India.

10 marks

India is the 2nd largest
producer of Aluminium in the world.

Significance

- ↳ ① Sunrise industries like aviation, ~~tech~~ electrical technologies need aluminium.
- ② provide employment & help bridge gaps of regional disparities in resource rich regions of bauxite.

③ Export potential

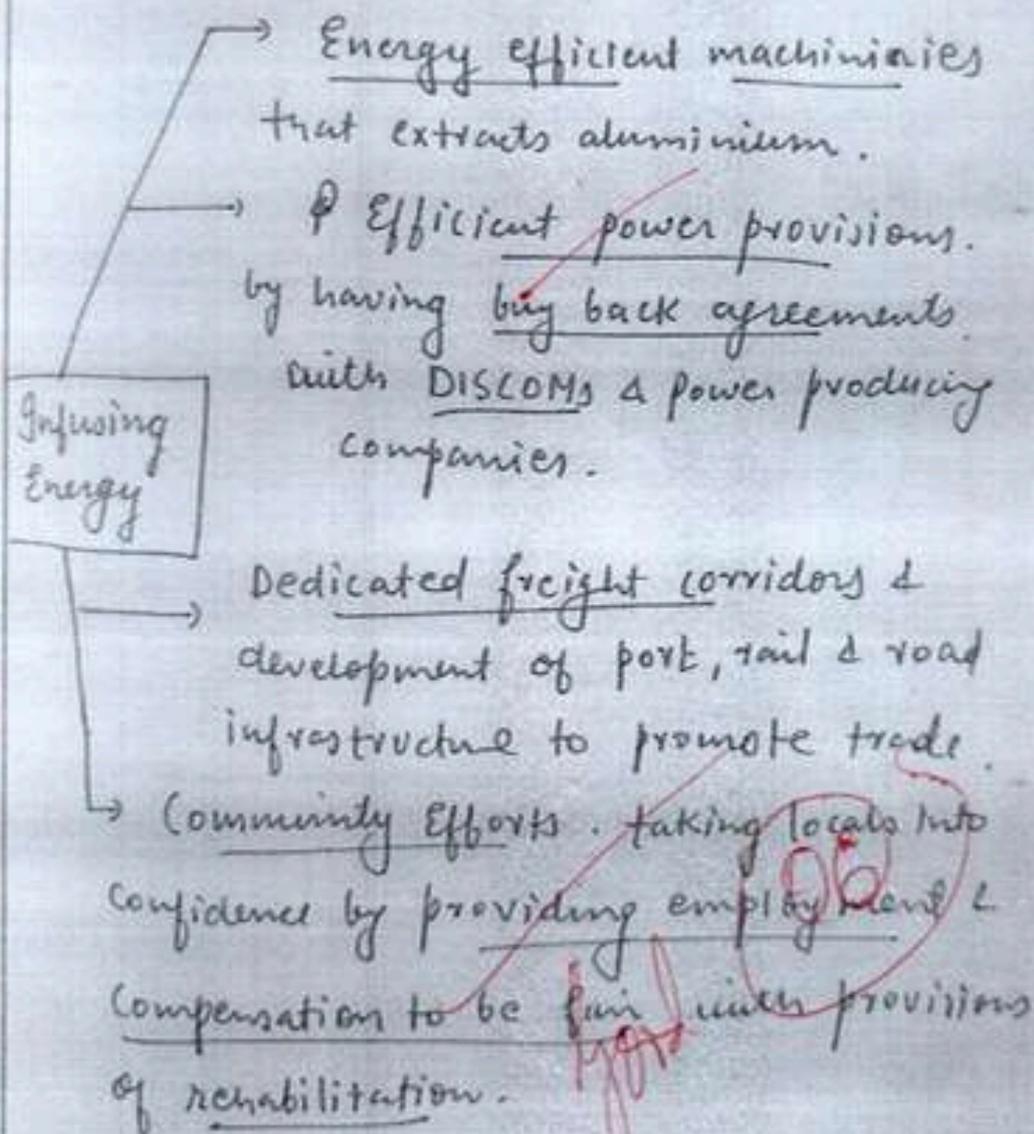
→ Huge Electricity cost -
around 30-40% of the input cost is electricity only that increases with rise in pet fossil fuel prices.

→ power intensive technologies.

Challenges faced

→ Regional challenges in resources extraction as major bauxite producing regions are overlapping with left wing Extremism (LWE) affected areas.

→ Transportation cost is huge as it is a weight loosing industry & thus need better connectivity with ports & markets (Japan major importer)



The poverty ridden region of Eastern India can get a initial kick (G. Myrdal) with bauxite resource for development of the region.

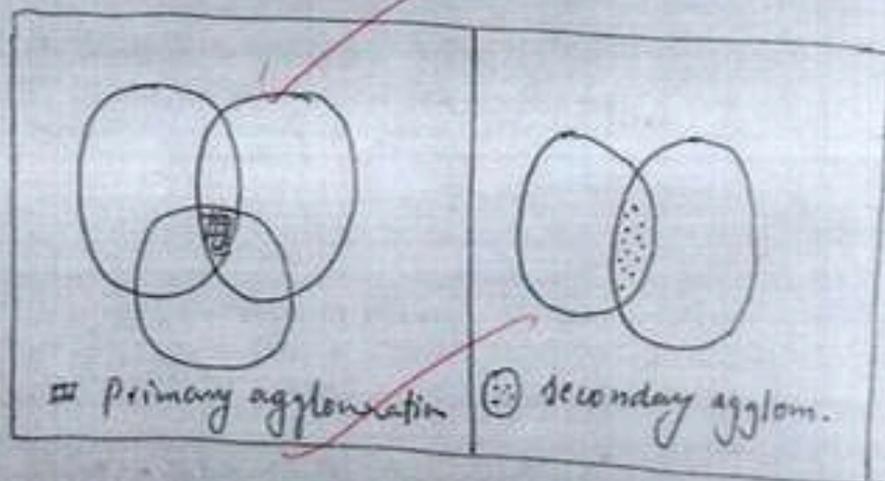
Que. 5. (c)

Clustering tendencies of manufacturing are evident worldwide, justify the statement.

10 marks

Weber in his Industrial location theory talks about agglomeration economies which are the benefits derived due to agglomeration of industries.

Evident Clustering Tendencies



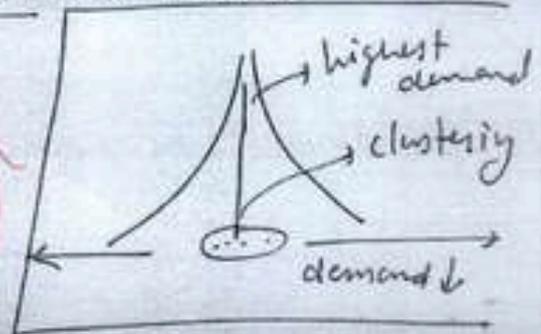
- ① Resource availability → as pointed by Weber weight losing industries will be clustered near source like Coal production in Eastern Chotanagpur region.
 ↳ Food processing industries in the North western parts of Punjab, Haryana. (Green revolution belt).

② Market availability -

Weight gaining industries will be located near markets in cities as it helps in reducing transportation cost (cost efficient location)

↳ Also demand as pointed out by Losch has a role to play, i.e.

Clustering of industries decreases with decrease increase in distance from demand region



theories not asked

Issues with Approach

- ① Increases regional disparity
- ② low economic development of poor regions - resource rich regions - low value addition thus poverty & low incomes.

Manufacturing Industries can be centres of growth (perovox) from where development could be trickled down.

Que. 5. (d) Examine how geothermal energy makes challenging source, in global perspective. 10marks

Geothermal energy is the tapping of heat energy that is sourced deep within the earth.

Challenging source

① Unexplored regions - enough scientific and geologic studies have not been conducted to assess the true nature & extent & limits of this energy source.

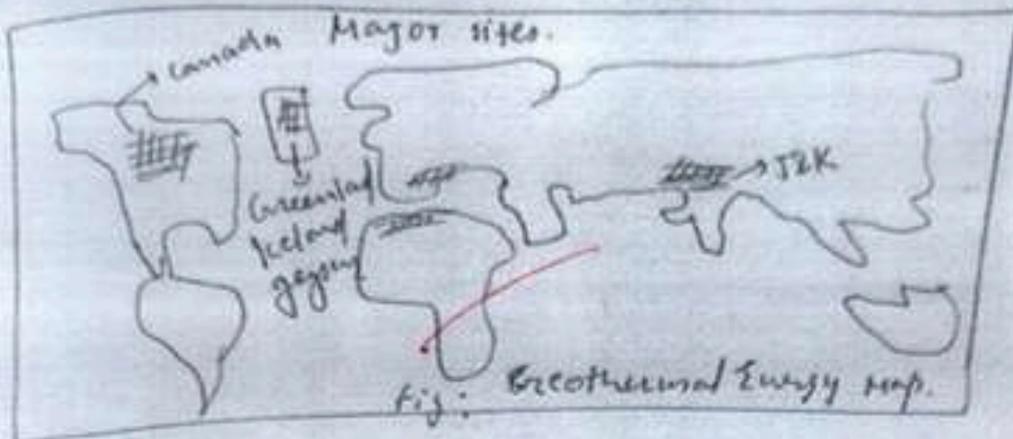
② Low investment - tapping geothermal energy is capital intensive & need technologies that can overlook the natural challenges.

like efficient turbines & machinery to produce electricity.

Coupled with issues of transporting this energy source.

Pol'n
Strata

~~disubers~~



Prospects &
ways to improve

- (a) can help tackle & reduce green house gas emissions and thus tackle climate.
- (b) cheap & renewable source with efficient technologies.
- (c) Research into mapping major geological sites (Chota Nagpur region India) that can help develop the sector.

Thus to achieve the targets of Paris agreement to keep global temperature well below 1.5°C, geothermal energy can be a big pie.

Que. 5. (c) On the outline map of India provided to you, mark the location of all the following. Write in your QCA Booklet the significance of these locations, whether physical/commercial/economic/ecological/environmental/cultural in not more than 30 words for each entry.

- (i) Shevroy Hills — part of the Eastern ghat ranges, located in Andhra Pradesh with red plateaus soil, it is with deciduous vegetation, rain shadow of Satyadri.
- (ii) Cachar — hill district of Assam,
↳ is a designated 6th scheduled tribal region. Geographical vicinity with Purvanchal hills, moist evergreen vegetation.
- (iii) Panna — Tiger reserve in Madhya Pradesh, ~~forest~~ transversed by Ken river, grasslands & deciduous tropical deciduous vegetation with rich forest resource.
- (iv) Nokrek — hills of tiger reserve located in North eastern region.
↳ have moist evergreen vegetation, rainfall > 200 cm (NE & SW monsoon)
- (v) Lemru — Elephant reserve recently declared in Chhattisgarh. located in the eastern plateaus help in biodiversity conservation (MIKE site)

(vi) Ranthambore - located in Rajasthan, is a tiger reserve, along Chambal river & basin area.

(vii) Palamu - hills located in the Baghelkhand region of purvanchal UP & madhya pradesh Jharkhand region, forms the line b/w plains & peninsula, have waterfalls, deciduous vegetation.

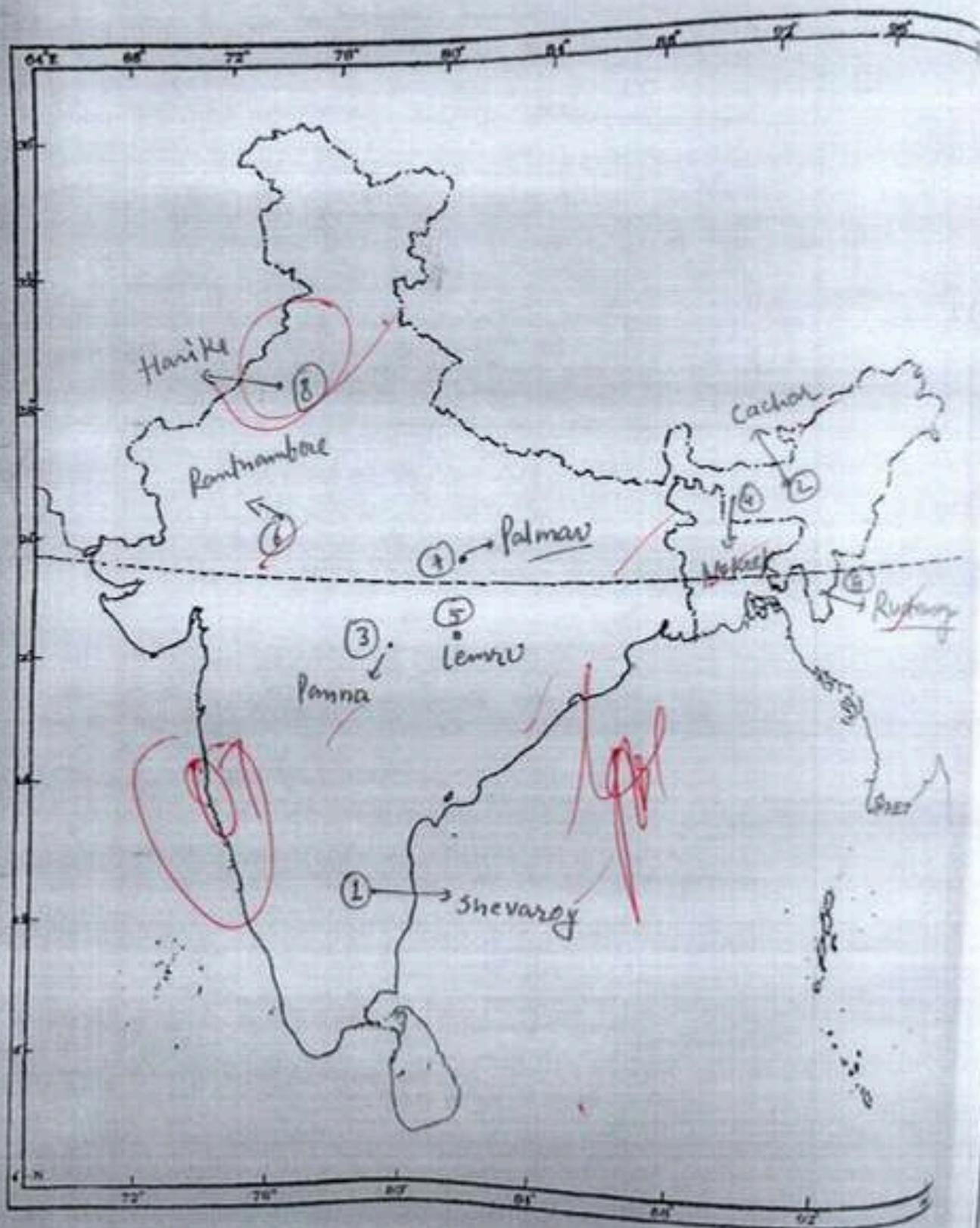
(viii) Harike

- ↳ Harike barrage along Satlyj river
- ↳ Indira Gandhi Canal is diverted to Rajasthan.

(ix) Rudrasagar → located in Mizoram is a conservation site.

(x) Jaccu

INDIA



Que. 6 (a) Why MSMEs are important constituent of economic planning in India? 20marks

MSMEs sector accounts for ~ 45% of manufacturing component & contribute around 28% in GDP growth & 40% of exports of the country.

Important Constituent

① huge employment -

→ MSMEs sector alone employs around 111 million people across the country.

② poverty alleviation - with huge employment potential this sector absorbs unskilled forces of the country.

③ Alleviate Disguised unemployment - with agriculture sector facing huge disguised unemployment, MSMEs provide alternate source of income & thus increases living standard & thus human development indicators.

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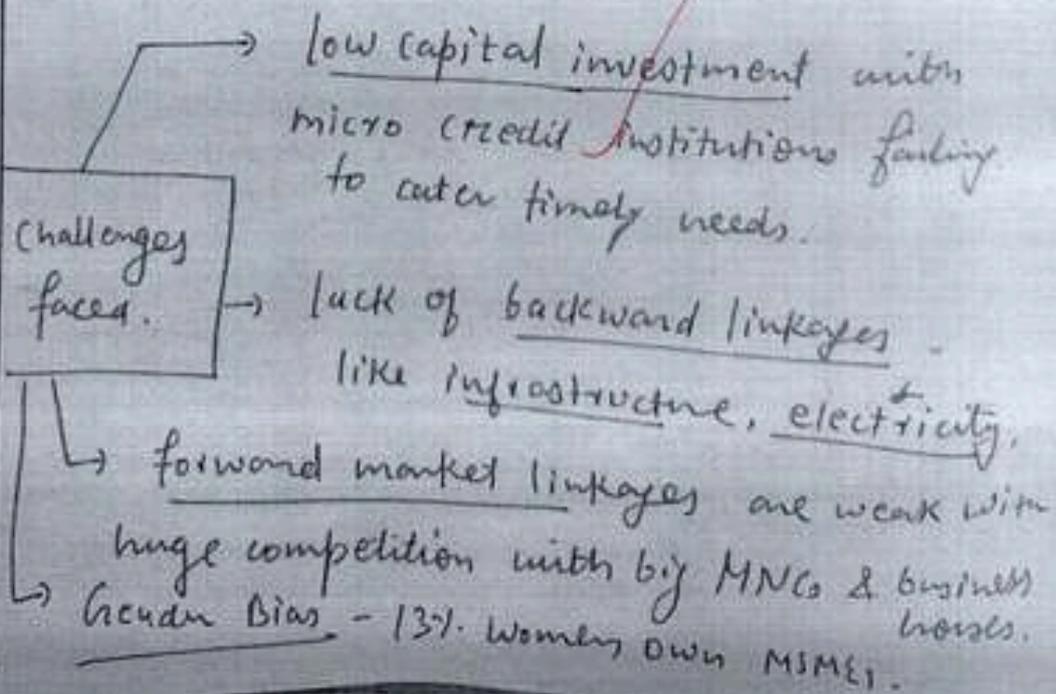
decentralised

④ Promotes regional development:

→ Prevailing wide spread inequalities in economic potentialities of various regions (like aspirational districts - NITI AAYOG), MSMEs can penetrate to infuse the growth prospects like growth pole concept & growth centre (G. Myrdal).

⑤ "Improve social indicators"

↳ Basic human development amenities of education, health, housing are connected with poverty. Thus with economic development issues of child marriage, AS-IMR etc. can be tackled.

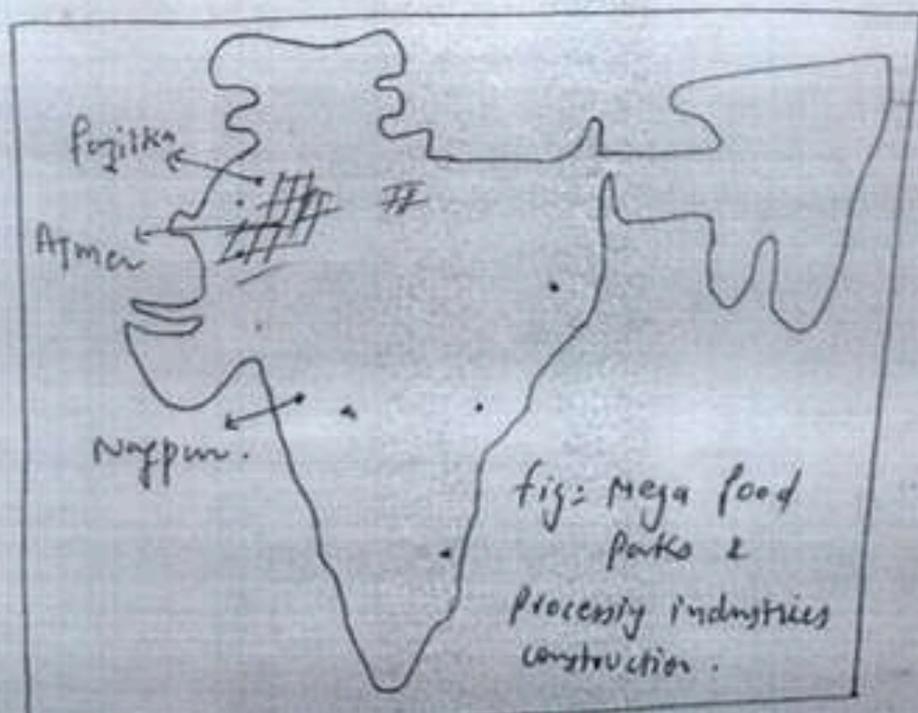


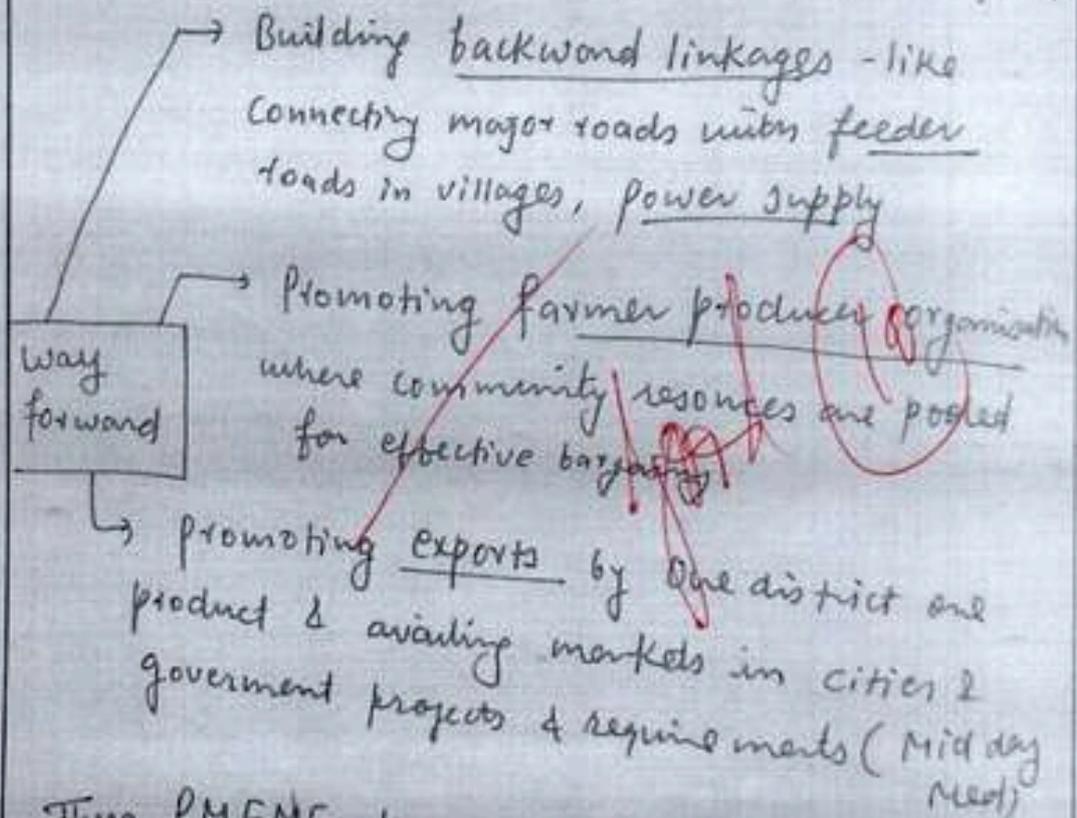
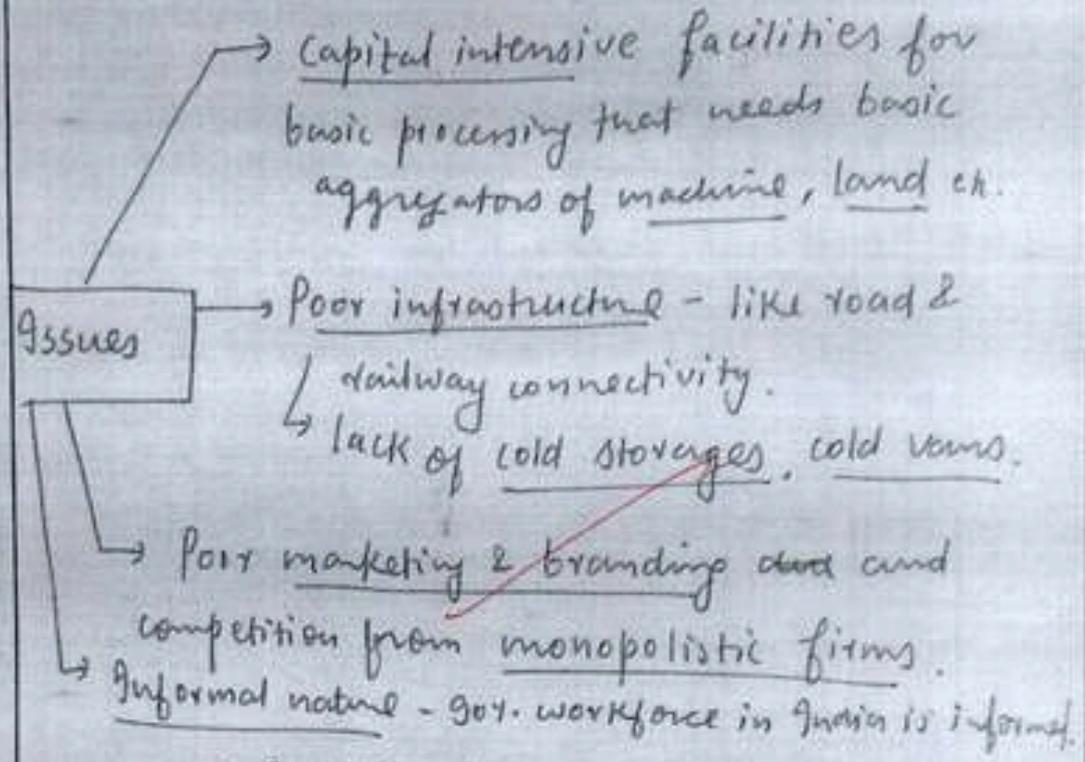
④ Doubling farmers income -

as postulated by Dalwai Committee with horticultural production surpassing food grains production, processing can help farmers increase their income potential.

⑤ Helps in regional development:

→ Accⁿ to resource base theory (resources to give competitive advantage), food processing can help develop local infra, increasing income level thus living standard of people - Bridging gaps caused after green revolution 1.0.





Thus PMFME thus can bring in potential to target issues from poverty alleviation, food security & economic & regional development.

Write note on initiatives taken by the Government to promote the pharmaceutical sector in India.

15 marks

India is the 3rd largest by volume and 14th largest by value in its pharmaceutical industry. And is termed as "pharmacy of world" (Economy survey 2022).

Initiatives taken by government

A The recent incidents of deaths caused by consumption of cough syrups made by Indian companies in Gambia, central Asia, Sri Lanka have raised alarms:

① Institutional setup:

→ Under Cosmetics Act, this sector is regulated under multiple ~~is~~ organizations & executive bodies.

① C D S C O (central drugs standards ~~org~~ & control organisation)

↳ overlook the sectors by setting standards.

① NPPA (National pharmaceutical & pricing authority) → overlooks the price setting of medicines. Generic drugs in India increases its competitiveness with easy availability & cheap cost.

② Compulsory licensing:

- ↳ Imposed under Essential Commodities Patent Act, this promoted the generic drugs revolution in the country
- the patented drugs are allowed to produce at mass scale to increase their availability at affordable prices.
- used for domestic front, the patentee gets share of the profit.
- * This discourages investment by individuals & companies in research & development of drugs.
- * Also recently South Africa & India applied for COVID-vaccine relaxation under compulsory licensing provisions.

(3) Price capping -

With putting ~~may~~ almost all drugs under essential commodities Act, the prices of the drugs are capped ~~to~~ by NPPA, to:-

- provide affordable drugs to all
- Increase presence of small medicine firms a competitive nudge in market.

(4) Unfair practices.

→ Recently Competition Commission of India has put huge penalty on Cipla for selling Paracetamols through unfair means bribing doctors & medical stores.

With huge export potential i.e. 60% of USA medicines & 25% of UK medicine market.

India pharmacy sector can capitalise by third party auditing & regulating of its drugs, better oversight mechanisms & increasing transparency in its production for sustainable development of sector.

Que. 7. (a) What are the India's fertilizer sector dynamics? Outline important initiatives taken by government for this sector. 20marks

Indian fertilizer sector being among the top five (to 4th) in the world has huge domestic demand to cater.

Sectoral dynamics

- ① Very high domestic demand -
~~after~~ from very first 5th five year plan & Sindri plant of fertilizer. Attaining food sufficiency & poor nutrients in major soils expects of huge demand.
- ② Locational dynamics:
 → It is largely raw material oriented industry with its demands being met
 - locally like in Sindri.
 - transporting by pipelines of natural gas, etc.

→ The major pipelines sourced from Gulf of Khambhat to Dibrugarh, Nahanlatiya.

③ Resource availability:

→ like the Gypsum availability in parts of Rajasthan for Gypsum fertilisers. Phosphate fertilizers are also sourced locally.

④ Finances & Economic sickness:

↳ with closing down of public entities & low investment from private sector due to issues of:

→ price capping in final products while raw materials sourced in petroleum products are volatile.

→ NPA ridden banks.

⑤ Overseas Expansion -

with B. Videsh Khaniy Limited investing near Kamchatka peninsula.

↳ for urea production from middle east (oman company)

Government Initiatives

e. 7. (b)

- ① Nutrient based subsidy regime -
for Phosphorous & phosphate fertilizers
to enhance competitiveness by giving
subsidy upon inputs.
- ② Neem coated urea - to tackle the
→ issues of diversion to industries,
diversion of subsidised fertilizers across
border (like Nepal)
→ to deal with leaching with very low
use efficiency by plant.
Well done
- ③ Nano urea / fertilizers:
by IIIFCO for sustainable & environment
friendly that increase its usage & less wastage
- ④ Promoting green field & brown field
Investments.

In agriculture is heavily dependant on
fertilizers to attain food security. Effective
usage can help Evergreen revolution.

Ques 7. (b)

Examine how energy poverty in India is a major drag on manufacturing ambitions?

15 marks

As per International Energy outlook India is the 3rd largest primary energy consumer in the world.

Energy poverty

→ It is the lack of affordable & clean availability of energy to the people. &
→ with around 80% of its energy demands still met by fossil fuels.

India has a long way to meet its demands for development & attain net zero emissions (by 2070).

Reasons

→ ① Affordability - though heavily subsidised in many parts of country, power is a costly affair with sick DISCOMs.

→ ② Nascent Renewable energy sectors - still 80% is fossil fuel based energy & ~ 3% by nuclear power.

③ Regional differences -

- ↳ cities & urban centres have high demand & thus availability is huge which require transportation (huge A&T losses) from other parts.
- Rural regions still face power trippings, power cuts during summers.

④ Coal shortage - during peak summers & during monsoon season.

Major drag on Manufacturing sector

① Issues with MSMEs -

- ↳ power supply is a big issue for enterprises in MSME sector & they account for around 45% of manufacturing out.

② Dynamic pricing -

- Household power supply is heavily subsidised with agricultural waivers of electricity bills,
- the Burden falls on manufacturing units to "trade off the losses".

Promoting Manufacturing by Curbing Poor Energy poverty

→ India's commitment attain net zero by 2070 is sensitive about its current dependence on unclean sources to meet its demands.

- Measures
- ① Promoting renewables - around 50% of its electricity demands to be from non-renewables by 2030. (Lot panchamita COP27)
 - MSMEs can be self sufficient with solar power (installing small units & selling power as well).
 - ② Reviving DISCOMs & producer companies by infusing capital, tackling NPAs.
 - ③ For supply & transportation of power by reducing AT&C losses.

manufacturing provides the economic base of country. Thus with vision of Panchamita to attain net zero by 2070, we can meet out energy demands.

Que. 7(c) India's economy holds great potential, but there is a big risk to translate it into reality. Comment. 15 marks

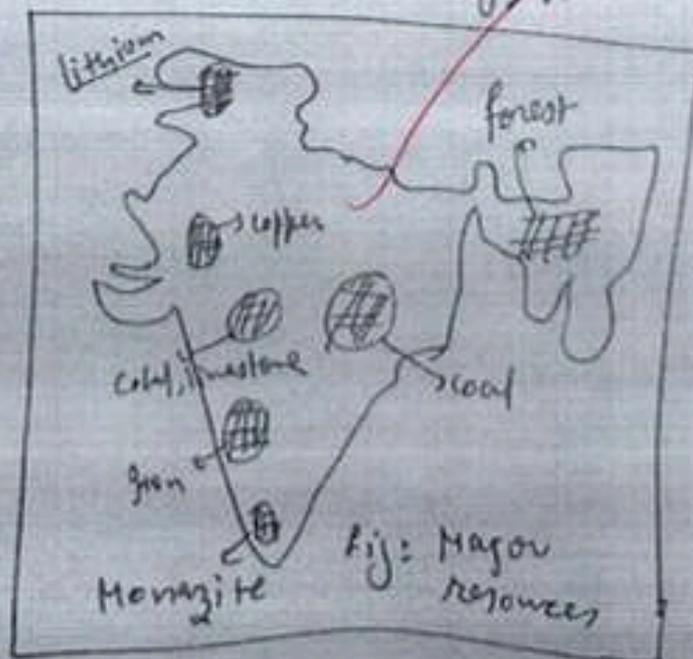
India is the 3rd largest economy in purchasing power parity & 5th overall, and

Holds great Potential

Demographic dividend - with around 65% population in working age group.

~~to~~ huge Resource base - ~~to~~ India is blessed with various natural resources like Coal, copper, Bauxite, Iron, Monazite etc.

Big domestic market - with 1.4 billion population India is the biggest domestic market.



Issues faced to attain potential

① Unskilled workforce -

→ with 84.5% population still stuck in agri sector & 50% of workforce

working in informal sectors of economy (less formalization).

② Disguised unemployment:

→ Agriculture is still the largest employer
45% of population with only 17-18%
contribution in GVA/GDP.

→ Industrial & service sector employ less
number of population with huge
contribution to GDP.
(Issue of jobless growth)

③ Weak Industrial base -

India transitioned from a agriculture
economy (during independence) to a service
based economy & the industries & manufa-
cturing base remained weak.

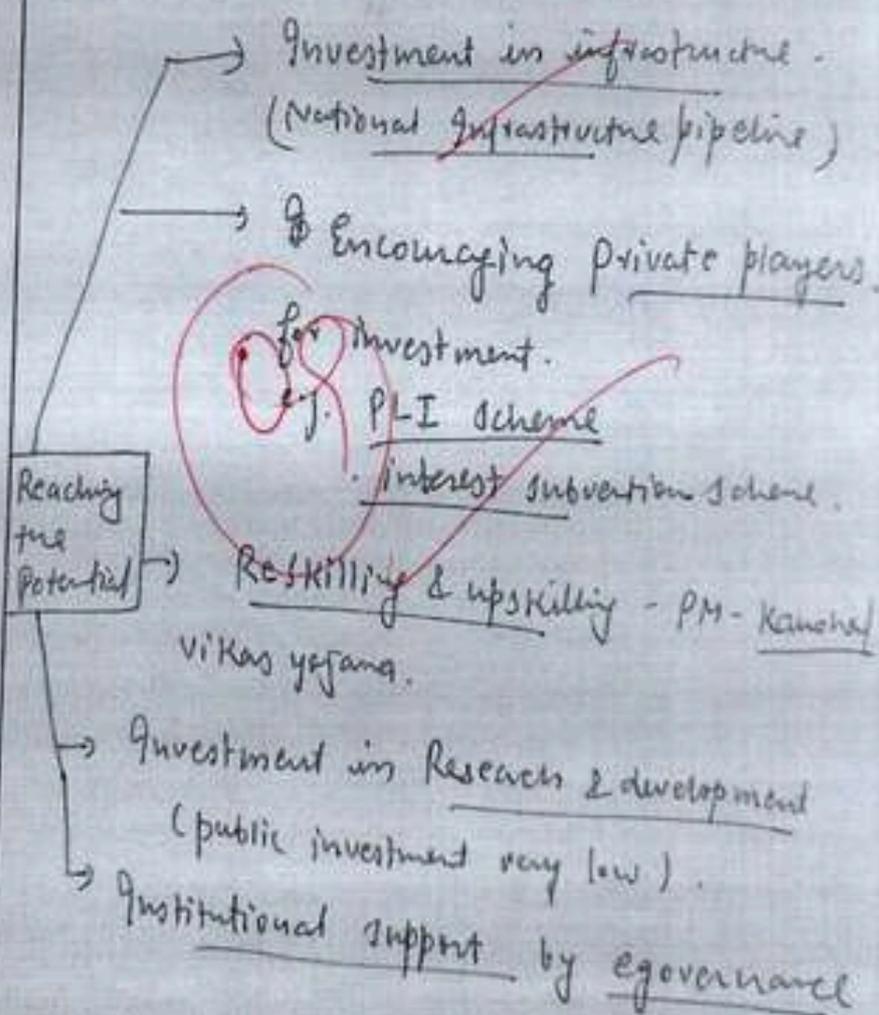
(service sector boom during 2000s) with
LPG reforms.

↓
leaves
dividends

↓

Full

- (4) Red tapism & - Institutional red tapism in allowing contracts, favouritism, cronyism that held entrepreneurship hostage.
- (5) Weak infrastructure base - that holds growth back (logistics cost - 13-14% of GDP)



Thus to attain the dream of a 5 trillion economy India need the fundamentals to be strong.