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

प्रश्न
संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

<input type="checkbox"/>	<input type="checkbox"/>	1. 1	ISRO stands for <u>Indian Space Research Organisation</u> . It is the <u>national space agency</u> of India. It is headquartered in <u>Bengaluru</u> .
<input type="checkbox"/>	<input type="checkbox"/>	1. 2	BARC or <u>Bhabha Atomic Research Centre</u> is premier <u>atomic and nuclear research agency</u> of India. It is headquartered in <u>Trombay, Mumbai</u> .
<input type="checkbox"/>	<input type="checkbox"/>	1. 3	<u>Satyendra Nath Bose</u> was Indian scientist & Physicist. He is known for his <u>Bose-</u> <u>Einstein Quantum Theory</u> .
<input type="checkbox"/>	<input type="checkbox"/>	1. 4	Technology that is developed by a country without taking any international or outside help. e.g. <u>Atakash missile of India</u> .
<input type="checkbox"/>	<input type="checkbox"/>	1. 5	The technology to <u>analyse</u> & gather <u>information</u> about an object <u>without</u> <u>making any physical contact</u> .
<input type="checkbox"/>	<input type="checkbox"/>	1. 6	Using less energy to perform the same task is called <u>energy efficiency</u> .
<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>		



1	8	The <u>market based system</u> to <u>trade carbon emission</u> so that <u>Greenhouse gases</u> emissions can be reduced, is referred as <u>Carbon trading</u> .
1	9/10	<u>Environmental education</u> is the branch of education that is based on <u>environment protection</u> .
1	10	<u>Green audit</u> of an organization is the audit of its <u>impact on environment</u> through various activities.
1	12	<u>Igneous rocks</u> are those rocks which are formed due to <u>solidification</u> of <u>magma and lava</u> .
1	13	<u>Weathering</u> is the process of <u>breaking down</u> of rocks into <u>smaller particles</u> by the various agents of weathering.
1	14	<u>NGT</u> or <u>National Green Tribunal</u> is the <u>statutory body</u> to deal with <u>environmental disputes</u> .

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<input type="checkbox"/> 1.	<input type="checkbox"/> 15	Earth's crust is the <u>outer</u> most part of the earth. It is mainly <u>rocky</u> .
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> 1.	<input type="checkbox"/> 7	Biomass energy is that energy which is harnessed from the <u>living</u> or <u>once living organism</u> . e.g. <u>plants</u> .
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> 1.	<input type="checkbox"/> 9	Gene bank is a <u>pool</u> or <u>repository</u> of genes that <u>conserves genetic material</u> of different organism.
<input type="checkbox"/> 2.	<input type="checkbox"/> 1	Biotechnology is technology which is based on <u>biotic</u> or <u>living component</u> of the environment. Living organism such as <u>bacteria</u> , <u>fungi</u> etc. are used in this technology. Biotechnology is used in various sector such as <u>health</u> , <u>agriculture</u> , <u>industries</u> etc.
<input type="checkbox"/>	<input type="checkbox"/>	The use of biotechnology :
<input type="checkbox"/>	<input type="checkbox"/>	① In manufacturing <u>genetic crops</u> such as <u>BT cotton</u> , <u>BT Brinjal</u> .
<input type="checkbox"/>	<input type="checkbox"/>	② <u>Genetic engineering</u> — <u>CRISPR Tech</u> .
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Bio fertilizers</u> — <u>PSA</u>
<input type="checkbox"/>	<input type="checkbox"/>	④ <u>Bio decomposer</u> — <u>PVA Decomposer</u>
<input type="checkbox"/>	<input type="checkbox"/>	⑤ In <u>Brewing & baking</u> — <u>yeast</u> is used in <u>bread making</u> .

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	2.	The growing sphere of technology has impacted human life as never before.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			The impacts can be seen as:
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			① Communication & transport facility
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			② Faster delivery system
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			③ Online shopping
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			④ Genome editing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			⑤ State of the art machinery
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			⑥ High speed internet etc
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	3	Remote sensing is a technology to analyze an object without making any physical contact. India has pre launched several remote sensing satellite to observe the weather, agriculture land use, resource mapping etc. The first remote sensing satellite of India was <u>RISAT 1</u> which was launched with the help of <u>Russian space agency</u> in <u>1988</u> . After that India has launched various remote sensing satellites such as <u>RISAT 1A</u> , <u>CAROSAT</u> , etc. The recent ones are <u>Amazonia</u> of <u>Brazil & Argentina</u> which was launched by <u>ISRO</u> .

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2.	4	<p>Energy management is control & operation of energy resources & its usage. India being a developing country has limited energy resources. In such case energy management becomes of paramount importance. India has taken various steps to conserve, control & manage its energy resources, and is part of various International treaty such as <u>International solar alliance</u>, <u>Paris Climate Agreement</u> etc</p>
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
2.	5	<p>India being a <u>tropical</u> country experience most of its days under the influence of the sun. It has a great potential to harness the <u>energy of sun</u> which is called the <u>solar energy</u>. In order to do so India founded the <u>International solar alliance</u> with the help of <u>France</u>. Under which solar energy is harnessed & conserved. India has also set, under its <u>Internationally determined contribution</u> to attain <u>175 GW</u> of energy that will come from renewable energy sources by 2020. Out of which <u>100 GW</u> will be contributed through <u>'solar power'</u></p>
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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<input type="checkbox"/>	<input type="checkbox"/>	<p>2. 8</p> <p>Groundwater management is the control & management of groundwater resources. India is one of the top countries going through a <u>ground water scarcity</u> situation. <u>Unscientific</u> agriculture practices & <u>unsustainable</u> irrigation is the main cause of it. Government is taking various step to conserve the ground water such as <u>drip irrigation</u>, <u>scientific planning</u> for agriculture, <u>crops</u> according to water availability etc.</p>
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<p>2. 9</p> <p>Big Bang theory is the theory regarding the <u>origin</u> of the <u>universe</u>. According to this there was a <u>tiny volume</u> thing with <u>infinite volume & density</u> which was called <u>singularity</u>. It <u>exploded</u> & kept <u>exploding</u> & thus the universe was formed. The <u>stars & planets</u> were formed through it. A The <u>spreading</u> of universe is still continuing.</p>
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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It has different variant such as
GSLV Mk II & GSLV Mk III.

Chandrayan-II was launched using
the GSLV Mk III vehicle.



<input type="checkbox"/>	<input type="checkbox"/>	<u>Conditions for surrogate mother</u> —
<input type="checkbox"/>	<input type="checkbox"/>	① she should be any relative of the couple who is doing it for altruistic purpose.
<input type="checkbox"/>	<input type="checkbox"/>	② she should already be a mother.
<input type="checkbox"/>	<input type="checkbox"/>	③ she should be at least 25-35 years of age.
<input type="checkbox"/>	<input type="checkbox"/>	<u>Challenges</u> :- ① The Act provides for only <u>altruistic</u> surrogacy.
<input type="checkbox"/>	<input type="checkbox"/>	② there is no provision for <u>single parents</u> , <u>LGBTQ+</u> parents etc.
<input type="checkbox"/>	<input type="checkbox"/>	③ The surrogates have to be a relative.
<input type="checkbox"/>	<input type="checkbox"/>	④ The past intending parents to have to wait for 5 years even if they found out it in their early years of marriage.
<input type="checkbox"/>	<input type="checkbox"/>	⑤ No monetary incentives or rewards for the surrogate mother except the medical expenses & insurance.
<input type="checkbox"/>	<input type="checkbox"/>	There are several loopholes in the Act which prevents a large population of intending parents to go for surrogacy. This needs to be revisited and make the Act <u>more inclusive</u> .

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<input type="checkbox"/>	<input type="checkbox"/>	3. 3
<input type="checkbox"/>	<input type="checkbox"/>	There are various sources of energy which are available at human's disposal.
<input type="checkbox"/>	<input type="checkbox"/>	These can be categorised as :
<input type="checkbox"/>	<input type="checkbox"/>	(1) Conventional sources
<input type="checkbox"/>	<input type="checkbox"/>	(2) Non conventional sources
<input type="checkbox"/>	<input type="checkbox"/>	Within the conventional sources they can be classified as :
<input type="checkbox"/>	<input type="checkbox"/>	(1) Commercial sources &
<input type="checkbox"/>	<input type="checkbox"/>	(2) Non commercial sources.
<input type="checkbox"/>	<input type="checkbox"/>	<u>Commercial sources</u> under <u>Conventional sources</u> — It includes those sources which are of commercial in nature & form part of industrial & use also. Sources such as coal, Petroleum, oil & natural gas.
<input type="checkbox"/>	<input type="checkbox"/>	The major source of these are Chotanagpur plateau (coal), Gujarat & Maharashtra coast (Petroleum & natural gas), Krishna-Godavari Basin (Natural gas), Assam (oil)
<input type="checkbox"/>	<input type="checkbox"/>	<u>Non-commercial sources</u> of <u>Conventional sources</u> — It includes those sources

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<input type="checkbox"/>	<input type="checkbox"/>	of energy which are freely available such as <u>fire wood</u> , <u>cowdung</u> etc.
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<u>[Non-Conventional sources]</u> → This includes sources of energy which are <u>not traditional</u> & are mostly <u>re-nouable</u> in nature.
<input type="checkbox"/>	<input type="checkbox"/>	These are:
<input type="checkbox"/>	<input type="checkbox"/>	① <u>Wind energy</u> → Energy is produced & harnessed through winds using windmills. <u>Tamilnadu coast</u> harnesses this energy the most
<input type="checkbox"/>	<input type="checkbox"/>	② <u>Solar power</u> → Energy from solar radiation, the using solar panel.
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Geothermal energy</u> → Energy that is harnessed from the <u>hot springs</u> & <u>geysers</u> . eg. <u>Manikaran lake</u> <u>Himachal</u> <u>Pradesh</u> .
<input type="checkbox"/>	<input type="checkbox"/>	④ <u>Biomass energy</u> → Energy from biomass such as <u>gobar gas plant</u> etc.
<input type="checkbox"/>	<input type="checkbox"/>	India has set a target of attaining <u>175 GW</u> of renewable energy by <u>2022</u> under its <u>Internationally</u> <u>determined Contribution</u> . It is working towards this goal to achieve the <u>SDGs</u> also. By doing this the <u>SDGs</u> goals will also be achieved.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. 4	Anything that surrounds us is referred as environment. When the hydrosphere, lithosphere & biosphere interact it is called the environment.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		The environment is the sphere where all the to <u>abiotic</u> components & <u>biotic</u> components which is <u>non-living</u> & <u>living organisms</u> respectively interact is called the environment.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		The scope of environment or the environmental studies can be described as :
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		(1) To educate about the effect & impact of environment on human & other lines.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		(2) The significance of environment.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		(3) The importance of environment protection.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		(4) The methods & practices to be used to make it more sustainable.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		(5) The judicious use of environmental resources.



<input type="checkbox"/>	<input type="checkbox"/>	There are different dimensions of environment. These can be explained as :
<input type="checkbox"/>	<input type="checkbox"/>	as :
<input type="checkbox"/>	<input type="checkbox"/>	① <u>Lithosphere</u> - The earth's up crust & upper mantle. The rocky part of its surface where the human life exists.
<input type="checkbox"/>	<input type="checkbox"/>	② <u>Hydrosphere</u> - The Ocean & other water bodies. It comprises around ^{around} 70% of earth. It include the <u>marine</u> life & <u>aquatic</u> life.
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Atmosphere</u> - The air which surrounds the earth is called the atmosphere. It consist mainly <u>Nitrogen</u> (78%) & <u>Oxygen</u> (21%), CO ₂ & other gases in minute quantity.
<input type="checkbox"/>	<input type="checkbox"/>	④ <u>Biosphere</u> - The interaction of the above three is called biosphere where the human life & other living organism exist.
<input type="checkbox"/>	<input type="checkbox"/>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Lithosphere</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Hydrosphere</div> </div>
<input type="checkbox"/>	<input type="checkbox"/>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;">Environment</div>
<input type="checkbox"/>	<input type="checkbox"/>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Atmosphere</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Biosphere</div> </div>

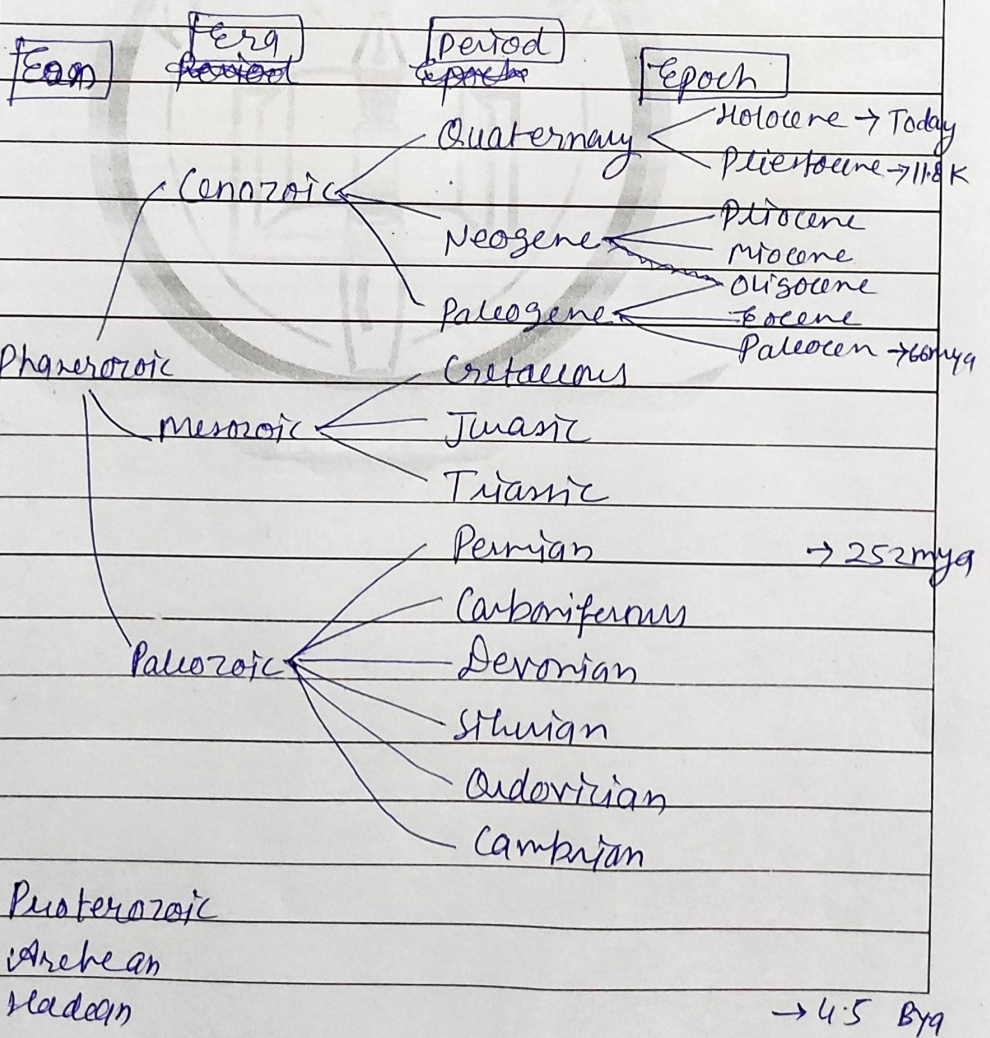


3. 5.

Geological time scale is the division of the time on the basis of origin & evolution of the earth with respect to different geological attributes & events.

□ □
□ □
□ □

It is divided into ^{Era,} Eon, Period, Age & epoch. It can be depicted as:



→ 4.5 Bya