

| प्रश्न संख्या | मुख्य परीक्षा म.प्र. राज्य लोक सेवा आयोग |
|---------------|---|
| I A | → Code made of numbers and letters which contain |
| □ □ | description about manufacturer, date etc |
| □ □ | → found on cloth, food item etc |
| □ □ | → read by QR-code machine. |
| □ □ | through laser. |
| □ □ | |
| I B | → which convert atmospheric nitrogen into nitrate or nitrite. |
| □ □ | |
| □ □ | → <u>nitobacter</u> , <u>ribosome</u> etc blue green algae etc. |
| □ □ | → crops directly consume |
| □ □ | N ₂ in form of nitrate/ nitrate and release as |
| □ □ | N ₂ or ammonia |

हाशिप में न लिखे

1 c

→ substance used as medicine

1 D

→ which help ~~the~~ plants to grow, and dormancy, flowering etc

→ hormone - ethylene, Abscission, etc.

→ deficiency or excess cause plants to die

1 e

→ tree flowing electrons in a conductor is termed as electrical charge.

→ Remoted as R.

→ they generate current; may be free / -ve.

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1 2

→ wireless conductivity network covering maximum area around central point

1 H

→ caused by onsetness of calcium in body.

→ stiffness in joints and pain in body.

→ source - contaminated ^{reservoir} water ; mining . etc

1 I

→ point of destruction for RBC 4 WBC

→ control immunity ; help in blood formation

— Provide base to body

→ which have magnitude
as well as direction.

→ Example — Displacement, speed,
force etc.

→ It may be positive,
negative or zero

→ which move with speed of
sound.

→ Auto-target detectors; multidirectional

→ Land to surface — mainly.

1 L

→ sending unwanted messages

or calls to someone,

in order to get vital

details.

→ Continuous process - with a

detailed knowledge about

someone.

- Type of cyber security threat

1 M

→ Based on phenomena of nuclear fission & fusion.

→ Example - Atomic bomb and

hydrogen bomb

→ It may controlled or

uncontrolled

→ Based on - Energy mass

equivalent concept.

1 N

37.5-

1 0

- Number from 0 to 9 all termed as whole no.

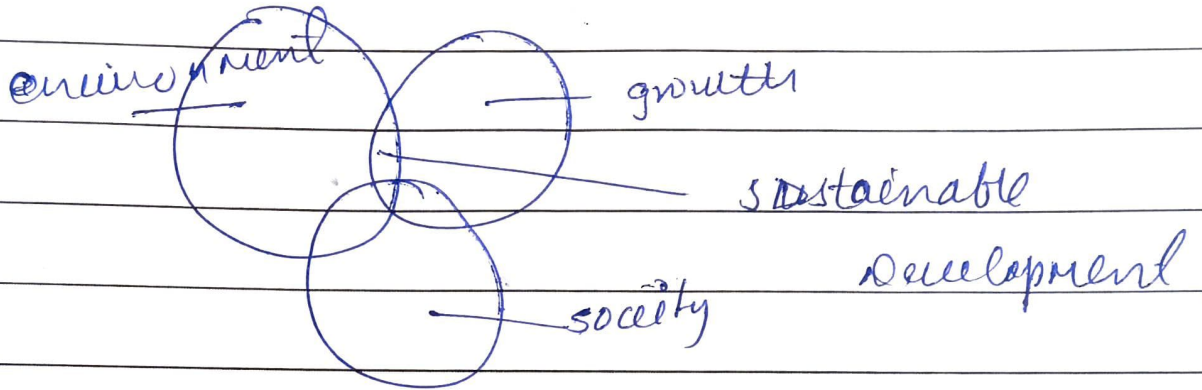
- Integer - all numerical number from 1.

3 A

Sustainable development refers to grow with which is

entirely environmentally sustainable and economically viable.

It has 3 component -



It is 21st centuries

focus agenda because -

① To control climate change and green house gas

emission

② to preserve valued resources which are likely to decline

③ It focus is to not compromise with need of future generation

| संख्या | |
|---|---|
| <input type="checkbox"/> <input type="checkbox"/> | ④ to meet future demand of drinking water and food. |
| <input type="checkbox"/> <input type="checkbox"/> | ⑤ to conserve the endangered <u>wildlife</u> species, coastal areas and islands. |
| <input type="checkbox"/> <input type="checkbox"/> | ⑥ to preserve natural ecosystems - <u>terrestrial</u> as well as <u>aquatic</u> . |
| <input type="checkbox"/> <input type="checkbox"/> | ⑦ to harness ^{non-} renewable energy - solar, wind, geo-thermal etc. |
| <input type="checkbox"/> <input type="checkbox"/> | ⑧ To ensure <u>environmentally</u> industrialisation and <u>urbanisation</u> |
| <input type="checkbox"/> <input type="checkbox"/> | ⑨ to promote inclusive growth - end poverty, malnutrition, unemployment etc |
| <input type="checkbox"/> <input type="checkbox"/> | |
| <input type="checkbox"/> <input type="checkbox"/> | |

⑩ to ensure effective and optimum utilisation and allocation of resources.

⑪ to conserve natural traditional tribes

Thus, ~~it~~ at international level

it is recognised as future agenda, in Rio summit 2012. ~~it~~

there are 17 SDGs —

① Remove poverty

② end hunger

③ raise quality of life — good health

④ ensure quality education

⑤ Remove ^{gender} inequality

⑥ ensure water availability

⑦ decent living source

⑧ integrative effort etc

⑨ sanitation

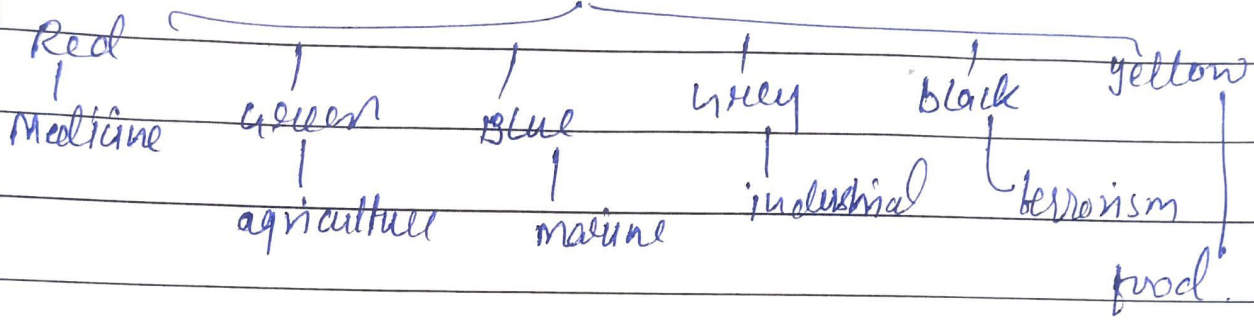
these goal need to be achieved - till 2030. India's swachh

Bharat Abhiyan, Ujala yojna etc are step in this direction

3 B

Bio-technology is one of emerging technology, which uses living organism for benefit of human and environment.

It has different applications in different fields -



~~It's~~ It's applications in field of agriculture are. ←

① In transporting fertilizers to roots of plants

② In efficient water supply.

③ In increasing fertility of soil through bio-decompose

④ In sensing, disease penetration

5 In growing Genetically Modified seeds like Bt Brinjal, colelam rice etc

6 making crops drought and flood resistant.

7 Reducing cost of fuels - by using energy in effective manner.

8 In increasing shelf life after harvesting.

9 For preserving horticulture products / perishable items.

10 Availability of all fruits & vegetable - through the year.

11 Increasing nutritional capacity of crops.

12 Producing climate adaptive crops.

(13) Inventing high quality seed, fertilizers and manure

(14) Fast decomposition of agriculture waste — Rice husk and etc.

(15) Increasing CO_2 absorption capacity of crops and soil — climate friendly.

(16) Adapting climate resilient agriculture practices

(17) Fast sowing, and harvesting — promote multi cropping.

(18) Harnessing productive capacity of land — without degrading its quality.

Thus, Bio-technology is need of hour. Its smart and right use will be very useful.

3 C Metal are and non-metal are type of mineral which are divided on basis of their property. They are found in nature as well as artificially produced. They are found in ore and used after their extraction in form of pure metal.

| Physical property of | | |
|----------------------|--|--------------------------------|
| | Metal | Non-Metal |
| → | Hard, brittle and Ductile | soft and non-ductile |
| → | Malleable - converted to wire. (Copper) | Non-malleable. |
| → | light, lustrous, | non-lustrous |
| → | Produce sound when colled. | No. sound produced. |
| → | Example - Iron, Aluminium, beryllium, copper etc | → Carbon dioxide, Nitrogen etc |

| | | | |
|--------------------------|--------------------------|--|---|
| <input type="checkbox"/> | <input type="checkbox"/> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | → High boiling and melting point | low boiling and melting point |
| <input type="checkbox"/> | <input type="checkbox"/> | → good conductors of heat and electricity. | Bad conductors. |
| <input type="checkbox"/> | <input type="checkbox"/> | → Right side of periodic table | left side of periodic table. |
| <input type="checkbox"/> | <input type="checkbox"/> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | thus, - they can physically differ in various ways. |
| <input type="checkbox"/> | <input type="checkbox"/> | <u>Chemical properties</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <u>Metal</u> | <u>sem-metal</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | React with Acid — → Produce oxide. | Produce hydronide |
| <input type="checkbox"/> | <input type="checkbox"/> | NaCl FeO | |
| <input type="checkbox"/> | <input type="checkbox"/> | → with water — Not soluble | Aqueous solution form |

2 A

mineral consist of solvent and solute in varied proportion. It may be heterogeneous or homogeneous.

Heterogeneous mineral can be separated through —

(1) Gravity separation method —
Metallic element set at bottom.

(2) Hand picking method —
Heavy material are collected manually.

(3) Flotation method —
material set as per their densities, heavy at bottom & light at above surface, thus, by pouring light material, mineral separated

(4) Distillation —
separated via heating —

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evaporation and ~~precip~~ condensation

(5) sublimation method—

solid material is heated
so much, it evaporates directly
and condense later.

(9) Thus, these all some
of ways to separate a
mixture.

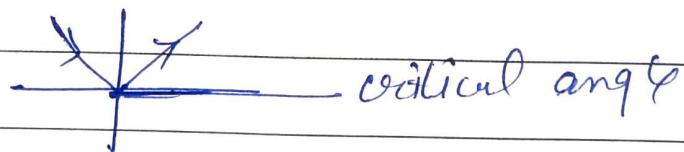
2 B

Light is electromagnetic wave, which store energy in form of photons. It helps in visibility.

Properties — angle of incidence → angle of reflection
 through plane polished surface

② Reflection — while moving from rare to denser medium or vice versa

③ Total internal reflection — denser to rarer — when critical angle exceed 90° .



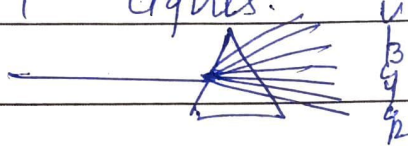
④ Polarization — Light particle move in single plane in ~~same~~ direction of motion.

④ Diffraction —

when small beam of light incident small object, it diffract in different direction

⑤ Dispersion / scattering —

↳ splitting of white light into 7 lights.



Thus, light is source of energy, received from sun, have huge role in daily life.

2 ८

Enzyme and hormone are protein particle which have particular function in body.

Enzyme

Hormone

① Produced from Endocrine gland.

- from exocrine gland.

② Perform particular task without mixing in blood.

- Perform different task by mixing in blood.

③ Single task at a time → multi-task.

④ Example - Trypsine, Pepsin, renin etc.

→ thyroid ~~hormone~~ hormone, lactating hormone etc.

⑤ Perform its own task.

- stimulate body parts to perform tasks

thus, both have specific role in maintaining balance of body & functioning of body.

| | | |
|---|---|--|
| 2 | D | handshakes, discovered |
| | | 4 type of blood groups, based on their different properties. |
| | | Blood groups — |
| | | ① A → antigen b → antibody a |
| | | antibody - a |
| | | ② B → antigen aB - a |
| | | antibody b |
| | | ③ AB - antigen ab → universal |
| | | - no antibody accepts |
| | | ④ O → no antigen — universal |
| | | antibody a. donor. |
| | | |
| | | Antigen and antibodies of |
| | | same type (a-a) or (b-b) cause |
| | | blood coagulation. |
| | | Thus, blood transfusion |
| | | done after checking blood groups. |
| | | |
| | | |
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| | | |

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2

६

Brahmagupta —
↳ scientist, astronomer and
chronist of ancient India.

→ Give — ① Brahmagupta's work →
↳ earth revolution,
eclipse, day & night etc

② Khondkhandak — about atom,
universe and space etc.

③ Magajjeng —
↳ great chemist, astronomer and
physician.

— value of 0, decimal, no.,
trigonometry, algebra etc.

→ Granit beej, asopad, — Lilavati

2

f

Climate change is long term effect of environment caused by natural or human actions.

~~Agree some of agreement~~ —

① Earth summit — 1992

↳ adopt conservation of biodiversity, agenda 21, convention to ~~tense~~ combat desertification

② Kyoto protocol — 1997

↳ to implement clause of earth summit by COP summit.

③ Paris agreement — 2015

↳ to achieve sustainable development goal, 4

④ Rio-20 — 2012

↳ adopt millennium development goal & SDG's

⑤ Montreal protocol & Vienna

convention — to ~~conserve~~

by one layer. and pres

(5) Conventions to restrict trade of
wildlife - animals - (CITES).

thus, there are several
international efforts going on to
conserve environment.

2 H

Traffic jam is biggest problem in urbanised world, where road ^{accepting} vehicle is ~~all~~

Use of technology to combat it are -

① Integrated traffic management system - single stop center.

② Camera → to ensure law implementation.

③ Tracking sensor - to measure speed at highways.

④ Direct - online challan - no contact monitoring

⑤ Integrated command & control center - to ensure coordination

⑥ ^{for} awareness - about traffic rules.

thus, technology has capability to transform traffic management

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2 1

Geo- augment. to navigation satellite system to ~~direct~~ produce real time geographical data.

It is based on GPS system of USA.

It is indigenous navigation system based on IRNSS satellite.

else —

→ Railway, airline & road traffic
→ Mineral detection, forest cover analysis.

→ Population distribution; settlement, industries — location

→ security purpose — terrorist spot.

→ to analyze changing climate.

thus, it is regional satellite based system cover 1500 km area around India

2 I

technology which uses
nano size particles 10^5 to 10^9 .
termed as nano-technology.

It uses —

— Medicine —

↳ target medicine delivery,
detect foreign organs, increase
immunity etc.

→ Industries —

↳ increasing automation, quality
assurance, decrease size etc

→ space —

↳ Energy production & conservation,
Robot's, Carbon tubes used etc

→ Agriculture —

↳ fertiliser implementation, safe storage,
increasing fertility etc

→ Development —

chips, tubes, robots, etc

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Thus, nanotechnology has
huge role in future research
& development projects.

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|---------------|--|------------------|
| 2 K | Energy is necessarily of | |
| | not only humans but plants | |
| | and animal too. sun is basic | |
| | source of energy. | |
| | Technological advancement | |
| | in this field are — | |
| | ① <u>Solar cell</u> — nano-size | |
| | ↳ cheap as well as portable | |
| | ② <u>LED</u> → conserve light and | |
| | emit less heat, etc | |
| | ③ <u>Lithium ion battery</u> — easy & fast | |
| | charge and long life | |
| | ④ <u>BS IV</u> → efficient fuel use — less | |
| | pollution | |
| | ⑤ <u>Bio-sensors</u> to detect — pollution | |
| | ⑥ <u>Optical fibre network</u> — to conserve | |
| | light & signals without distortion | |
| | thus, high energy conservation | |
| | & preservation need greater technological | |
| | development. | |