Name - Neeraj Mandloi Date: 19/11/2020

Paper III Part I.

1 A

Fullerene : Allotrope of Carbon

Formula : C_{60}

Full name : Buckminsterfullerence

Shape : Sphere like (Football)

1 B

Rust

$$2Fe + H_2O \xrightarrow{O_2} Fe_2O_3$$

(Iron) (water) (Iron oxide) (Ferric oxide)

Rust.

1 C

Use of $KMnO_4$

1. Dressing Wounds
2. Use as antibacterial
3. Use as antifugal antifungal.

Avagadro number

Number of atoms present in 1 mole of an element.

i.e. 1 mole of 'C' atoms = $\boxed{6.022 \times 10^{23}}$ atom
= 12 gm of 'C' atom.

CSIR

- Council of Scientific & Industrial Research
- established in 1942
- To ~~promote~~ promote research in science.
- Recently in news because of Development of Corona Vaccine

1 F. Jeevan Bindi

→ Iodine bindi (generally women wear it on forehead)

→ Through Bindi, Iodine absorb into skin

⇒ Decrease Iodine defficiency.

1 G. Given,

Today is Tuesday

To find,

Day after 62th days from now.

Solution.

∵ 7 days in a week.

$\Rightarrow \frac{62}{7}$ = 8 weeks 6 days.

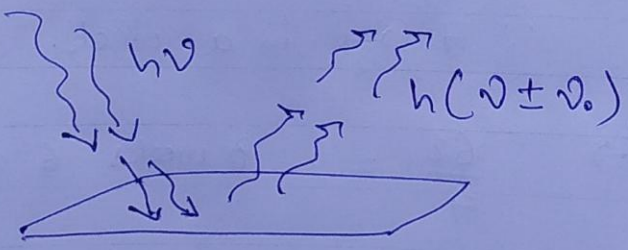
$\Rightarrow$ 6th day from Tuesday

Monday

Ans. 61st day from now will be Monday.

H. Raman Effect.

When light scatter from a surface, its energy gets changes i.e. increase or decrease because of absorbtion by the surface.



$\because \quad \nu = \frac{v}{\lambda}$

if. $\nu \longrightarrow \nu \pm \nu_0$

$\Rightarrow \lambda \longrightarrow \lambda \pm \lambda_0$

where ν = frequency.

λ = wavelength.

II. Ecological Print.

Total consumption of natural resources by human being in a given period. known as Ecological foot print.

Current Ecological foot print of an Year is 1.7 time of what earth produces in an Year.

i.e. Ecological Foot Print $\geq$ Earth produ

1 J. Wind mills are useful where wind speed is high.

$\because \quad P \propto v^3$

where P = Power

v = Velocity of winds.

Therefore, Tropical & Sub Tropical regions are useful for more ~~generati~~ power generation.

Countries → Norway, USA, India, China etc.

also useful where electricity ~~coll~~ connection is not reached like hilly areas.

11. Project Blue Flag.

→ Initiative which give a cleanliness certificate to the beach.

→ Recently Golden Beach of Odisha got Blue flag.

→ It indicates → Cleanness, hygiene, etc.

→ Total 12 Beaches got this tag in India.

12. Environment Protection Act.

→ Enacted in 1986.

→ To protect the overall environm

→ Identifying the Biosphere reserves

1. M. Govardhan Yojna.

1. N. Kalamsat :- Lightest satellite.
→ weight 1.7 kgs

→ Developed by students

→ launched by ISRO in January 2019.

1. O. Given,

Speed of train (S) = 180 km/h

Time taken to cross a man (t) = 60 s.

To find.

length of train = L = ?

Ques 1. → 30 mins

Solution.

$$\because \quad \boxed{S = \frac{L}{t}}$$

$$\Rightarrow \quad S = 180 \text{ km/h} = 180 \times \frac{1000 \text{ m}}{3600 \text{ s}}$$

$$= 180 \times \frac{5}{18} \text{ m/s}$$

$$= 50 \text{ m/s}.$$

$$\Rightarrow \quad S = \frac{L}{t}$$

$$\Rightarrow \quad 50 = \frac{L}{60}$$

$$\Rightarrow \quad L = 3000 \text{ m}$$

$$\boxed{L = 3 \text{ KM}}$$

Ans. length of train = 3 KM.

2. A. Endocrine System.

Endocrine system deals with hormones of humans.

Thomas Addison → Father of Endocrine Syste (1856)

later Bayliss & starling discovered first hormone.

Characteristics of Hormones.

① Ductless
② Sorce of to sink.

Function

→ Each hormone perform different functions, to maintain the functions of body.

There are total 7 Glands & function

① Pituitary → Growth hormone.

② Hypothalamus → Hunger / thirst / sex / Temperature regulation.

③ Thyroid → Physical & Mental growth.

④ Para Thyroid → Salt mantainance.

⑤ Pancreas → Maintain glucogen & Insulin.

⑥ Adrenal → Blood pressure maintanance. (Emergency gland).

⑦ Gonads → Maintain Sexual hormones.

Therefore, Endocrine system known as master functional system of human body.

2. B. Sun is the ultimate source of energy on the earth. Therefore, Solar Energy is the most sustainable source of energy.

MP lies in tropical zone, where it gets sunshine in maximum number of days in an year.

Uses → Solar pump: farmers using solar pump under KUSUM Scheme.

→ Domestic Solar Power Generation: People are showing interest in solar plates.

→ Power plant.: MP has ampple possibility in solar energy. Therefore, Rewa got asia's biggest solar power plant.

India has targeted 175 GW renewable energy generation by 2022. Solar energy investment in MP would give a boost in it.

2. C. O-blood group holders are known as universal donars because 'O' Blood group don't have antigen. & has antibody of A & B both.

i.e.

Blood contain → Antigen
Blood contain → Antibody.

Blood group	Antigen	Antibody.
A	A	Anti B
B	B	Anti A
AB	AB	nil
O	-	Anti A, Anti B.

Therefore, 'O' has anti A & anti B which can be donate to other groups.

2. D. Fields in which nanotechnology applied.

Nanotechnology deals with with development of devices & material structure in physical size from 1 to 100 nanometers.

Applications

① Agriculture → Irrigation → Effective penetration of water.
→ Drone
→ Monitoring.

② Health → Analytical tool, ex. microscopes.
→ Physical therapy applications ex. endoscopy.
→ Use of optical fibres to see inside the organs.

③ Transport → lighter, smarter, efficient automobiles.

→ Stronger & economic structure like bridge, road etc.

→ Traffic management.

④ Sport → Reduced friction

→ Increase Hardness

→ Decrease weight of equipments.

Nano technology is emerging technology and has vibrant future. Our Institution should give a wholistic course & invest in R&D.

2. E. Ans Ozone layer protect earth from UV rays.

Reasons for depletion.

① Increased use of refrigerators

∵ they release CO.

∵ $2CO + O_2 \rightarrow 2CO_2 + O^-$ (nascent oxygen)

$O_3 + O^- \rightarrow 2O_2$

② Global warming :- Ozone is depleting around polar region.

∵ Global warming cause melting glaciers

$\Rightarrow$ O_3 affected.

③ Polluting: Overall pollution also add up to it's depletion.

By considering its importance Montreal protocol was signed and now ozone layer is recovering.

1. F. Bio Signature

1. G

Geogeaplical Iyformabiay system (GIS) is a system designed to capture, analyze, store all types of geogeaplical data. by using technology. in space.

Cxample: - Iyformabiay from maps.
- Global positioning System (GPS).

ISRO has launced many stallites to impaove GIS.

USE → Agiculture → Mapping.
→ Net sworn area
→ weather forecast.
→ Defence → Monitoring.
→ Guiding.
→ Spatial planning, Healths, transport etc.

Its an emerging technology. which may change & enhance life.

2 H.

e-waste; Electronic waste such as old mobilephones, computes, radio etc.

e-waste contain rare earth mental. therepore disposal is vital, because may cause toxic & severe health problem.

Step taken by India.

- Separate bin.
- Home to home collection.
- Recycle & reuse.
- Repair

By 2050, we will produce highest e-waste, we need to develop a proper system to tackle e-waste.

2. I. Given,

Total student pass in Maths (M) = 47%.

Student pass in Science(S) = 42%.

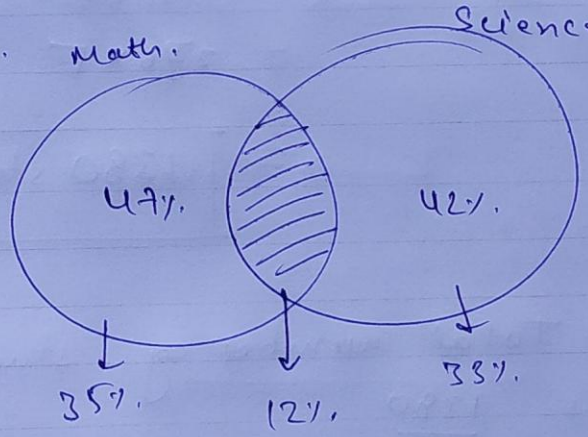
Student pass in Both sub. = 12%.

Total failed student = 276.

To find,

Total number of student ?

Solution.



Therefore, student passed only in maths

$\Rightarrow$ 47% - 12% = 35%.

student passed only in science

$\Rightarrow$ 45% - 12% = 33%.

Total passed student = 35% + 12% + 33%
= 80%

⇒ Total passe failed student = 100 − 80
= 20%

∴ 20% = 276 student

Now, 100% = $\frac{100 \times 276}{20}$

= 276 × 5

= 1380 students.

Rough

276
× 5
1380 3

Ans. Total number of student in class is 1380

2 J. **IRNSS**

Indian Regional Navigation satellite System.

ISRO programme launched in 2013.

Under this programme a series of satellite will launched to set an effective & indigenous navigation system. called NAVIC.

Benefites
- Decrease dependence.
- Increase efficiency.
- Proper monitoring.
- Exact weather forecasting.
- Natural clamity warning.

This system of satellite is a land mark achievement of ISRO.

3 A. As per UNFCCC "Climate Change" means a change of climate which attributed directly or indirectly to human activity.

Concern: According to IPCC, Global temperature may rise by 1.5°C between 2030 to 2050

Causes → Natural Causes
→ Anthropogenic causes.

① Natural Causse

1.1. Change in the var earth's orbit.

1.2. Pollution due to Volcanic Activitees.

1.3. Plate Tectonics.

1.4. Change in the pattern of Ocean currents.

(2) Anthropogenic causes.

2.1 Excessive emission of Green house gases.

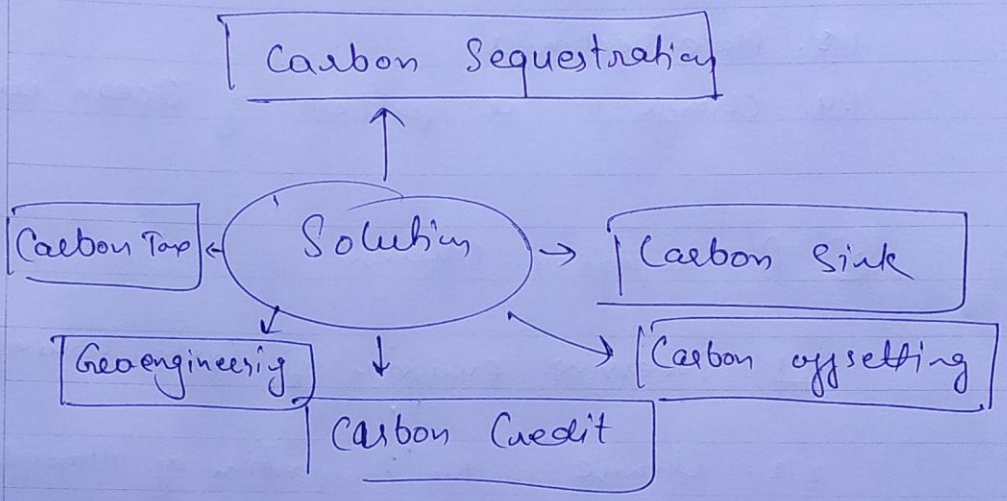
2.2. Change in the composition of Atmospheric aerosols

2.3. Deforestation.

2.4. Excessive exploitation of natural resources

2.5. Policy priority to industrial growth.

2.6. Excessive emission of CO_2.



Extreme weather condition are evidence to its concern, Example, Bihar faced heat waves, in June & flood in August. Chennai faced water crisis. It's quite an alarm.

Q. 8. Technological institutions dedicated towards promoting science & technology in India.

(1) IITs: Indian Institutes of Technology Premier Institution provide quality technology education.

(2) NITs: National Institutes of Technology. also provide technological education. every state has one Institute.

(3) IISc: Indian Institute of Science. promote scientific research by providing education. located in Bangalore.

(4) ICAR: Indian counsil of Agricultural research.
Head Quater → Delhi.
Promote agricultural research.

(5) ISRO : Indian space research Organisation
established in 1969.
Head Quater in Bangalore.

World's one of the leading
organisation in space research.

(6) DRDO : Defence research & development
organisation

established in 1958.

→ Promote, research & Development
in Defence field.

Milestones → Agni missile, Nag,
Akash, Drones etc.

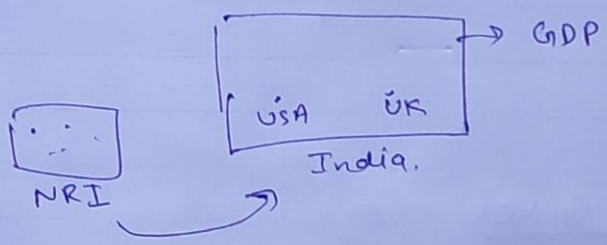
India is doing good in science
& technology but we need to speed up
to match global standard.

Name- Neeraj Mandloi Date - 19/11/2020

Paper III - Part B. (economics)

1. A GNP - Gross National Product.

→ Total amount production's price by national company within territory as well as out side the territory.



GNP = GDP - Foreign Company + National company.

1. B. Footloose Industries.

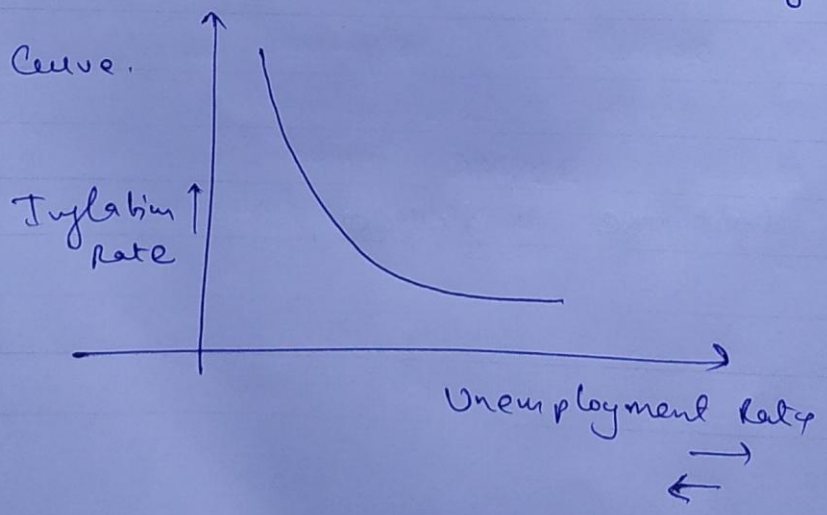
1 C. **Trade Balance** → Balance in Trade of two country.

i.e. Minimum gap of export to a country & import from the country.

⇒ win-win situation.

1. D. **Philips Curve.**

Unemployment $\propto \frac{1}{\text{Rate of Inflation}}$



1. E. Hundi

1. F. Free trade zone

Geographical region where trade taxes are forbidden or low.

Recently RCEP propose free trade zone.

India refuse that proposal.

1. g. Bulls → Share market is going up
i.e. share purchasing is costly.

Bears → Share market is going down.
i.e. value of shares decreased.

1. H. Buffer Stock: → Stock for an emergency.

→ Usely stock creation for controlling price in the market.

→ Regulations are imposed on Buffer stock to maintain supply.

1. I Floating Currency.

→ Currency which depend on market for it's value.

Example: US Dollar., Rupee.

Indian rupee, earlier it was regulated currency completely before 1991.

1. J. **Monetary Policy** → Policy which states lending rates of the Banks.

- → RBI govern monetary Policy.
- → 4 times in an year.
- → Repo rate, reverse repo, bank rate etc.

1. K. Gender Budgeting.

1 L. **Anti-Dumping Duty.**

Countries use to give subsity to lowering their products price and dump into another country, to manage in receiving country apply Anti-Dumping Duty.

1 M. India Vision 2020

- Document by Dr. A.P.J. Abdul Kalam. published in 1998.
- Vision to become self-reliant by 2020 in the field of science & technology.
- Did not ~~ap~~ achieved it completely. so far.

1 N. Disguised Unemployment.

Unemployment where an individual is indulged in such employment where there is not need of him.

i.e. without him that work can be done.

Example: In rural area many people doing farming in a small area.

10. Role of SEBI

- Protecting interests of investors in securities.
- Regulating securities market.
- Regulate the business in stock exchange
- Registering working of stock brokers.

2. A. The unemployment of India is 6.1% before corona period. i.e. it is even waist after it.

If we exclude corona period, Indian GDP was growing rapidly since 2003 but the employment rate is decreasing or remain steady.

Reasons → **Increasing population.**
every year 17 million people comes under employment age.

Structure problem secondary sector is not developed properly after 1991 reforms.

FDI because of FDI., our GDP is showing geo. such great growth.

Skills students do not match work skills.

Growth in tertiary sector only.

tertiary sector i.e. service sector doing exclusively great. but which is also saturated.

The biggest problem of India is now unemployment. India need to focus on job generation & entrepreneurship.

2. B. MP is the central geographical region of country, showing low industrialization because.

① **location.** far from coast line.

② **Forest** 70% of dense forest and around 30% of land under forest reserve.

③ **lack of will** regulatory policy in MP.

④ **lack of work force** lack of skilled work force.

But the scenario is changing MP doing work towards it by creating logistic hubs, simple & ease policy, promote investment etc.

2. C. Difference between industries & cottage industry.

Industry	Cottage industry.
• large scale production.	• small scale production.
• High investment	• Relatively low investment.
• Machinary intensive.	• labour intensive.
• Required large area	• require small area.
• Urban based	• Rural based.

Cottage industry comes unde MSME Article 42 of our constitution provide & states to the goverenment, to promote this establishment.

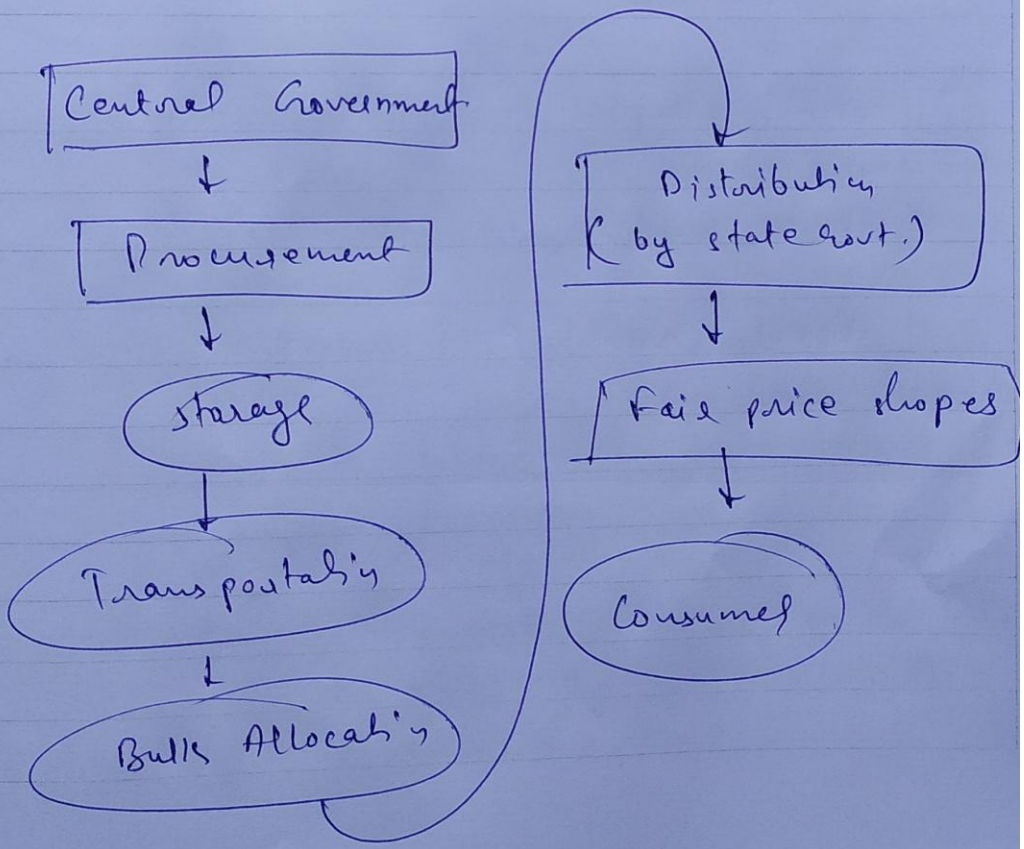
2. D. Features of NEW trade policy declared in 1991.

2. E Targeted Public distribution system. (PDS)

PDS is food security system established under the ministry of consumer affairs, food & Public distribution

PDS provide food grains at affordable prices.

Funding, Functioning of PDS.



PDS is one of the biggest welfare programme of government helping farmers sell their produces at remunerative prices. But it is corruption prone.

Economic survey 2016-17, states strengthening existing TPDS by training & capacity building.

2 A. According to HDI India's Rank 140. one of measure ~~reason~~ reason for this is low income.

Reasons for low income.

(1) Poverty due to unemployment. 33%. polution is poor.

(2) Population is increasing but resources are limited.

(3) Regional imbalance & migration. only few cities are developed Therefore, Non-proportional development.

(4) Historic reason. → loot & exploitive policy of colonial rule. which broke the back bone of Indian economy.

India is expected to grow by 8% GDP in 2021. but to fulfil the requirement India need structural changes.

2. (b) World Development Report.

2. H.

Liberalisation.

Removing the restrictions & open various sectors of the economy, is known as liberalisation.

Example. Abolish liscense Raj etc.

Privatisation

Giving up the control on resources for of government to private players is known as Privatisation.

Example: PSU share selling etc.

Globalisation

opening up economy for world market by attaining international competition.

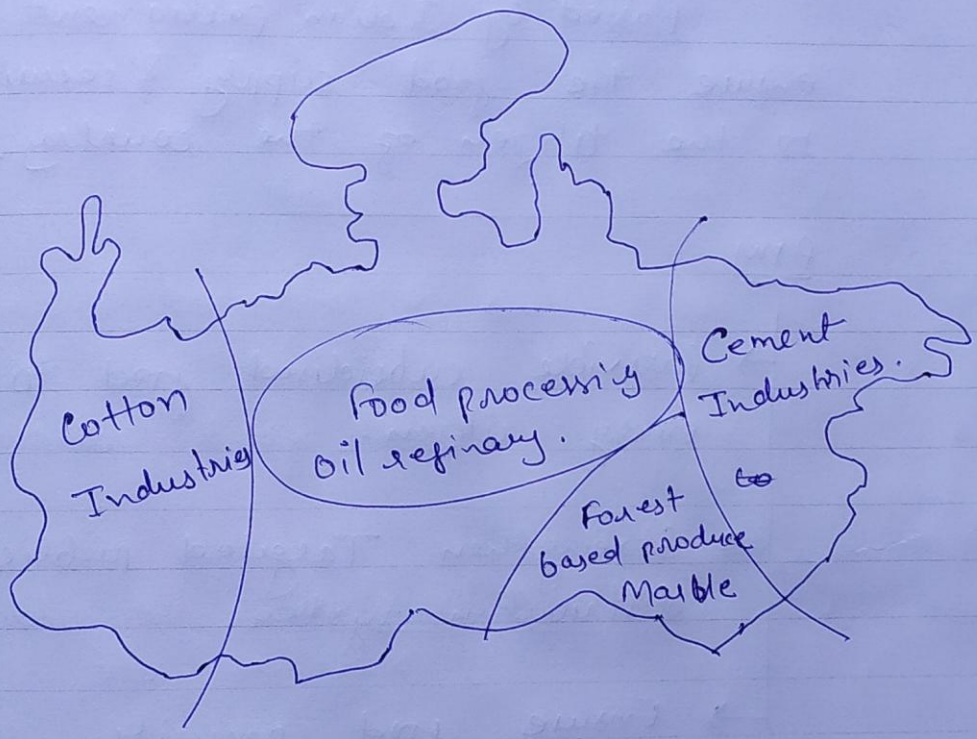
Example: FDI, foreign investment.

Yes, they are interrelated.

Liberalisation leads privatisation & globalisation.

India adopted these regime in 1991.

2 I. Major industries in MP.



MP carries major potential in industrial field but it is not moving with its pace.

2. J Food security Act 2013.

Passed by Indian parliament to ensure the food supply & security to the citizen of the country.

Aim

- Provide subsidised food to every citizen.
- Strengthen Targeted public distribution system.
- Ensure food security.
- Decrease malnutrition among children.
- Purchase adequate amount of grain from farmers.

It is two way benefited act one is farmer another on is consumer.

3. A. Almost 48% of Indian population is associated with agriculture.

Features of Indian Agriculture.

(1) Subsistence agriculture - rain fed agriculture.

(2) Mixed agriculture (agro + livestock / fishery / poultry).

(3) Non-mechanized : Majorly labour intense.

(4) Low-per person productivity.
∵ marginal farmer
i.e. size of land is small.

(5) Division of land throughout generations
⇒ land fragmentation

(6) Food crop cultivation dominant less vegetable & fruit production.

(7) Low agro investment

(8) Poor forward & backward linkage

(9) Under developed food processing industry.

(10) Poor infrastructure, i.e. cold storage, irrigation etc.

Indian government targeted to doubling the income of farmer by 2022. In order to achieve it agricultural sector need rapid reforms.

8 B. Unemployment rate of rural area in India is 5.8%. which is less then urban unemployment rate but the quality employment is an issue.

Suggestions

(1) Cottage Industries development.

(2) Rural credit.

(3) Womenisation of Agriculture.

(4) Compulsory local recruitment for a company.

(5) Improve infrastructure in rural area.

(6) Decrease migration.

⑦ ~~MIGRATE~~ Job security.

⑧ Vocal for local.

Rural India has great potential and preserve many precious heritage we need to groom that talent.

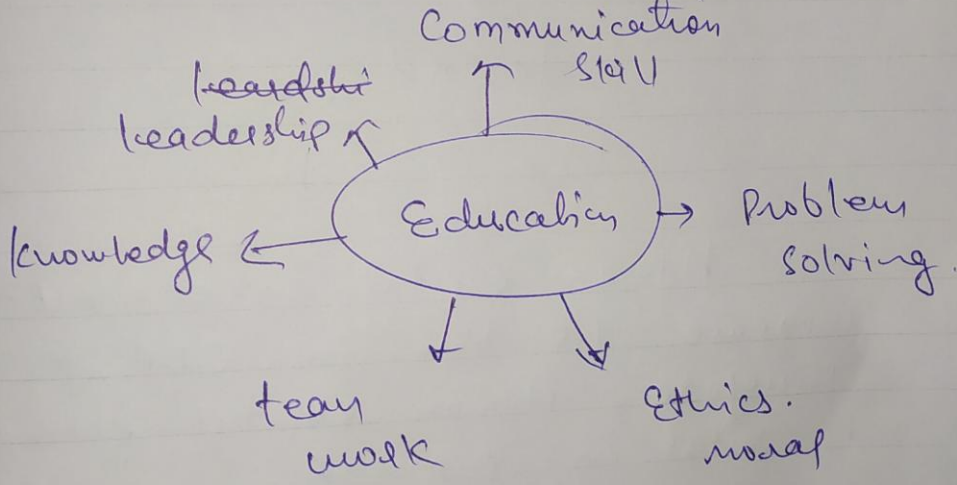
3. c.

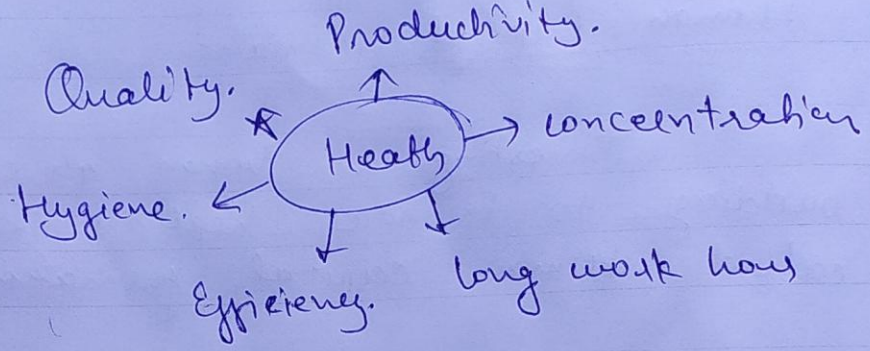
Human Capital formation.

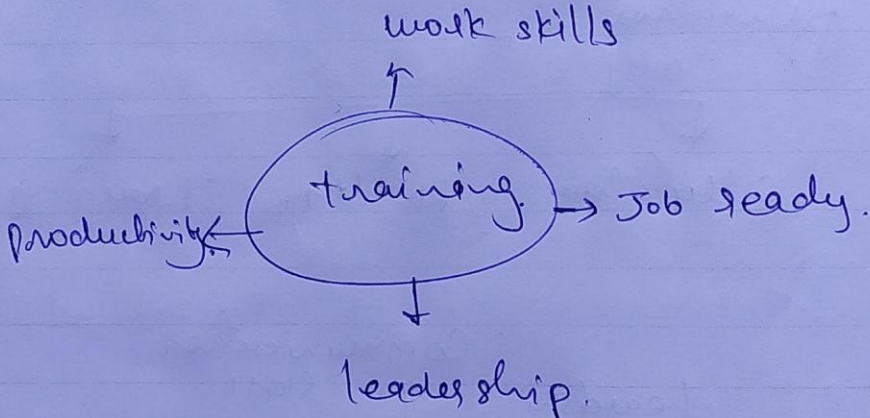
Investing in human ~~of~~ capacity building to improve health & skills. called human capital formation.

Method of human capital formation

- Education
- Health.
- Training.







Human capital investment increase 1.5 time in GDP, a Therefore Human capital formation is vital in economy.