

1A

Founded on 22 September 1974
 Headquarter at New Delhi, Seven zonal offices, 5 labs
 It is statutory organisation under water Act, 1974
 It comes under ministry of Environment, Forest and
 Climate change.
 Current chairman is Shri Rav Sankar Prasad.

1B

Environmentalist, founded Dasholi Gram Swarajya
 Sangh (DGSS) in Gopeshwar in 1964, later become
 mother organisation of Chipko movement in Uttarakhand.
 • Got Raman Magsaysay Award in 1982 and Biju Patil
 Gandhi Award for National Integration for 2017 and 2018,
 His published work includes Pratikar ke Aankur, Future of
 large project in Himalaya, Chipko experience.

1C

Mitra crater named after physicist Sirir Kumar Mitra,
~~by ISRO~~. Located on ^{northern} surface of moon. Picture captured
 by Chandrayaan-2 orbiter (Indian Mission of ISRO).
 Naming done by IAU (International Astronomical Union).
 • Created by volcanism and cratering

1D

It is the vulnerability which allows sophisticated malware
 attack on all version of Android operating system used in
 mobiles.

- The Bug is naming by Norwegian firm, Proton, in ^{Dec} 2019
- Vulnerability can be exploited without root access in Android
 system.

1E

Launched by Union Minister for Communication and
 Information Technology, Ravi Shankar Prasad on 17 Dec 2019
 Aimed to provide internet connectivity to all villages by 2022
 • It involves laydown 30 lakh kilometre optical fibre network,
 and require 7 lakh crore investment in next 3 to 4 years.

F

It is high speed travel technology in which passenger
 capsules or pods travel through tube, either above or
 below ground.

The air friction in tube is reduced by pumps,

- It is first built between Pune and Mumbai in Maharashtra and second between Vijayawada and Amravati.
- It can achieve speed upto 1000km/hour.
- It is dubbed as 5th mode of transportation.

- IG Released by Ministry of Rural Development
 Developed by National Remote Sensing Centre (NRSC), ^{Hyderabad} Department of Space and Department of Land Resource of Ministry of Rural Development.
- It is first released in 2014
 - It shows ^{map of} barren and uncultivating land of India.

- IH Chemical compound containing benzene ring are known as benzenoids and those not containing benzene ring are known as non-benzenoids.
- Characteristics are Planarity, complete delocalisation of π electron in ring, follows Huckel rule $(4n+2)$ π electrons present in ring
- example - benzene (C_6H_6), Arenes

- II. It is plant hormone. growth inhibiting
- work in many plant development process (seed and bud dormancy control of organ size)
 - It is produced in roots and terminal buds at top of plant.
 - It is also known as stress hormone

- IJ It is a increase or decrease in frequency of sound, light or other waves because of source and observer moves towards or away from each other.

Applications - Sirens, RADAR, Medical Imaging, Astronomy,

$$\text{Formula } f = \left(\frac{c \pm v_r}{c \pm v_s} \right) f_0$$

f_0 is emitted frequency
 c is speed of wave
 v_s velocity of source
 v_r velocity of receiver

- IK Also known as Tear Gland of eye
- It secretes saline, watery fluid that contain enzyme called as lysozyme, which moisten surface of eyeballs.
 - It is modified sweat gland

1L Known as powerhouse of cell.

- It is set of organelles that helps in digestive system of cell.
- They have their own ribosomes and DNA structure.
- It also involved in controlling concentration of Ca^{2+} (calcium) ion within cell.

1M based on Thermonuclear fusion reaction.

- Releases energy by fusing (combining) together light nuclei like tritium or deuterium.
- Sun and stars act as Hydrogen Bomb
- It is much more power atomic weapon than atomic Bomb
- It is never been used till date by any countries

1N It is specific genetic sequence inserted by scientists into plant seed's DNA that renders seed and the crop it produces sterile.

- It is patented by USDA and Delta and Pine land co. (now owned by Monsanto company of USA).
- This Technology no economic or agricultural benefits to farmer or consumer.

1O It is a phenomenon of electrical conductivity with zero resistance. The conductor which possess superconductivity are known as superconductors at below zero degree temperatures.

II SC bangalore confirms superconductivity at room temperature

Applications: MRI Machines, power utilities, electronics

2A Acids - The word 'Acid' derived from Latin word, which means "sour".

- It is chemical compound found naturally in plants or derived from minerals.

Bases :- The chemical compound which are bitter in taste and soapy in touch. Also known as Alkali (base in aqueous solution)

Acids	Bases
• Taste sour	• Taste bitter
• Turn Blue litmus paper Red	• Turn Red litmus paper Blue

- Acids
- classified into mild (weak) acids and strong acids
- example Tartaric acid, Sulphuric acid (H_2SO_4)

- Presence of H^+ ion
- have PH value less than 7

• Acid + Base \rightarrow Salt + water

Base

- classified as weak bases and strong bases

• example: Sodium Hydroxide ($NaOH$)

Presence of OH^- ion.

- PH value more than 7

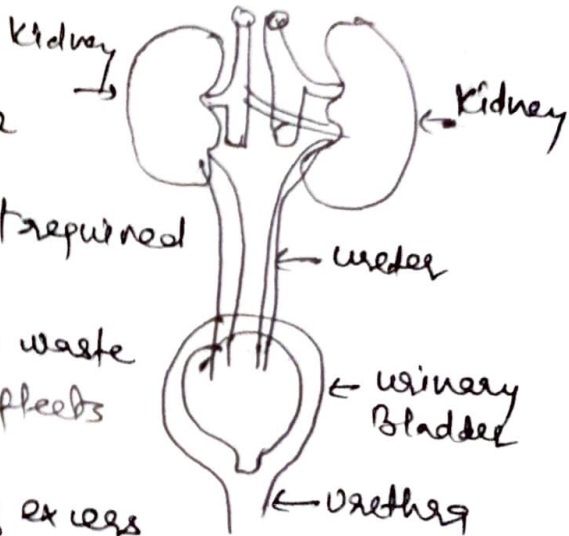
2B

There are Two kidneys in Human body.

- kidney are bean shaped organ.
- located at upper and back side of abdomen, protected by lower ribs.
- weight = 150-170 grams.

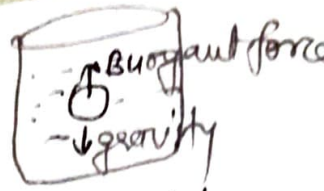
Functions:

- Primary Function - To make urine and purify blood.
- It removes waste materials, not required by body.
- Creatinine and urea are two waste products, measured by blood test reflects function of kidney.
- Secondary Function - Removal of excess fluid and regulate fluid balance of body.
- It regulates minerals and chemicals in composition of fluid.
- Control of Blood Pressure by regulating salt and water and disturbances in hormones production.
- To maintain healthy bones by converting vitamin D into its active form.



2C

It stated that " The upward buoyant force that is exerted on body immersed in a fluid, whether partially or fully submerged, is equal to the weight of fluid that the body displaces and acts in the upward direction at centre of mass of displaced fluid.



• Archimedes is scientist of Greece

• Buoyant force $F_b = \rho \times g \times V$

ρ is density of fluid, g is acceleration due to gravity

V is submerged volume

• The Apparent loss of weight is equal to weight of object in air - Buoyant (Thrust) force

Applications - submarine, Hot-air Balloon, Hydrometer

20

Given: Time = 2 years; rate = 4% p.a.

$C.I - S.I = 4$ for 2 years

~~$P \left(1 + \frac{4}{100}\right)^2 - \frac{P \times 8}{100} = 4$~~

~~$P \left(\frac{104}{100}\right) \left(\frac{104}{100}\right) - \frac{8P}{100} = 4$~~

~~$P \left(\frac{1352}{100} - 1\right) = 50$~~ ~~$\left(\frac{1352}{100} - 1\right) P = 50$~~

~~$1828 \frac{8 \times P \times 50 \times 100}{100 \times 82}$~~ ~~$\frac{1252}{100} P = 50$~~

~~$P = \frac{50 \times 100 \times 82}{1252 - 626}$~~ ~~$P = \frac{1250}{313}$~~

Ans $P = 8.9$ Rupee

20

$C.I - S.I = 4$ $r = 4\%$ p.a. $T = 2$ year

$P \left(\frac{P}{100}\right)^2 = 4$

$P \left(\frac{4}{100}\right)^2 = 4$

$P = \frac{2 \times 2}{50 \times 50} = 4$ $P = 2500$ Rupee Answer

2E

Average of 11 innings ^{is} ~~are~~ x

Let total Run in 11 innings are $T = 11x$

new average is $x+2$

new total runs are $11x+63$

$$\text{So, } \frac{11x+63}{12} = (x+2)$$

$$12x+24 = 11x+63$$

$$x = 39$$

new average after 12 innings is $x+2 = 39+2 = \underline{41 \text{ Avg}}$

2F

It is human space flight programme under which Indian astronauts (three members) will go into space by 2022

- It is ~~total~~ Indigenously done by ISRO (Indian Space Research Organisation) with cooperation of France and Russia.
- GSLV MK III launch vehicle is used to lift them to their orbit (LEO - low earth orbit)
- After successful, India become 4th nation (USSR/Russia, USA, China)
- Mission cost is ₹ 10,000 crore

- Challenges -
- To develop ability to bring spacecraft back to earth after flight.
 - To build spacecrafts for Astronauts to live in space.
 - Crew escape system in case of faulty launch.
 - ECLSS (Environmental Control and Life support system) for earth-like conditions for astronauts in space.
- These developments helps ISRO in perfecting to send heavier payloads and will reduce India's dependency on other countries.

2G

Carbon credit is generic term for any tradable certificate or permit representing the right to emit one tonne of Carbon dioxide or mass of other green house gas (GHG) equivalent to one tonne of carbon.

Aim: The goal is to allow market mechanism to drive industrial and commercial process in the direction of low emission or less carbon intensive approaches.

- It is GHG mitigation project or carbon reduction scheme
- It is adopted under Kyoto protocol in 1997 at Kyoto, Japan, part of Clean Development Mechanism (CDM)
- Price of carbon credit is set by principle of demand and supply.

1992
(Earth Summit)

- India is Non-Annex 1 country under UNFCCC
 - India invested hundreds of millions to earn carbon credit by adopting low-carbon intensive technologies, switching to renewable energy and protecting forests.
- Buhat COP 25 held at Madrid, Spain in 2019, ~~have~~ world is not agreed on rules for future of carbon trading.

2H

A Patent is an exclusive ^{Statutory} right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offer a new technical solution to a problem.

- To get a patent, technical information about invention must be disclosed to public in a patent Application.
- Protection offered under Patent - In principle, patent owner has exclusive right to prevent or stop others from commercially exploiting the patented invention.
- Patents are territorial Rights.
- The Protection is granted for a limited period, generally 20 years from filing date of Application.

- WIPO (World Intellectual Property Organisation), Geneva, Switzerland registers, monitor and regulate Patent rules in world.
- India have Patents Act, 1970 empowers central government to make rules and regulating patent administration.
- Patent act 1970 amended in 2005.

21 Radioactive wastes are generated during various operations of nuclear Fuel cycle.

- Mining, nuclear power generation and various process in industry, defence, medicine and scientific research produces byproducts that include radioactive waste.
- It can be in gas, liquid or solid form, and its level of radioactivity can be vary.

• Depends on level and nature of radioactivity, it can be classified as → exempt waste

Low & Intermediate level waste (Half life Time < 30 years)
High level waste (Half life Time > 30 years)

Radioactive waste management:

• Solid wastes are stored / disposed of in multi-barrier ~~point~~ engineered structures such as stone lined trenches, reinforced concrete trenches.

• Base-wells were digged near waste disposal structures which are monitored by Environmental Survey laboratories (ESL) of BARC as per IAEA guidelines.

• Segregation - separated into their isotopes

Treatment (to reduce volume)

[Solid waste Liquid waste]	—	Combustible
		non-compactible

Treatment of solid waste includes shredding (reduces void space) and crushing (size reduction), cutting, incineration (waste is combusted at 900-1100°C, used for reduction of volume of solid and liquid waste)

• Treatment of liquid waste — Ion exchange / sorption -

Natural	Synthetic
---------	-----------

② Chemical Precipitation -

③ ...

- Atomic energy Regulatory Board issues authorization for disposal of radioactive waste under Atomic Energy (Safe Disposal of Radioactive Waste) Act, 1987.

204 Ocean energy classified as wave energy, Tidal energy, current energy, Ocean Thermal energy.

- Ocean energy is renewable energy source.
- Gulf of Cambay and Gulf of Kachch on west coast of India have potential of Tidal energy.

(1) Tidal energy Technology -

(a) Tidal Passage - Energy can be extracted from tides by creating a reservoir or basin behind a barrage and then passing tidal water through turbines in barrage to generate electricity, condition of mean tidal differences greater than 4 meters.

(2) Wave Power Technology -

- (i) Float or Buoy system - that uses rise and fall of ocean swells to drive hydraulic pumps, subsequently to run an electrical generator to produce electricity.
- (ii) Oscillating water column devices - in which the in-and-out motion of waves at shore enters a column and forces air to turn turbine, generate electricity.
- (iii) Tapered channel - generate electricity using standard hydropower technologies.

(3) Ocean Thermal energy (sun's heat) -

OTEC (Ocean Thermal Energy Conversion) - it uses ocean's natural thermal gradient, temperature between warm surface water and cold deep water differ more than 20°C (36°F). OTEC system can produce power.

2K

In 2019, India was ranked as 4th most attractive renewable energy market in world.

- Country set ambitious target of 175 GW of renewable power by 2022
 - 100 GW solar power
 - 60 GW wind power
 - 10 GW Biomass power
 - 5 GW Small Hydro power.

- 1000+ GW Renewable energy potential in India.
- 81 GW - installed renewable energy capacity of India (Aug, 2019)
- 22% share in total installed capacity of India
- 5th largest installed capacity of renewable energy in world
- 4th largest installed capacity of wind power in world
- 5th largest installed capacity of solar power in world
- 81 GW (installed capacity) includes -
 - 46% share (36 GW) of wind power
 - 36% share (30 GW) of solar power
 - 12% share (9 GW) of ~~small hydro~~ Biomass power
 - 6% share (5 GW) of small hydro power
- largest solar Park of 2000 MW in Pavagada (Gujarat) is under installation
- Under "Development of solar city programme" - 60 solar cities included.
- ~~Ocean~~ Tidal energy potential in India is 12455 MW identified and total theoretical potential is 40 GW.
- OTEC Theoretical potential is 180 GW
- 132 GW installed capacity of renewable energy till March 2020
- Around 250 MW waste to energy plant installed in country and have potential of 5.6 GW in India.

2L

IRNSS is an Independent regional navigation system being developed in India.

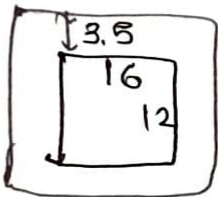
- It provide accurate position information service to users in India as well as regions extending upto 1500 km from its boundary, which is the primary service area.

- IRNSS provide two types of services - (1) SPS - standard Positioning services - provided to all users
- (2) RS - Restricted services :- encrypted services provided to only to authorized users.

• Accuracy : 20 m in primary service area.
 Application : Terrestrial, Aerial and Marine Navigation
 • Disaster Management - vehicle tracking, Fleet management

NAVIC is Indian IRNSS constellation of 7 satellites -
 3 in geostationary orbit and 4 in geosynchronous orbit.
 NavIC - Navigation in Indian constellation, certified by
 3GPP, a global body for coordinating mobile telephony standards.
 • It replace US's GPS system

$16 \times 12 \times 35$ = dimension of room



stone size/dimension = 70×50 cm

$$\begin{aligned} \text{Area of porch} &= (19.5 \times 15.5) - (16 \times 12) \\ &= 302.25 - 192 \\ &= 110.25 \text{ m}^2 \end{aligned}$$

$$\text{Area of stone size} = 3500 \text{ cm}^2 = 0.35 \text{ m}^2$$

$$\text{no. of stone} = \frac{110.25}{0.35} = \frac{11025}{35} = 515 \text{ Ans}$$

- MP state environment policy, 1999
- Climate change initiatives of M.P. - First state to prepare state Action Plan on climate change (SAPCC)
- M.P. Vision Document 2030; Goal 13: Climate Actions.
- Climate smart villages in Satna, Sehore and Rajgarh District under NAFCC
- Traditional water supply sources conservation (wells and Bawdies) of Indore and Buxarpur
- Forest conservation - forest fire alert messaging system, Forest planning and geomapping system,
- Forest dwellers survey system - under ST & Other Pradhikaran Forest dwellers (Recognition of forest rights) Act, 2006

- Effective implementation of Environmental Protection Act, 1986 through management of protected areas (Nashanore Park, 31 Wildlife Sanctuary) for wildlife and biodiversity conservation
- MP forest cover is 31.92% of total area of M.P.
- Promoting Eco-Development system for villages inside protected areas. (6 Tiger Reserves)
- 3 Biosphere Reserves (Panchmar, Panna, Amarkantak)
- Afforestation work through Lok Vaniki Programmes, Joint Forest Management.
- Densification of existing forests through enrichment plantation, generation of higher biomass.
- Treatment of catchment areas of rivers and area sensitive to soil erosion (5 crore plants along Narmada in 2016 on 2 July)
- Non-Timber Forest Products (NTFP) procurement through MP state forest Produce Federation
- Urban Forestry scheme - (MPSBB) 500
- MP state Biodiversity Board monitor through Biodiversity Management Committee (BMC) under Biodiversity Act, 2002
- MPSBB constituted on 11 April, 2005
- MP state Biological Diversity rules 2004 notified on 17 Dec, 2004
- BMC -: local self government constitutes BMC for sustainable use of bio-resources, Functionaries of MPSBB at local level
- EPCC (Environment Planning & Coordination Organisation) established in 1981.
- Operation MP Bio 2017) - Penalty on Industries on non-compliance with Biodiversity Act 2002 and MP Biodiversity Rules, 2004.
- Greening of Young Minds by MPSBB on FM Radio 98.3
- Mowgli Bal Utsav - at four places (Kanha Kisli, Madhav, Satpura, Bandhavgarh National Park)
- State level Biodiversity Award - on 22 May (International Biodiversity Day)
- MPSBB organises "Beez Bachao - Krishi Bachao" Yatra to conserve and promote Traditional farm seeds and practices.
- People's Biodiversity Register
- Ecological studies "Vulture Atlas" in MP - total 7028 vultures
- Macrophytes Bioj wetland, Bhopal

- Asiatic Lion reintroduction project at Kuno - palpur Sanctuary, now national park in Oct, 2019.
- In-situ biodiversity conservation - establishment of Wildlife Health Monitoring disease diagnostic and research cell, (Jabalpur) and Anti-poaching squads.
- GI tag of 'Kadaknethi' breed of chicken, native to Jabalpur district.
- 12 agro-climatic zone, 6 crop zone, 28 soil types.
- GOI's endemic centre at Panchwair
- Tiger state recognition to M.P.
- MP PCB monitor air, water, ^{noise} qualities & noise pollution control
- Ground water quality monitor by CGWB at 805 hydrograph station located all over M.P.
- Van Suraksha samiti pactures with panchayats check illegal mining in forest areas.
- Adoption of Swachh Bharat Mission, Smart cities (7 cities in MP), use of renewable energy source (wind mills at Dewas and largest solar park in Rewa) are initiative to conserve environment.

3C Central Government taken steps to spread awareness about cyber crime, issue of alerts / advisories, capacity building / training of law enforcement personnel / prosecutors / judicial officers, improving cyber forensic facilities etc, to prevent such crimes and to speed up investigations.

- GOI launched online cybercrime reporting portal www.cybercrime.gov.in
 - Scheme of establishment of IAC (Indian cyber Crime coordination centre)
 - NCIIPC (National critical Information Infrastructure Protection centre) for protection of critical information in country)
 - CERT-In - India's ^{Computer} ~~Central~~ emergency Response Team
 - Cyber Swachhata Kendra (Botnet cleaning and Malware Analysis centre); provides detection of malicious programme and free tools to remove such program, launched in 2017
 - Issue of guidelines for chief Information security officer
 - Provision of audit of government websites and applications
 - Formulation of Crisis management plan
 - Conducting cyber security mock drills and exercises
 - enactment of Information Technology Act, 2008 and National cyber policy, 2013
 - cyber Surakshit Bharat Initiative - launched in 2018.
 - ISEA (Information Security Education and Awareness) project - Training programme
 - International Cooperation with USA, Singapore, Japan etc.
 - CERT-In functions as nodal agency for coordination of all cyber security efforts, emergency responses and crisis management.
 - National cyber security, 2013 provides a secure e-governance ecosystem by implementing global best practices, and wider use of public key infrastructure.
- way forward
- Indian cyber security faces varied challenges like

Increased use of mobile technology, IoT (Internet of things), poor security infrastructure, wannacry like cyber attack, lack of cybersecurity specialist, increased use of cyberspace by terrorists. To tackle with these new emerging issues, government should make use of Artificial Intelligence for predicting attacks. Periodical 'Backup of data' against ransom waves, Real time intelligence, boosting digital literacy etc.

3D
Endocrine glands are those glands which secrete their product directly onto a surface rather than via a duct.

- Its secretions are directly discharged into blood.
- Its secretion is known as Hormones.
- They also known as Ductless glands.
- Hormones are chemical messenger, also called as autocrine.
- Hormones are easily digestible and soluble.
- The endocrine and nervous system collectively known as neuro-endocrine systems.

• Order of Endocrine glands situating from top to bottom in human body are

- (i) Pineal Gland
- (ii) Pituitary Gland
- (iii) Thyroid Gland
- (iv) Thymus Gland
- (v) Adrenal Gland
- (vi) Pancreas Gland
- (vii) Ovary
- (viii) Testis

• Endocrinology is study of endocrine system

① Pineal gland - located in brain (known as third eye).
secretes Hormone - Melatonin

Function - Regulates development of gonads and slows menstrual cycle in female.

(ii) Pituitary gland - known as Master gland because of regulating secretion of other endocrine glands.

- Pituitary gland itself is in control of hypothalamus.
- ~~It is located~~ Hormones secreted are ① S.T.H (Somatotropin) or growth hormone (GH) - disorder of its secretion causes

Dwarfism, Gigantism

② T.S.H (Thyroid stimulating Hormone) - induces thyroid gland,

③ Prolactin - control secretion of Milk, referred as hormone of maternity.

④ ADH (Antidiuretic Hormone) or vasopressin -

Function - increases blood pressure
its deficiency causes diabetes insipidus

⑤ Oxytocin - induces lactation and helps in parturition

(iii) Thyroid gland - largest endocrine gland

① Thyroxine hormone - increases BMR of body

• control growth of body
deficiency causes Goitre, cretinism

② Calcitonin hormone - Retard bone dissolution and stimulates excretion of calcium in urine.

(iv) Parathyroid gland - secretes Parathormone hormone - increases calcium concentration in blood and reduces phosphorus in blood.

Hypersecretion causes osteoporosis

(v) Thymus Gland - secretes Thymosin hormone controls growth and maturity

(vi) Adrenal gland -

Sex Hormones - Oestrogen in female and Androgen in male.

• controls growth of sex organs and secondary sexual characters.

(vii) Pancreas - mixed gland (both exocrine and endocrine gland). Hormones secreted are ① Insulin - decreases blood glucose level ~~and~~

- It promotes fat synthesis
- (2) Glucagon - increases blood sugar level
- (viii) Ovary - secretes estrogen and progesterone hormones
 - ↳ Estrogen stimulates growth of female secondary sexual characters.
 - ↳ Progesterone controls pregnancy.
- (ix) Testis secretes testosterone hormones which stimulates growth and function of sex organs and develops secondary sexual characters.
- (x) Intestinal Mucosa - secretes secretin hormone which stimulates pancreas and stimulates gastric glands to secrete pepsin.

Part - B

A Full employment is an economic situation in which all available labor resources are being used in most efficient way possible. It is ideal and probably unachievable benchmark and where unemployment is zero.

B ~~Providing~~ Provision of Urban Amenities to Rural Areas (PURA) is project, announced in 2003, succeeded by SPMRM (Shyama Prasad Mukherjee Rural Mission) ^{scheme} launched in 21 February, 2016.

- Aimed to deliver integrated project based infrastructure in rural areas such as ~~urban~~ livelihood opportunities so migration from rural to urban can be reduced, and bridging rural-urban divide.

C The Imperial bank of India, became State Bank of India, later came into existence on 27 January, 1921. on 1 July, 1955, as per SBI Act, 1955, State Bank of India constituted. It is largest Public sector Bank of India.

- HQ in Mumbai, Maharashtra.
- Current chairman is Rajnish Kumar

1D PMJDY - National Mission for Financial Inclusion to ensure access to financial services such as Banking, Remittance, Credit, insurance, pension in an affordable manner.

- Zero Balance account, accidental benefit of 2 lakh rupee,
- overdraft facility by Rupay card (Rs 10,000/-)
- launched on ~~15~~ 15 Aug, 2014 by PM Narendra Modi.

1E KCC scheme introduced in 1998, implemented by Commercial banks, RRB, Small Finance Banks, Cooperatives.

- provide short term crop loans upto ₹ 3 lakh to farmers @ 7% p.a. interest.
- Interest subvention scheme implemented by NABARD & RBI
- 6.92 crore live KCC's according to Ministry of Agriculture.
- Now banks kickstarted KCC saturation Campaign, scheme comes with ATM enabled Rupay debit card

1F MPFC - premier institution, provides financial assistance and related services to small to medium sized industries.

- Incorporated in 1955 under state Financial Corporation Act, 1951. H.Q. in Indore with 20 branch offices.
- Chairman is Anurag Jain.

1G Poverty line: Rs 32 for Rural India and Rs 47 for urban India per day per capita.

~~was~~ C. Rangrajan Committee constituted on June 2012 by Planning Commission, submitted report on 30 June 2014.

- In 2011-12, 30.9% rural and 26.4% urban population lives below poverty line (BPL) = total 29.6% population of India
- Poverty line in term of energy requirement: 2155 kcal per person per day in rural area and 2090 kcal per person per day in rural areas, ~~and fat~~ ~~and fat~~
- Protein and fat requirement are 48g and 28g per capita per day in rural areas and 50g and 26g per capita per day in urban areas.

1H PMAY (U) launched by MOHUPA (Ministry of Housing and urban Poverty Alleviation) provides housing for All by 2022

covered 4041 Statutory town as per Census 2011 (31 March)

- launched in 2015 (1st June)
- targeted 20 million affordable housing for all

PMAY-G replaced India Awas Yojna (IAY) on 20 Nov, 2016 aimed to build 4 crore pucca house by 2022. ~~PMO~~ Monitoring by Geo-tagging and Awas soft and Awas App.

II Marginal standing facility is ^{scheme} ~~window~~ for bank to borrow from RBI in an emergency situation upto 1% of their NDTL (Net Demand and ~~and~~ Time Liability)
MSF rate is 100 basic point or percentage going above repo rate. It is announced in RBI's Monetary policy (2011-12)
MSF rate is 4.65% now.

IJ operated jointly by Centre and state/ Union Territories. launched in June, 1997. B
Beneficiary divided into - BPL and APL (Above poverty line)
Aimed to provide subsidised food and fuel to poor through ration shops. It is comes under NFSA, 2013
TPDS is Targetted Public Distribution system
Implemented by Department of Food, Civil supplies and Consumer Protection in Madhya Pradesh.

IK ~~Push factor~~ Disaster
① Disaster, desertification, lack of natural resources
② Conflict, war, terrorism,
③ Unemployment, low wages
④ Population growth, poverty.

IL Cooperative Credit societies
Land Development Banks
Commercial banks
Regional Rural Bank
Governments

IM As per Economic Survey 2019-20, GVA
Service sector contributes 55.3% to India's Gross Value Added
Industries sector - 29.6% - " -
agriculture - 16.5% - "

19. Agreement on Trade Related aspects of Intellectual Property Rights
 - came into effect on 1 January, 1995
 - agreement covers - ~~Appl~~ basic principles, methods, dispute enforcement
 settlement arrangements
 - It is treaty of world Trade Organisation.

10. DCCB - total 38 in M.P.
 Functions - meet credit requirement of member societies
 Based - comprise of elected chairman of Primary Agricultural
 Cooperative Societies, representatives of state Government and
 state cooperative Bank.
 • Functions under administrative control of register of
 cooperative societies
 • registered under Banking Regulation Act and are under
 regulatory control of RBI
 • to undertake non-credit activities

2A. Financial Inclusion refers to universal access to wide range
 of financial services at a reasonable cost. These includes
 not only banking products but also other financial services
 like insurance and equity products (Committee on Financial
 Inclusion sector reports - Rangarajan Rajan).

- Importance
 need - Broadens the resource base of financial system by
 developing culture of savings among large section of rural
 population
 • play importance role in economic development process.
 • Protects financial wealth of low income groups
 • mitigates the exploitation of vulnerable sections by usurious
 money lenders by facilitating easy access to formal credit.
 • curbs corruption prevails in government schemes by use of DBT
 need - As per census 2011, only 58.7% of households are availing

banking service. As per NABARD All India Rural Financial
 Inclusion Survey 2016-17, 59% household took loans from institutional
 sources only, only 20% household associated with self help groups (SHG)
 • 36% branches of scheduled commercial banks in rural areas, only 30% insurance coverage
 way forward - licensing of new banks, & deploying Business
 correspondents, grant of credit through kisan credit cards, example of
 ATM in rural areas, providing financial literacy, Rupay network,
 mobile banking, Remittance corridors for migrant workers
 Infrastructural development (UPA 5 scheme)

• use of post office ~~as~~ Banking, while label ATM are need of hours to ensure financial inclusions

2B

Subsidy is benefit given by government in form of cash payment (Direct subsidy), or tax reductions (Indirect) etc to bring out desired change. ~~by~~ effective

need: India is developing nation, large part of our population is poor (21.1%), literacy rate is low, impacts export, promotion of agriculture and safeguarding farmer is needed,

• High agricultural input cost (HYV seed, fertiliser, labourer etc)
Negative impacts: • often promote inefficiencies

- over-subsidization adversely affect environment and allocation of resources (fertilizer, fuel)
- Fiscal deficits as expenditure increases
- Higher price as supply remain constant but demand of subsidized product increases
- Regional discrepancies
- Hampered growth of producer producing subsidized food due to lack of timely payment by government and also low prices way forward - capital investment rather than subsidies are solution to India's growing issues.

2C

MSP - is policy tool used by government to save farmers from price fluctuations/shocks for their produce. It ensure minimum price at which government will buy their produce if market price fall below that.

• It is decided by CACP (Commission for Agricultural Costs and Prices) before each Kharif and Rabi season; considering various factors viz cost of production, overall demand-supply, prices, minimum of 50% as margin over cost of production. ~~as~~ as recommended by MS Swaminathan's NCF (National Commission on farmer).

- Recent umbrella scheme: PM - AASHA (Pradhan Mantri Annadata Aay Sanrakshan Abhiyan) for assuring remunerative price for farmers
- Government announced MSP for 22 Crops and FRP for Coconut.

Government is working on market architecture to ensure farmer get remunerative price like GRAMS (Grain Agricultural Market), e-NAM, robust pro-farmer export policy.

2D Potential Growth rate is sustainable ~~and~~ over long term without causing inflation.

- Factors -
- Increasing national saving rate
 - Productivity of capital investment (capital-output ratio) reduction
 - ease of land acquisition process
 - Labour laws
 - Performance of country in economic parameters (fiscal deficit, inflation, Forex, current Account deficit)
 - environment clearances
 - good governance / e-governance
 - skilled manpower
 - Infrastructural facilities (Power, transport, banking etc)
 - taxation system (GST)
 - Domestic and International demand
 - monsoon
 - Healthy Competition among cooperates

To achieve Potential output in economy, Government should reforms these above factors to boost consumer and industrial confidence.

2E India is primarily an agricultural economy and majority of people are still dependent on agriculture for their livelihood, various revolutions -

- ① Green revolution - led to tremendous rise in production of food grains (wheat especially) by use of High-yielding varieties of seeds, fertilisers, pesticides, in decade of 1960.
- ② White revolution - Operation flood (1970), an initiative of NDDB (National Dairy Development board) led to revolution in milk production in India by introducing new breeding technologies, high quality fodder, vaccinations, veterinary facilities improved.
- ③ Blue revolution - focussed on fish production and productivity from aquaculture and fisheries resources of marine and inland sources.

- ④ other revolutions - Yellow revolution (oil seed production), Gold fibre revolution (Jute), gold revolution (Horticulture), Silver fibre revolution (Cotton), red revolution (meat production).

These revolutions help in poverty alleviation and food security of India.

2F

100 Smart Cities Mission launched on 25 June, 2015.

Smart city can be defined as city where dwellers provide core infrastructure (institutional, physical, social, economic) and give decent quality of life to its citizens, clean and sustainable environment, implemented by special purpose vehicle.

- There are 7 smart cities in Madhya Pradesh.
- Smart cities have smart solutions in field of e-governance and citizen services, energy, waste, water management, Urban mobility, Tele-medicine, etc.

Role in urban development -

① Funds: ensure adequate fund access through private investment

② Functions - Security Infra (CCTV)

- Disaster management & sustainable environment
- Renewable energy source - solar plant on rooftop
- PMAY - Urban for city slums

③ Functionaries - Special Purpose vehicles planning and implementing projects using domestic and foreign institutions

④ Sustainability (economic & environment)

⑤ Social justice.

⑥ Technological solution for employment opportunity generation

Smart city is future of urbanisation in India through AMRUT, SBM-Urban, will build infra for "new India"

Cooperative societies is an enterprise formed and directed by association of users, applying rule of democracy.

Cooperative credit institutions two types - (1) short and medium term (2) long term credit

• Indian farmer is poor and reside in mainly rural areas. At rural village level, Primary agricultural cooperative societies and cooperative banks provides loans (small and medium term) to meet farmers need of purchasing seeds, fertilizers, paying wages to hired workers, purchasing cattle, pumps, reclamation of land etc -

other financial institutions such as moneylender, Mahajans, Regional rural banks, SCB are also there but not have branch penetration in villages or have exploitative nature.

- Cooperative societies main motive is farmer's development rather than profit generation as against other financial institutions
- They help in Procurement centre for farm produces, helps in marketing of produces, provide insurance, inputs (Seed, fertiliser) to farmers, promote R&D in agriculture.

NFSA, 2013, also known as Right to Food Act, received president of India's assent on 10 September 2013 under Article 21 and Article 47 of Indian constitution. Objective - To provide Food & nutritional security by ensuring adequate quantity and quality food at affordable price

- welfare base Approach to Right based Approach
- Covers 67% population (75% rural, 50% urban): 81.35 crore people
- 3/2/1 Rupee per kg - 5kg per person of rice/wheat/coarse food grains for priority households and 35kg per household under AAY (Antyodaya Anna Yojna)
- Free meal to pregnant and lactating mothers - 6 month post child birth and Rs 6000/- maternity benefits
- Free meal mid-day to childrens (6-14 years)
- Failure to provide this state Government - gave Food security Allow

Challenges in Implementation!

- Increasing population, increasing urbanisation, increasing demand for food due to rising income
- Changing dietary preferences
- Global climate change, weather pattern uncertainty,
- Declining and degrading land resources, soil infertility,
- Price fluctuations of food grains.
- PDS system inefficiency, leakages
- Inadequate storage facilities of state warehouses

way forward

- ~~Crop~~ Crop Biofortification
- Biotechnological uses to improve soil productivity
- Mechanisation of agriculture
- ~~Sust~~ food processing sector reforms
- Credit facilities to farmers.
- Promotion of FPO
- PPP model in storage space
- end to end computerisation of entire food management system (e-PDS of chhattisgarh)
- MIS system in TPDS, GPS tracking of trucks, electronic weight bridges.
- Digitisation, Aadhaar, Biometric Identification.
- Decentralisation of Procurement under PDS
- Food Coupons

21

It is process of rapid integration or interconnections between countries.

Factors like rapid improvement in technology, liberalisation of foreign trade and foreign investment policy.

- effects :-
- (1) Negative - Agriculture backwardness and farmer distress
 - (2) Disparity between rural and urban India
 - (3) Growing Unemployment
 - (4) Growth of slums
 - (5) Threat of terrorism, black marketing
 - (6) growing gender inequality
 - (7) marginalisation of women in informal labour sector
 - (8) cultural degradation of Indian society
 - (9) MSME sector distress

- Positive effect - expansion of agro industries and commercialisation of agriculture
- Liberalisation of International trade of food and other agricultural products.
 - Increased standard of living
 - efficiencies due to private players
 - mass media revolution led education to society
 - foreign investment increases industrial expansion, employment, increased competition
 - cross border cultural ties
 - Technology upgradation and advancement in all sectors of economy.

- 2J Located in central India, MP known as "heart of India" and is beneficiary of mega infrastructure projects, with both North-South and East-West corridor crossing state.
- Infrastructural support - Robust rail network with 550 trains crossing daily, National Highway network of 8772 km, 5 Commercial airports operating 100+ flights and 7 inland ~~air~~ container depots (ICD) → Gwalior, Rattam, Indore, Raipur, Hosangabad (C)
- Indore cleanest city in India (4th times)
- Mineral Wealth - ^{largest} ~~only~~ diamond and copper producing state
- Leading producer of coal, manganese, dolomite, limestone, sand
 - oil refinery at Bina (Sagar)
 - 14% of India's total cement production
 - Installed power capacity is 23400 MW (35% from renewable energy source)
 - Largest producer of soybean, pulses, garlic, gram, oilseed, orange, Coriander
 - 2nd in Floriculture Production
- Coal Reserve: Asia's thickest coal seam coalfield in Singrauli (Depth 138m)
- Agri - Business and Food Processing -
- 2 Mega Food parks, 8 Food Parks, 5 Agri-Export ^{Zones} ~~park~~, 45 Industrial ^{area} ~~sector~~
- Among top 5 in milk production
 - MP Industrial Land Bank 2013 - developed by MPIDC, Bhopal - 41,290 hectare area available on online platform INVEST Portal. which are GIS based mapping.

- Record 12.2% GDP growth rate in 2017-18
- 24x7 road, water supply, irrigation facility, power availability.
- It has 900 MCM water of Narmada water reserved for industrial purpose.
- MP has created total capacity of 100 lakh MT of warehouse
- Pool of skilled manpower & 63% population in working age (15-59 yrs)
- MPIDC is single window facilitation centre for investment promotion in M.P. since 2004.
- 2 Central university, 21 state universities, 1155 IIT, 298 engineering colleges (AICTE Approved), 69 polytechnic institutes, 13 medical colleges, 211 management institutes
- 10 National park, 25 wildlife sanctuaries, 3 biosphere reserves.

Thus, M.P organises "Magnificent MP" in Indore in 18 October, 2019 to boost investment & to harness growth potential of Industries

2K

Regional Imbalance or disparities means wide difference in per capita income, literacy rates, health and education services, level of industrialization, infrastructural facilities etc between different regions.

- Regions may be either state or regions within a state.
- Types - • Global Disparity, Inter-state, Intra-state, Rural-urban disparity.

Impacts: ① Inter-state and Intra-state Agitations for example, Bodo state demand in Assam, Vidharbha state in Maharashtra.

② Migration: Rural to urban

③ Social unrest: for example Naxalism in Chhatisgarh, Jharkhand

④ Pollution: due to centralisation of industrial development

⑤ Housing and water & Sanitation Problem - metro cities crisis

⑥ Frustration among Rural Youth - due to unemployment

⑦ Poverty, criminal activities, terrorism attracts youth mind

- (7) Under-developed Infrastructure - in backward and rural areas - no power supply, proper house, safe drinking water etc
- (8) Aggregation of imbalance - developed area attracts more investment neglecting backward areas.
- way forward

- Identification of Backward Areas and Allocation of Funds
- Attract Investment by creating corporate confidence
- Good Governance
- Political will
- Incentives to industries - Land, tax, subsidies, etc for backward areas
- New Financial Inclusion Institutions in backward areas
- Setting up of Regional Boards - As per Article 321 D of Indian Constitution, RB with necessary legal powers, funds should be instituted to remove disparities in state.
- dedicated Growth corridors - educational zone, agricultural zones, industrial zone
- Usage of natural resources for development of tribal areas
- Devolution of Fund to local self government institutions
- Rewarding states who reduce disparities
- Greater share of Central Pool of Funds & Grant in aid provisions
- launching special area programmes like Desert Development Programme, Drought prone area Development Programme
- Use of Improved Dry farming technology
- Cottage and small industries promoted to generate employment
- shedding caste and Religion politics
- speeding of development works in backward areas

2L Economic planning is mentioned in Concurrent List of 7th schedule of constitution.

- Economic planning refers to path of action in terms of policy measures to be followed in future, in pursuance of pre-determined objectives.
- The utilisation of Country's resources for developmental activities in accordance of national priorities, as defined by planning Commission (now NITI Aayog)
- Five year plans in India aims to achieve high rate of growth, improved standard of living.

Classification of Economic Planning:

- (1) on basis of Role of Government
 - (a) Imperative planning - also called as directive / totalitarian / authoritative planning
 - one central authority, which decides all aspects of plan
 - Generally, practiced in socialist economies.
 - (b) planning by Inducement - The planning authority (state) induces people through monetary and fiscal measures and through appropriate price policies to act in certain desired ways. Also known as indicative or market incentive planning.
- (2) ~~Ext~~ on basis of Extent of People's Participation -
 - (a) Centralised Planning - All economic decisions taken by central authority (Government)
 - (b) Decentralised Planning - Empowers people as planning operates from bottom to top
- (3) on the Basis of Time-Period:
 - (a) short-term plan: Also known as 'controlling Plan'
 - Annual plan - for period of one year
 - Main objective - raise revenue, attain short term economic target, remove BOP Deficit, bring price stability
 - (b) Medium-term Plan - Lasts for 3 to 7 years, normally made for 5 years
 - objective - raise per capita income, raise employment, remove regional disparity
 - (c) long term Plan - Lasts for 10 to 30 years, Also called as "Perspective Plan"
 - objective - to bring structural changes in economy
- (4) on basis of Resource Allocation
 - (a) Physical Planning - physical balance b/w investment and output
 - (b) Financial planning - equilibrium b/w demand and supply to avoid inflation
- (5) on basis of Flexibility / Rigidity
 - (a) Rolling plan - usually one year
 - (b) Fixed plan - usually medium-term Plan
 - (c) structural Planning - To bring change in socio-economic setup of country
 - (d) Functional planning - no change in existing socio-economic setup and planning made in context of existing institutions. (France, UK)

3A Private investment is the investment which is made by private individuals with the sole objective of earning Profit.

Two factors which decides private investment are -:

① Rate of Investment ② Marginal Efficiency of Capital (MEC)

• It is key driver for boosting demand, increasing labour

Productivity, creating jobs and capacity.

• It can come from India or Abroad. If it's from abroad - they can be FDI or FII.

Importance of Private Investment: India is capitalistic bias mixed economy

• Fiscal deficit of GOI is growing day by day

• India's ambitious target of 8% growth, Rs 2 lakh

core a year infrastructure investment is needed.

Achieving this will need significant and rapid growth in private investment in infrastructure projects.

For example, In Railway, annual requirement would be five times the current allocation in Union Budget.

So, GOI proposed an apex committee to recommend measures to channel long-term private capital meet this need.

• The Aviation Industry, capital crisis, development of regional airports require investment can be used from

GOI policies that support for growth of airport finance with innovative schemes like MRO (Maintenance, repair and overhaul).

• National highway and inland waterways development projects are key to reduce cost of logistics in the country.

• Private investment provides flexibility, supply talent and resources to businesses, targetting more companies create healthy competition, provides capital to grow business sustain in developing Indian economies

- It creates consumer centric approach to business, provide customer more options at most affordable price.
- It advocates innovation, new technology adoption, boost patent scenario in Indian economy.
- It supplement government schemes of social welfare through CSR (Corporate Social Responsibility).
- It helps in reducing regional imbalances whether inter state or intra state.
- It increases efficiency to businesses, develop responsibility and deliver timely.
- It minimises corruption prevailing in public sector.
- It forces public sector to be more efficient, sustainable.

Economic Impact of private Investment

- Increased employment
- more investment
- more production
- attract more foreign trade
- favours balance of payment and decreases current account deficit

In order to create 10 trillion dollar economy by 2032,

India needs robust and resilient Infrastructure

- Inefficient state Power utilities (Public sector) are no move to privatization to ensure reliable supply to consumers (Tata & Reliance in Mumbai city)
- Now private sector banks are performing more efficiently than loss making or growing NPA burden'ed Public sector banks.
- Private sector investment in food processing industry like GOI sanctioned 42 Food parks and rural markets boost agricultural sector and bring down food inflation.
- Demonetization, GST tax reforms, ease of doing measures attracts private investment in countries.

- Promote Professionalism
- Startup attracts 61% increase in private investment in various field of economy. Investment in Infrastructure and real sector increase 3 times.
- Private Capital investment in India have grown at CAGR of almost 44% over past three years.
- LPG Reforms or NEP 1991 introduces private equity in almost all sectors of economy and its effect are clearly visible as India's economic base growing in double digit.
- Indian agriculture sector largely controlled by private sector.
- High Potentiality of MSME (mainly owned by private sector) - 80% of total working force employed in MSME.
- National Income Contribution - 3/4 of national income comes from private sector.
- Private sector increases gross domestic saving (GDS) and Gross domestic capital formation (GDCF) in economy.

3. Largest Proportion of Indian Population depends directly or indirectly on agriculture for employment opportunity as compared to any other sector.

- The share of agriculture and allied sector in total Gross value added (GVA) of ~~country~~ country has been continuously declining on account of relatively higher growth performance of non-agricultural sectors.
- GVA at Basic Prices for 2019-20 from "Agriculture, forestry and Fishing" sector is estimated to grow by 2.8%.
- Agricultural Productivity is constrained by lower level of mechanization in agriculture which is about 40% in India, much lower than China (60%) and Brazil (75%).

- Livestock income has become important secondary source of income in rural economy and play important role in achieving of goal of doubling of farmer's income.
- Livestock grew at CAGR of 7.99% during last five years.
- Food processing sector depend on agriculture grow at AAGR of 5.06% during last 6 years.
- Agriculture provides food security under NFSA, 2013
- Raw material to agro industries like textiles, sugar, leather, vanaspati etc.
- Agriculture creates demands for several industrial products like tractor, pumping set, thresher, fertilizers, pesticides, seeds etc.
- Prosperity of industrial sector is highly dependent on productivity in agriculture.
- export contribution - leads in tea, coffee, tobacco, fruits, vegetables, spices, rubber, leather,
- Agricultural product contributes 15.5% of total export value of country while another 20% of export is accounted for by agro-processed products.
- Agriculture creates demand of power (electricity) for irrigation boost power sector of country.
- Provides employment - ~~50~~⁵⁰% of population of country.
- Cyclical movement of growth of agricultural sector - GVA is negative 0.2% in 2014-15, 6.3% in 2016-17, 2.9% in 2018-19.
- Gross capital formation (GCF) in agriculture is 15.2% in 2017-18.
- women participation in agriculture is 13.9% in 2015-16 and highest among (28%) among small and marginal farmers.

- Agricultural sector accounts for 18% of India's GDP
- Driver of rural economy
- Indian food and grocery market is 70% of total retail sales. Indian food processing industry is 32% of total food market; contributes 8.39% of GVA in Agriculture and 8.8% in manufacturing, 13% in India's export and 6% of total Industrial Investment.
- Livestock output to total agriculture-output is 29% in 2015-16,
- India world's second largest milk producer and emerging exporter, contributes 26% to total agriculture GDP.

Challenges to Indian Agriculture -

- declining total productivity
- diminishing and degrading natural resources
- Rapidly growing demand of food
- Stagnating farm incomes
- Fragmented land holdings
- unprecedented climate change.
- 85% farmers are small and marginal (landholding < 2hectare)
- Linking of them to marketers, traders, exporters is another challenge.

Steps taken by Government -

- Soil Health Card scheme (19 Feb, 2015 launched on)
- Irrigation - PMKSY, per drop more crop
- organic farming - PKVY
- e-nam, GRAMS
- Insurance - PMFBY (implemented from Kharif 2016)
- CAPC accounts 50% margin over cost of production in MSP
- Cold chain warehousing, e-platform for storage
- R&D Investment, KVK,
- Digital technology Application + space Technology, GIS, IoT, Block chain technology, AI, user for enhancing farmer income (doubling) by 2022

30 Poverty can be defined as a condition in which an individual or household lacks the financial resources to afford a basic minimum standard of living.

• Absolute poverty is defined as shortfall in consumption expenditure from a threshold called "poverty line".

- Poverty line is expenditure incurred to obtain goods in a "poverty line basket (PLB)".
- Poverty can be measured in terms of number of people living below poverty line (with incidence of poverty expressed as head count ratio).

- Sark committee constituted so far for estimating number of people living in poverty in India

- Working group of 1962

- V N Dandekar and N Rath in 1971

- Y K Alagh in 1979

- D T Lakdawala in 1993

- Suresh Tendulkar in 2009

- C Rangarajan in 2014

→ Now poverty measured on basis of Tendulkar poverty line

- As per this, 21.9% of people in India live below poverty line. Poverty line threshold - minimum calorie intake of 2400 calorie per person in rural and 2100 calorie per person in urban area. Government uses MPCE (Monthly per capita expenditure) to identify poor.

Head count ratio: when no. of poor is estimated as proportion of people below poverty line.

Cause of poverty - ① Indebtedness ② unequal distribution of wealth ③ social exclusion ④ social, economic, political inequality ⑤ population pressure. ⑥ low agricultural productivity ⑦ unemployment

Multidimensional Poverty Index Identifies multiple deprivations at the household and individual level in health, education and standard of living.

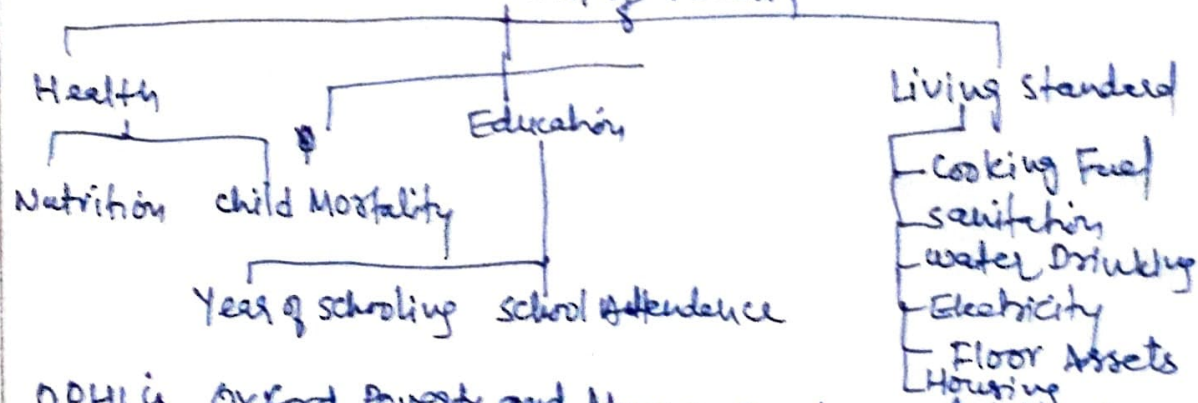
It uses micro data from household surveys

The MPI reflects both the incidence of multidimensional deprivations (a headcount of those in multidimensional Poverty) and its intensity (the average deprivation score experienced by poor people)

• Global MPI developed by OPHI with UNDP

According to 2019 Global MPI, India lifted 271 million people out of poverty between 2006 and 2016

Three Dimension of Poverty



OPHI is Oxford Poverty and Human Development Initiative

UNDP is United Nation Development Programme

• In 2015-16, the population in India living in MPI stood at about 369 million people (27.9%)

• It is main indicator of SDG-1: ending Poverty in all its form

3D

National Income is the total value of final goods and services produced by the country in certain year.

• The growth of National Income helps to know the progress of Country.

The net output of commodities and services flowing during the year from country's productive system in the hands of ultimate consumers.

National Income Accounting - GDP, GNP, NNP, WNPPC, NDP
It is method or technique used to measure the economic activity in the national economy as a whole.

① GDP: Gross Domestic Product

The Total value of all final goods and services produced within the geographical boundary of country during given period of time (generally one year).

- The Final produce of resident citizen and foreign nationals

$$GDP = TQ \times P ; P \text{ is Price ; } TQ = \text{Total quantity of final goods and services}$$

Real GDP = Price at base year - Inflationary impact is excluded

Nominal GDP = Price at current year - Inflation is included

② GNP: Gross National Product

Total value of total production or final goods and services produced by the National of Country during a year

- The Income of national citizen is included, irrespective of whether they are living within geographical boundary of Country or residing in foreign land.

$$\begin{aligned} GNP &= GDP + \text{Net factor Income from Abroad} \\ &= GDP + \text{Export} - \text{import} \\ &= GDP + \text{income earned by national in foreign land} \\ &\quad - \text{income earned by foreigners in domestic land} \end{aligned}$$

Factor cost = Market Price - Indirect Tax + Subsidies

③ $NDP = GDP - \text{Depreciation} = GDP - \text{total value of wear \& tear}$

④ $NNP = GNP - \text{Depreciation}$

Methods of calculating GDP: Base year is 2011-12

Method of calculating National Income -

- ① Income ② Expenditure ③ Output/Production

① National Income - Income Method :- National Income is calculated by compiling income of factors of production viz. land, labour, capital and entrepreneur.

② Expenditure Method : It measures all spending on currently produced final goods and services only in an economy.

• Personal consumption + Investment made by companies as well as government - Government expenditure on pensions, schemes, scholarships, unemployment allowance etc + Net of export expenditure = National Income

③ Output Method : used to calculate GDP at market prices. = Total value of outputs produced at different stages of Production + Complementary goods and services - second hand items - Transfer payments such as scholarship, pension

Problems in calculating national income :-

① Limitations of Product Method

- Problem of Double Counting - unclear distinction between a final and an intermediate product
- Not applicable to tertiary sector - This method is useful only when output measured in physical terms
- Exclusion of non marketed products - e.g. self consumption
- self consumption of output - Producer consumes part of his production

② Limitations of Income Method :-

- Exclusion of non monetary income - e.g. farmer and family working in field
 - Exclusion of non marketed services - e.g. mother's service to family
- ~~Ignore~~

③ Limitation of expenditure method -

- Ignore Barter system
- Ignore own consumption
- Affected by inflation

~~out~~ Other difficulties are -

- Mass Illiteracy • Black Money • Inter-regional differences
- Difficulties of sampling techniques
- Public services • Transfer Payment • Conceptual difficulties
- Second hand sale • Unaccounted Environmental cost
- Increase contribution of service sector