

19.12.24

AARYA RATHOD

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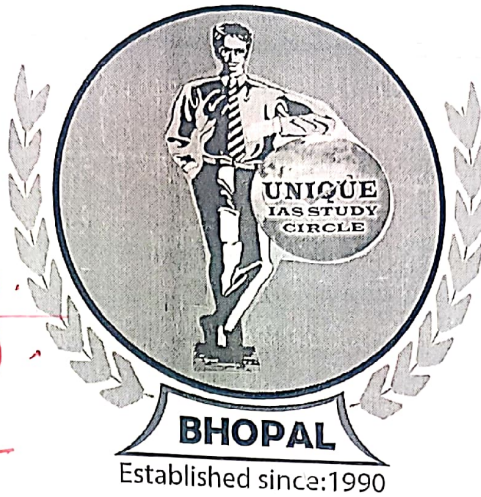
GRAND TEST

(SCIENCE & TECHNOLOGY)

- very good
handwriting
&

fine presentation.
(keep it up).

- Good use of
words + fine content.



33
85

For v good
😊

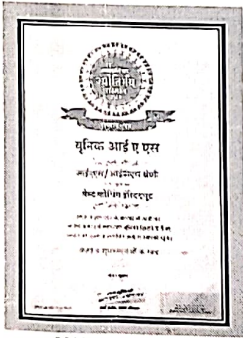
- Try to
complete
full
paper.

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- conclusion
makes the answer
complete } use it.

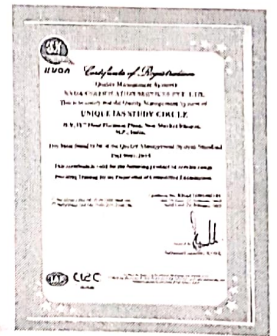


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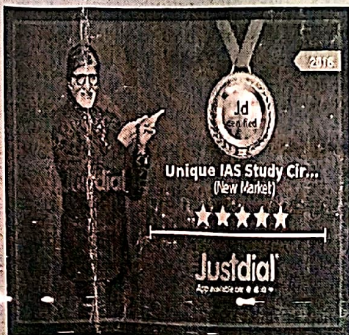


UPSC Q C A

Question cum Answer Booklet



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B Missiles are a dangerous but an integral part of our Indian Defence ~~System~~ ^{auxiliary system}.

Missiles can be classified into many categories:

- (1) → Ballistic Missiles:
(Missiles which are designed as ~~rocket~~ ^{initiated} missiles)
- (2) → Cruise Missiles:
(Missiles which are designed as ~~jet-propelled~~ ^{jet-propelled} missiles)

(This categorization is done on basis of Trajectory Path.)

Other categorization includes (Speed of Sound & Speed of missile) on basis of Speed:

- (1) → Subsonic Missiles (upto 0.8 mach speed)
- (2) → Supersonic Missiles (between 2-4 Mach)
- (3) → Hypersonic Missiles (above 5 mach)

If we particularly talk about Ballistic Missiles:

Features of Ballistic Missiles include:-

→ Path: Projectile path is followed.



→ Rocket-Based Missile, once initiated, cannot be turned down.

→ Range: Can be short-ranged, Medium-range or long-ranged.

Prithvi → Was the first indigenous surface-to-surface ballistic missile created under IGMDP (Integrated Guided Missile Development Programme) under the eye of DRDO (Defence Research & Development Organisation)

Ballistic Missile can be

- Surface-to-Surface Missile → Eg: Prithvi, Agni
- Air-to-Air Missile → Eg: Dhanush.
- Surface-to-Air Missile → Eg: Trishul

IGMDP → Integrated Guided Missile Development Programme contributes to the increment of creation of such ballistic missiles in India,

This program is an addition ~~to~~ ^{to} step taken by the DRDO, has resulted in formation of many major development in the country which include:

1> Agni Missile (Surface-to-Surface Missile)

- Agni-I
 - Agni-II
 - Agni-III
 - Agni-IV
 - Agni-V
- All are sub-versions of the Agni Missile, in which Agni-V is the most advanced Missile of India.

Agni-V is a long-range (upto 5000 km) missile.

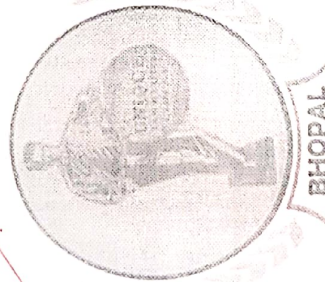
2> Nag (Anti-Tank Missile)
Targets enemy vessel & attacks it.

3> HELINA (Light weight fighting helicopter with artillery function)

4>

88/10
15

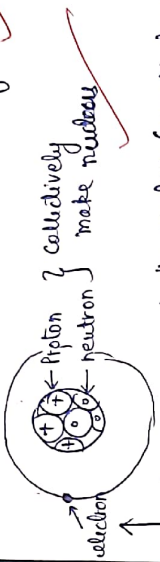
Lacks Conclusion



BHOPAL
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Q.6

Nuclear Energy - It is an energy which is produced due to the various interaction of the nucleus of an atom.



Revolves around the nucleus (negatively charged particles)

Nucleus → Stable (which do not split)

→ Unstable (which split with bombardment of neutron)

The activity that takes place within unstable nucleus is known as 'Radioactivity'.

Nuclear Energy is a power, and a large energy producing source of energy which contributes to a nation's power defining status.

India is considered as a non-nuclear state after 1976 when we tested a Nuclear test in Pokhran, Rajasthan.

The Pokhran test were held twice

→ Pokhran-I (Smiling Buddha Mission)
→ Pokhran-II (Mission Shakti)
Mission Shakti is different operation

Due to this testing, countries like USA, China and all other made a protective Protocol known as the NSG Protocol from which India was exempted as a member, & still is not a member.

NSG - (Nuclear Safety Guidelines).

After which India also made its Nuclear Doctrine for the usage of its Nuclear weapons.

The 3 most important pillars of the Nuclear

Doctrine include:

- (1) → Nuclear Deterrence: which indeed says that our nuclear wage will only be a 'retaliator strikes', only in the purpose for defense.
- (2) → No to NWS Countries: Non-Nuclear weapon state India would not get involved into any exercises which possess a nuclear state of being and are defensive about action, ~~no~~
- (3) → No 'FIRST USE': India will make sure that it does not become a country in a state-of-way to use its nuclear weapon first, it will never be the one to strike first.

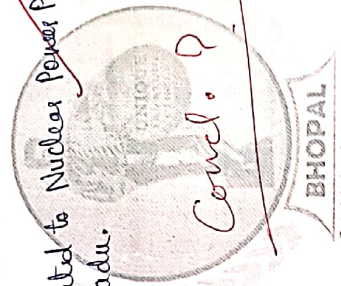
Looking at such nuclear laws, countries made nuclear agreements with India & helped it build Nuclear Reactors based in India itself.

There are a total of 22 nuclear Reactors in India in which 7 are actually contributing to nuclear energy production.

We stick to have a targetted production of 45000 Mega Watt nuclear energy by 2030, currently surviving 6781 Mega Watt.

Nuclear Reactors with Countries agreement contribute to

- 1> India - Russia (The biggest supporter to India in terms of Nuclear fuel & help)
→ ~~Conse~~ Contributed to Nuclear ~~Reactors~~ ^{Power Plant} based in Tamil Nadu, the largest producer (up to 2000 MW)
- 2> India - France
→ contributed to Nuclear ~~Reactors~~ ^{Power Plant} based in Tarapur, Maharashtra.
- 3> India - UK
→ contributed to Nuclear ~~Power Plant~~ based in Tamil Nadu.



Concl. ?

Established since 1990

g.o.s

Good

Nano-technology is a contribution given by the nano-particles (10^{-9}) in size which are basically known for their 3 features:

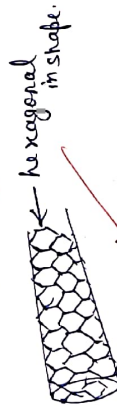
- (1) → Lightweight in nature
- (2) → Anti-Static Property
- (3) → Hard & tensile in nature

Types of Nano-particles:

- (1) → Inorganic-Based (made up of metal & metal oxides)
- (2) → Organic-Based (made up of natural material)
Eg: Azadirachta Indica / Neem
- (3) → Carbon-Based (made up of carbon particles)
- (4) → Composite-Type (made up of combinations of the above types mentioned)

The most effective use currently is being done by Carbon-Nano-tube

- Hexagonal in shape
- Made up of graphene (graphite fibre)
- rolled up as tubes.



These carbon-nanotubes are getting used in various fields such as medical field where they are used as -

- (1) Targeted Drug Delivery: Medicines are fit inside such capsules & they reach the targeted organ only without getting wasted.

(2) Medical Diagnosis: Usage of such technology helps in detection of medical condition, they are also used in prostheses.

(3) SCNTT (Somatic cell Nuclear Transfer Therapy) Nano-carbon tubes ~~are~~ carry out such procedures used for making clones (identical offspring asexually).

(4) ~~Organic~~ Nano-liposomes - cells which are used to treat cancer are made like this so that they can have direct contact with cancer cells.

(5) Nucleotides - Variations in the DNA & RNA can be obtained by Nano-tubes, Transgenesis is done through this technology.

correct. ?

Q.1 AI - Artificial intelligence is an generative kind of technology based on machine learning Algorithm.

It contributes to many developments such as Robotics, meters, automated vehicles, weapons & computeive programming.

It acts as a boon when used as

- Robotics
- Generative AI
- Unmanned Vehicular / Machinery Actions
- Surveillance, Analytics
- Multi-Tasker.

It acts as a bare when

- AI Profiliation
- AI weapons
- AI wars

When the technology is used in a destructive aspect AI is not considered as a boon, the further consequences lead to destruction of livelihood & ~~human existence~~ is a threat to human existence.

6.5