

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)



भारत का नं. 1 संस्थान
कौटिल्य एकेडमी
सफलता का प्रवेश द्वार...

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1 A	Influenza → It is a kind of infectious disease - spreading affecting people to people, in large numbers. Example - Swine flu, Bird flu
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 B	Double so
<input type="checkbox"/>	<input type="checkbox"/>		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3 C	Angiospermy → It is the study of flowering plants. Like sunflower It involves study of seed dispersal, plant reproduction etc.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4 d	Copyright → It is printing, publishing of idea, letter or writing
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1 d	Copyright It is the right entrusted to a person for printing, publishing or reproducing new ideas of a particular writing or idea. (which is designed & produced by creator's mind). Protected under Copyright Act. No one can use without the permission.
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	E	Gravity \rightarrow It is the pressure ^{acceleration} acting on a mass of body due to gravitational pull of Earth. * Denoted by g * Value $g = 9.8 \text{ m/s}^2$			
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<input type="checkbox"/>	<input type="checkbox"/>				
1	F	Electric field is produced by a charged particle or flow of current. It is measured in Coulombs.			
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<input type="checkbox"/>	<input type="checkbox"/>				
1	G	Probability \rightarrow Possibility of occurrence of single event from multiple possible outcomes called probability of an event. Probability of tossing a coin Probability of head = $(1/2)$			
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1	H	Insect - 3 do			
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1	I	<p>Gene Mapping → It is study on decoding the genetic sequence of an organism from its DNA.</p> <p>Use → targeted Drug delivery → detect genetic disease</p>
1	J	<p>Protein synthesis is the process of formation of proteins inside the cell of organism. Through enzymes like lipase.</p>
1	K	<p>Bandwidth is the range of frequency (f_1 to f_2). For Eg. Bandwidth of visible light is 380nm - 720nm.</p> <p>use in communication - 2G, 3G, 4G, 5G operations.</p>
1	L	<p>Magnetic Flux → It is the magnetic field force experienced a unit North pole placed at a particular point in magnetic field.</p> <p>→ Gauss law determines magnetic flux</p>

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✓
CARTOSAT - It is ^{an Earth} observation satellite placed in geostationary orbit used for military purposes.

Radioactive isotopes of an element lying in the same block of periodic table having same atomic number but different atomic masses & show radioactivity.

Genetic drift is a change whose genetic structure is modified through either deletion or removal of particular gene.





2	A	<p>Nuclear fission → process in which on bombardment of neutron to a radioactive element, it splits into two radioactive element of lower mass & atomic number.</p>
		<p>Eg. ${}^1_0n + {}^{235}_{92}\text{U} \rightarrow {}^{141}_{54}\text{Xe} + {}^{92}_{38}\text{Sr} + {}^1_0n + \text{Energy}$</p>
		<p>Energy generation in fission of Uranium isotope it produces 3 more neutrons which further strikes with 3 other Uranium atom to split them and produce 9 other neutrons + huge amount of energy. This process goes on and hence generation of significant amount of energy take place in nuclear reactor.</p>
		<p>Use - Electricity generation Nuclear Energy</p>
		<p>neutron Bombarded.</p> <p>3 more neutron produced</p> <p>9 neutrons produced</p>



2	C	Housing → It is governed and regulated under Ministry of housing & urban affairs.
<input type="checkbox"/>	<input type="checkbox"/>	2 innovations → Rooftop solar panel compulsory for commercial buildings
<input type="checkbox"/>	<input type="checkbox"/>	Energy Conservation Building Code
<input type="checkbox"/>	<input type="checkbox"/>	① Rooftop solar panel → Govt provide subsidy for installation of rooftop solar panel ↳ Also the households can sell excess energy to the DISCOMS.
<input type="checkbox"/>	<input type="checkbox"/>	② Energy Conservation Building Code → should be adopted for administrative government & commercial buildings.
<input type="checkbox"/>	<input type="checkbox"/>	Like Use of Energy Efficient Appliances (Eq. LED), water harvesting system.
<input type="checkbox"/>	<input type="checkbox"/>	* Biomass produce from sewage from residential houses.



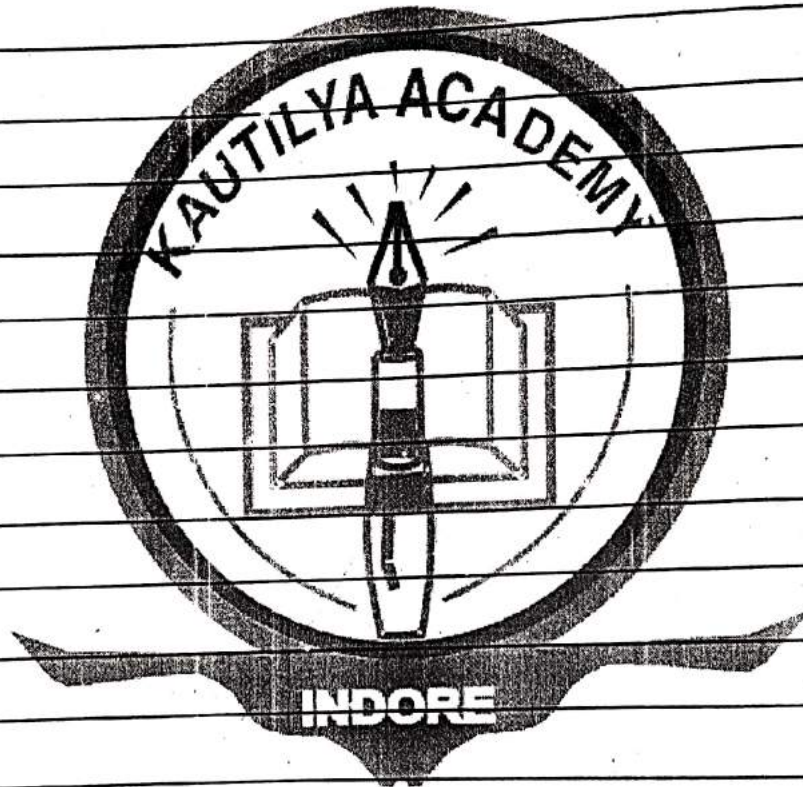


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2 E

Sickle cell anemia →
 ↳ It is a genetic disorder
 ↳ In this



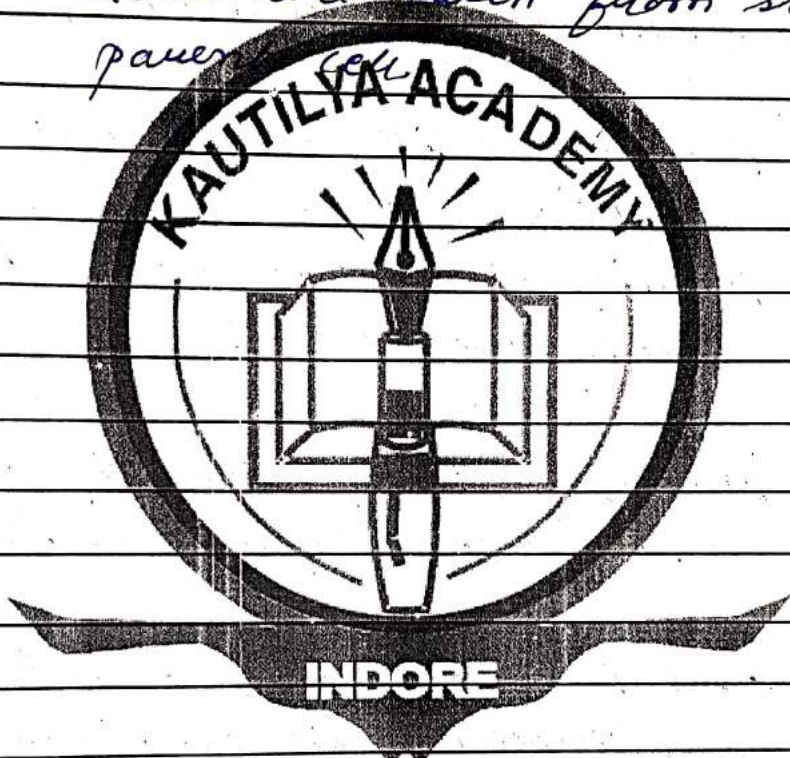
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<input type="checkbox"/> 2 <input type="checkbox"/> R	What is cloning →
<input type="checkbox"/> <input type="checkbox"/>	↳ It is production of daughter cells exactly identical to the parent cell
<input type="checkbox"/> <input type="checkbox"/>	↳ Genes are taken from single
<input type="checkbox"/> <input type="checkbox"/>	parent cell
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2	61	Nanotechnology → Use of nano sized particles to obtain desired outcome.
<input type="checkbox"/>	<input type="checkbox"/>	Nanotechnology use in medicine
<input type="checkbox"/>	<input type="checkbox"/>	↳ Target delivery of drugs
<input type="checkbox"/>	<input type="checkbox"/>	↳ Targeted drug delivery without affecting healthy cells.
<input type="checkbox"/>	<input type="checkbox"/>	↳ Manufacture of drug by changing molecule of molecule at nanoscale
<input type="checkbox"/>	<input type="checkbox"/>	↳ Coated nano particles used to treat heart arteries
<input type="checkbox"/>	<input type="checkbox"/>	↳ Absorb toxic materials from blood with help of coated nano particles.
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<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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2	H	<p>Petroleum → Petroleum is a fossil fuel obtained in sedimentary rocks</p>
		<p>↳ formed due to marine transgression or submergence under sea.</p>
		<p>↳ In India found in Bombay high, Bassett, Digboi (Assam), Naharkatiya (Assam)</p>
		<p>Petroleum Refinery Bhatindi (UP)</p>
		<p>Digboi (Assam) Naharkatiya (Assam)</p>
		<p>Bombay (MH) high Bassett (MH) INDORE</p>
		<p>↳ used in transportation sector</p>



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2	5	Biopesticides:-
		Pesticides produced with the help of organic & natural elements like Biomass, without use of any chemicals in it is known as Biopesticides.
		<u>Example</u> → to kill → to kill rodents & termites.
		<u>Advantage</u> → Environment friendly ↳ Contribute to soil productivity ↳ Balance sustainable - pest population & crop health ↳ help in Eutrophication ↳ key in Integrated pest management



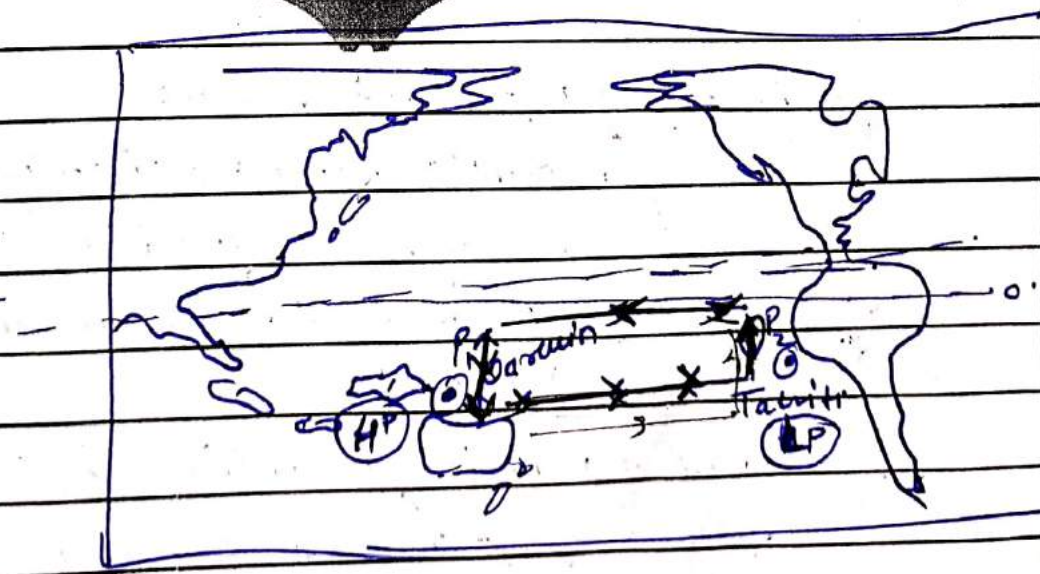
2 K

EL NINO → * Atmospheric oscillation of pressure ^{difference} between southern Indian ocean & southern Pacific ocean. Leads to a condition of El Niño Effect.

* When high pressure forms over south Pacific near Peru due to replacement of cold peruvian current by warm water

* And High pressure over Australia Ocean.
* Winds flow from Australia to south American land. This is known as El Niño.

* Effect Deficient rainfall in India.



2 4

Bio mass Energy →

Biomass is Organic waste generated from agriculture residue, Human, Animal Excreta, household vegetable waste etc. from Biomass.

Process

- These waste are put under a tank with particular pressure & temperature.
- Bacteria & microbes lead to degradation of Biomass into simpler forms.
- degradation led to generation of gas like methane & ammonia.
- Gas trapped & used to run turbine to generate and produce electricity.

Advantage →

- on free
- Environmental friendly
- decrease the load of landfills
- help in solid waste management

Current scenario in India current produce 9.9 GW of Biomass Energy in 2019.



3 A

Renewable Resources of Energy

↳ The sources of energy whose rate of replenishment or amount of availability is far greater than the its usage for electricity generation. Eg. Solar Energy, wind Energy, Biomass Energy etc.

Non Renewable Resources of Energy

↳ Resources which takes millions of years for its replenishment, which is far compared to its current rate of consumption. and may get exhaust on rapid consumption. Eg. Coal, Petroleum, natural gas.

Solar Energy

India is 3rd largest producer as well as consumer of solar energy after China & USA.

With rapid pace of urbanisation & industrialisation, energy requirements





<input type="checkbox"/>	<input type="checkbox"/>	are geosynchronous manifolds.
<input type="checkbox"/>	<input type="checkbox"/>	→ Around 20% of energy requirement of India is met by Renewable Energy (~84 GW in 2019).
<input type="checkbox"/>	<input type="checkbox"/>	→ India's commitment in Paris deal to increase capacity to 175 GW.
<input type="checkbox"/>	<input type="checkbox"/>	production of Energy from Renewable. In this 100 GW is to be contributed by solar Energy.
<input type="checkbox"/>	<input type="checkbox"/>	→ India being tropical country - has natural advantage of solar Energy.
<input type="checkbox"/>	<input type="checkbox"/>	→ Distribution more or less uniform throughout the country.
<input type="checkbox"/>	<input type="checkbox"/>	→ India with help of France set up International solar Alliance.
<input type="checkbox"/>	<input type="checkbox"/>	→ Example of Rewa - Ultra Mega power plant of solar Energy → will provide



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Energy to Delhi metro. → show
its contribution towards urban develop-
-mental needs of India's future

But still some obstacles like
Equipment, quality, nationwide
infrastructure needs addressed





3 B

Solid Waste Management →

Waste generated due to domestic, Municipal & Industrial left over in solid form contribute to solid waste

The solid waste collection, transportation, disposal of solid waste comes under solid waste management.

Technologies used under solid waste management include

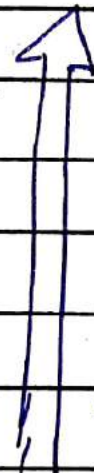
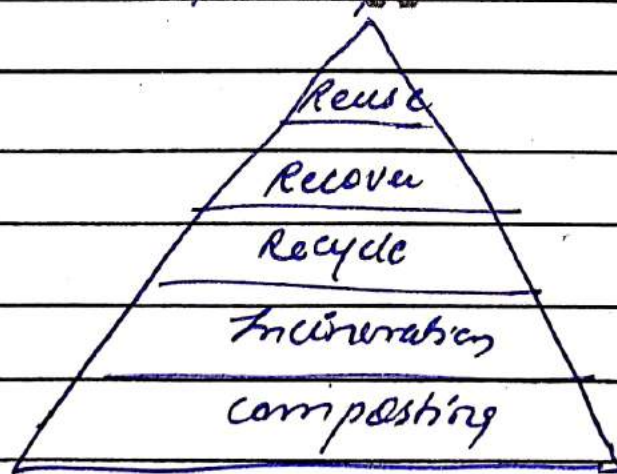
(1) Incineration

(2) Land remediation

(3) Landfilling

(4) Landfilling

(5) Composting



Hierarchy of solid waste management



<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	(1) Incineration → Burning of solid waste after proper segregation is called Incineration. Heat & gas released are trapped to produce energy.
<input type="checkbox"/>	<input type="checkbox"/>	(2) Bioremediation → use of microbes to convert complex organic waste to simple form is known as Bioremediation.
<input type="checkbox"/>	<input type="checkbox"/>	(3) Zero Waste → Especially useful in industrial waste management with the help of sustainable.
<input type="checkbox"/>	<input type="checkbox"/>	(4) Land fill → after proper arrangement to land control leachates → land fill is done by → other waste is dumped.
<input type="checkbox"/>	<input type="checkbox"/>	(5) Composting → Putting of solid waste under Temperature & pressure



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<input type="checkbox"/> <input type="checkbox"/>	<p>to convert it into organic manner is known as composting</p>
<input type="checkbox"/> <input type="checkbox"/>	<p>Solid waste management is</p>
<input type="checkbox"/> <input type="checkbox"/>	<p>key concern of today's developing world. It is</p>
<input type="checkbox"/> <input type="checkbox"/>	<p>Essential in promoting SDG's to</p>
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