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 Date - 28/02/2022

73 1/2

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

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
 (Mains Answer Sheet)

1. 1

Force is that cause that changes the static or moving position of an object.

e.g. Pull or push. formula unit?

1 1/2

1. 2

Angle rays are positively charged particle's beam or ray. unit?

2

1. 3

Velocity is change in the direction of displacement with given time interval.

$$V = \frac{\text{Displacement}}{\text{Time}}$$

unit? scalar or vector?

1 1/2

1. 4

acceleration is change in rate of velocity of an moving object with time interval.

$$a = \frac{\text{change in rate of velocity}}{\text{Time}}$$

unit?

1 1/2

1. 5

Dimension is measurement of an object in a specific direction on the basis of length, height etc.

2

प्रश्न संख्या

1.	6	An element is simplest form of a pure substance which can neither be further broken or built, e.g. gold.
1.	7.	Nuclear fission is that reaction in which the ^{hydrogen} atom splits into 2 & generates energy.
1.	8	Zinc flower is an oxide of zinc which is in form of white powder. It is used in pharmaceuticals & cosmetics.
1.	9	acid is that chemical substance that gives H^+ ions & whose pH value is less than 7.
1.	10	Noble metals are those metals which do not react with other substances very easily. such as gold, silver.
1.	11	Oxy respiration or aerobic respiration is that is which happens in the presence of oxygen.

property?

life

example? applications?

litmus test?

example?

11/2

प्रश्न संख्या

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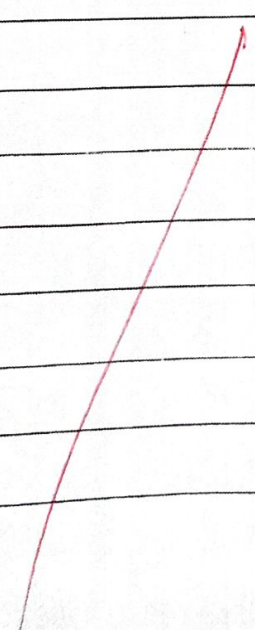
1.	12	Infectious disease are those diseases which transmit very quickly. These are highly contagious. e.g. viral diseases.
1.	13	Cell division ^{is} process of producing more cell. In this the cell itself divides to give birth to new cells.
1.	14	Hormones are chemical messengers. They are generally proteins, peptides, steroids etc. They are secreted by endocrine glands. e.g. Adrenal.
1.	15	Fertilization is union of gametes (female egg & male sperm) to produce zygote.

transmission route?

be specific

happen in importance?

types?



2.	1	<p><u>Gravitational force</u> is the <u>attractive</u> force between two bodies. In other words, it is a <u>universal force</u> which acts <u>between</u> between all the matters. The force that earth has is called its <u>gravity</u>.</p>
3	3	<p>According to <u>Newton's law</u>, the <u>gravitational force</u> between two bodies is <u>directly proportional</u> to their <u>product of their masses</u> & <u>inversely proportional</u> to the ^{square of} <u>distance</u> between them.</p>
		$F = G \frac{m_1 m_2}{r^2}$
		<p>where F = <u>Gravitational force</u></p>
		<p>G = <u>Gravitation constant</u></p>
		<p>m_1 & m_2 = <u>mass of 2 bodies</u></p>
		<p>r = <u>distance between them</u></p>
2.	2	<p><u>Audible sound</u> is that <u>sound wave</u> which can be <u>heard by the human ears</u>. The <u>sound wave</u> with <u>frequency range of 20 Hz to 20,000 Hz</u> is called <u>audible sound wave</u>. On the other hand, <u>Inaudible sound waves</u> are <u>not those sound waves</u> which cannot be heard by <u>human ears</u>. These <u>sound waves</u> have the <u>frequency of more than 20,000 Hz</u>. Only animals such as <u>dogs</u> can hear it. These are called <u>ultrasonic sound waves</u>.</p>

give example in bulge is earth due to gravity of sun.

2/2
add more points

2. 3.

Thermometer is an instrument that is used to measure the temperature of human body.

unit?

1/2

There are various types of thermometers such as:

① Mercury thermometer

②

③

④

2. 4.

Artificial magnet are those magnets which are made artificially by the human.

These magnets are made by magnetized Iron or its alloys such as steel etc.

The artificial magnets are made in different shape such as bar shape, horse shoe shape etc.

3/2

These artificial magnets are used in radio, television, telephone, loud speakers etc.

add more applications

Since the natural magnets are not found in abundance, these artificial magnet are proven to be very useful.

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(Mains Answer Sheet)

प्रश्न संख्या

Add more points

2 1/2

reactivity? place in periodic table? mels?

2. 5.

Physical properties of metals:

① They are lustrous or shiny in appearance. e.g. Gold, silver.

② They are malleable or mouldable.

③ They are ductile.

④ They are good conductors of electricity.

⑤ They are generally found in solid state at room temperature. Mercury is exception to this.

2. 6.

Mosley's periodic table is called modern periodic table. It is based on the order of atomic number of the elements. According to Mosley the elements show their physical & chemical properties according to their atomic number.

Mosley divided his periodic table in 4 blocks:

s-block - consists alkali metals.

These are from group 2-10

p-block - This consists of halogens, inert gases etc.

d-block - It consists elements from 8-10 group.

f-block - It contains rest of the elements.

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

2 7.

alkalis are those substances that give hydroxyl OH^- ions in an aqueous solution. Alkalis are basically bases. They turn red litmus paper into blue. Their pH value is more than 7. They give OH^- ions. The donate electron & can accept protons. e.g. CaOH , KOH etc.

write in points
use?

2 1/2

2. 8

Functions of the cell are as follows:
① Cellular respiration
② Production of energy
③ Growth of the body
④ Transpiration of minerals
⑤ Cell division to promote & stimulate growth

Start with definitions
of cell

1 1/2

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Nutrition in plants is done through various ways :
<input type="checkbox"/>	<input type="checkbox"/>	① Photosynthesis - They use chlorophyll, sunlight & CO ₂ to make food.
<input type="checkbox"/>	<input type="checkbox"/>	② Parasitism - Plants such as <u>cuscuta</u> or <u>Amorbel</u> which can't produce food through photosynthesis as they don't have chlorophyll, so they take food from their host tree.
<input type="checkbox"/>	<input type="checkbox"/>	③ Saphrophytic nutrition - Saprophytes such as fungi, they take their nutrition from old food etc.
<input type="checkbox"/>	<input type="checkbox"/>	④ Insectivores - Plants such as <u>pitcher plants</u> are insectivores. They eat the insects for nutrition.
<input type="checkbox"/>	<input type="checkbox"/>	⑤ Symbiosis - Fungi & algae live in symbiotic association called <u>lichens</u> . In this relation one provides the shelter & the other provide food to the other.
<input type="checkbox"/>	<input type="checkbox"/>	
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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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3 1/2

good knowledge about topic

प्रश्न संख्या

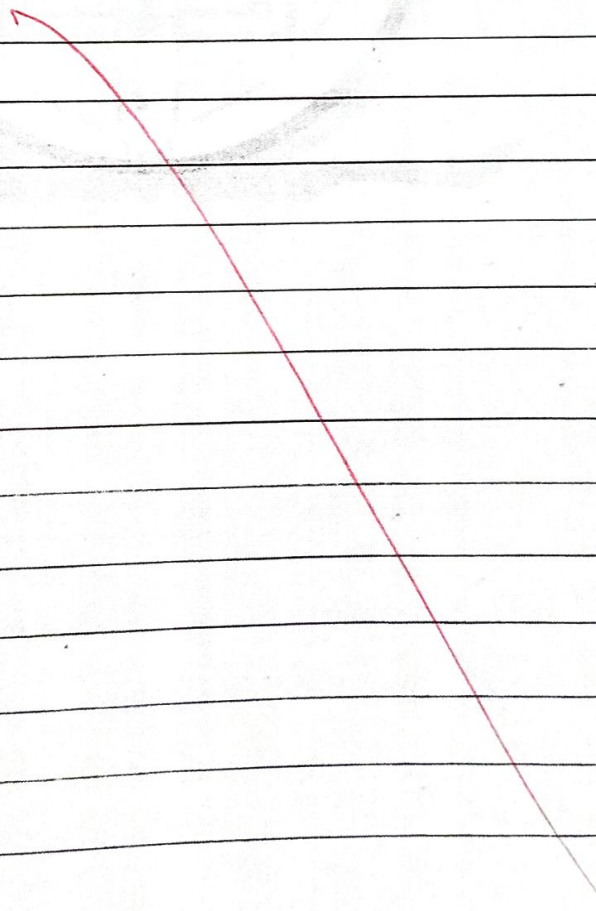
21 10

acid rain is that kind of precipitation whose pH value is less than 7. It can be in form of fog, mist, vapour, rainfall etc. Pollutants such as Sulphur dioxide (SO_2) & Oxides of Nitrogen (NO_x) get mixed with the precipitation & fall with them as acid rain. Long exposure to acid rain can cause cancer. These SO_2 & NO_x are mainly generated through fossil fuel emissions.

mention reaction of acid rain

mention problem of Taj Mahal turning yellow

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मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

प्रश्न संख्या

3	1	Sound waves are longitudinal mechanical waves.
		Sound waves can travel through all the 3 mediums i.e. solid, gas & liquid. The speed of sound is highest through solids.
		On the basis of the frequency range of the sound waves they can be divided as follows:
		(1) Audible sound waves - The frequency range of 20 Hz to 20,000 Hz of sound wave is audible to human ears & hence called audible sound waves. Any vibrating particle between this range can be heard by human ears.
		(2) Infrasonic sound waves - The frequency of less than 20 Hz comes under this category. Big events such as earthquakes produce these sound waves. Sound of elephants & whales are also infrasonic sound waves.

draw flow chart

sound waves

audible infrasonic ultrasonic

uses

avoid repetition

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

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

<input type="checkbox"/>	<input type="checkbox"/>	① <u>Ultrasonic sound waves</u> — The frequency of <u>more than 20,000 Hz</u> of comes under this category. The <u>ultrasonic sound waves</u> are not heard by the <u>human ears</u> but can be heard by <u>certain animals</u> such as <u>dogs, bats</u> etc.
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<u>Features of sound waves</u> :-
<input type="checkbox"/>	<input type="checkbox"/>	① <u>Intensity</u> — Intensity of a sound wave can be defined as the <u>area through which</u> a sound wave passes in a <u>unit time</u> .
<input type="checkbox"/>	<input type="checkbox"/>	② <u>Frequency</u> — The frequency of sound wave is that <u>the number of times</u> waves the sound wave passes through a <u>particular point</u> .
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Quality</u> — The quality of sound depends upon the <u>intensity & the frequency</u> of the sound wave.
<input type="checkbox"/>	<input type="checkbox"/>	④ <u>Pitch</u> — The sharpness and dullness of the sound is called <u>pitch</u> .
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

Substantiated
by
drawing
diagram

add
application
of
ultrasonic

6

3	2	Chemicals are used in day to day human life. It is an important part of modern lifestyle.
		There are different chemical substances which are used in daily life in one form or in another.
		Some of them can be described as follows:
		(1) salt Sodium chloride (NaCl) - It is used as normal salt in food.
		(2) Sodium Benzoate - It is used as preservative.
		(3) Sandstone $CaCO_3$ as calcium carbonate - It is used in cement manufacturing.
		(4) Sodium carbonate - It is used as baking soda in food items.
		(5) Sodium tri carbonate - It is used as detergent.
		(6) Alum - It is used to purify water.

give proper definition

mention formula

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

भारत का नं. 1 संस्थान
कौटिल्य एकेडमी
सफलता का पथ है ज्ञान

<input type="checkbox"/>	<input type="checkbox"/>	⑦ <u>Hydrochloric acid (HCl)</u> → It is used as <u>preservative</u> in pickles. Also used to <u>remove tanning of utensils</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑧ <u>Sulphuric acid (H₂SO₄)</u> → It is used as <u>cleaning agent</u> in <u>bathroom cleaning</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑨ <u>Phosphoric acid</u> - Used in <u>fertilizer manufacturing</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑩ <u>Ammonium Nitrate</u> - Used in <u>making explosives</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑪ <u>Potash</u> - used as <u>fertilizer</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑫ <u>Ammonia</u> - used as <u>fertilizer</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑬ <u>Citric acid</u> - In food products as <u>flavouring agent</u> .
<input type="checkbox"/>	<input type="checkbox"/>	⑭ <u>Bleaching powder</u> - It used as <u>bleaching agent</u> .
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Hence, <u>chemicals</u> has a <u>significant role</u> to play in <u>daily life</u> of humans.

mention examples from current affairs

also write formulae

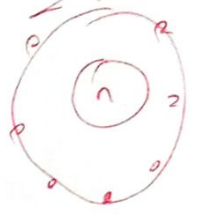
6

पृष्ठ
संख्या

मुख्य परीक्षा उत्तर पत्रिका
(Mains Answer Sheet)

35	35	Atomic structure of an atom consists of a nucleus, which consists of protons & neutrons. This nucleus is surrounded by the electrons which are revolving around it.
		The model of atomic structure has evolved over the period of time. There have been different scientists who have propounded different models of the atomic structure. Let's have a look at it:
		① Dalton's model of atom - Dalton in early 19th century propounded this model. In his model every atom has a nucleus in its centre. All the atoms of an element are similar in all aspects & different from the atoms of other elements.
		He could not explain the existence of isotopes & isobars through his model. This was the major drawback of his model.

Substantiate with diagram



mention the same
↓
Billiard ball model

~~also mention limitation of model~~

Atom can neither be created nor be destroyed

4 years?

Substantiated every diagram

Nuclear model

volume occupied by +ve charge is very small

planetary model

orbital shells, energy levels

mention limitation

6

<input type="checkbox"/>	<input type="checkbox"/>	② <u>J.J. Thomson's model</u> - J.J. Thomson
<input type="checkbox"/>	<input type="checkbox"/>	propounded his <u>water-melon model</u>
<input type="checkbox"/>	<input type="checkbox"/>	or <u>Plum-pudding model</u> of atom
<input type="checkbox"/>	<input type="checkbox"/>	According to which <u>positively charged</u>
<input type="checkbox"/>	<input type="checkbox"/>	<u>Protons</u> are <u>uniformly distributed</u> in
<input type="checkbox"/>	<input type="checkbox"/>	the atoms & <u>negatively charged electrons</u>
<input type="checkbox"/>	<input type="checkbox"/>	are <u>embedded</u> in between.
<input type="checkbox"/>	<input type="checkbox"/>	He failed to specify ^{about} the <u>stability</u> of
<input type="checkbox"/>	<input type="checkbox"/>	the atom.
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Rutherford's model</u> - Through his
<input type="checkbox"/>	<input type="checkbox"/>	<u>Gold foil with α particle scattering</u>
<input type="checkbox"/>	<input type="checkbox"/>	<u>experiment</u> , he proved that <u>nucleus</u>
<input type="checkbox"/>	<input type="checkbox"/>	is <u>positively charged</u> & consists <u>Protons</u>
<input type="checkbox"/>	<input type="checkbox"/>	in it. & <u>electrons move around it</u> .
<input type="checkbox"/>	<input type="checkbox"/>	④ <u>Bohr's model</u> - In <u>1904</u> Bohr finally
<input type="checkbox"/>	<input type="checkbox"/>	propounded the model which was
<input type="checkbox"/>	<input type="checkbox"/>	<u>widely accepted</u> . According to this <u>nucleus</u>
<input type="checkbox"/>	<input type="checkbox"/>	is <u>positively charged</u> with presence of
<input type="checkbox"/>	<input type="checkbox"/>	<u>neutral Neutron</u> & <u>positively charged</u>
<input type="checkbox"/>	<input type="checkbox"/>	<u>Proton</u> . <u>Electrons revolve around it</u> in
<input type="checkbox"/>	<input type="checkbox"/>	their <u>orbit</u> . This model is still
<input type="checkbox"/>	<input type="checkbox"/>	used to understand the <u>atomic structure</u> .

मुख्य परीक्षा उत्तर पुस्तिका
 (Mains Answer Sheet)

प्रश्न संख्या

pdf of answers not scanned by the student

<input type="checkbox"/>	<input type="checkbox"/>	pandemic the ex <u>medical oxygen</u> crisis <u>wreaked havoc</u> . <u>Situations were even worse in the metropolises.</u>
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Lack of awareness</u> - <u>Due to lack of awareness among people the virus spread more quickly.</u>
<input type="checkbox"/>	<input type="checkbox"/>	However, the governments at <u>central & state levels</u> were very <u>quick to respond</u> & <u>several measures</u> were taken to <u>curb the spread</u> . These can be described as follows:
<input type="checkbox"/>	<input type="checkbox"/>	① <u>A Nation wide lockdown</u> in early stages.
<input type="checkbox"/>	<input type="checkbox"/>	② <u>Awareness campaigns</u> to <u>bring awareness among people.</u>
<input type="checkbox"/>	<input type="checkbox"/>	③ <u>Arrangement of medical equipment & other medical facilities.</u>
<input type="checkbox"/>	<input type="checkbox"/>	④ <u>Rapid vaccination drive</u>
<input type="checkbox"/>	<input type="checkbox"/>	⑤ <u>Protection of employment</u> through various schemes such as <u>Aatma Nirbhar Bharate</u>
<input type="checkbox"/>	<input type="checkbox"/>	<u>Covid-19</u> <u>shook the whole nation</u> but with <u>government responses & stimulus</u> it was <u>handled in very well manner.</u>

2/10

categorywise measure at different levels
 ↓
 national level
 state level
 district level

प्रश्न
संख्या

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(Mains Answer Sheet)



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

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<input type="checkbox"/>	<input type="checkbox"/>	Covid-19 shook the whole nation but with government responses & stimulus it was handled in very a well manner.

प्रश्न संख्या

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write proper definitions

3

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Nutrients are those substances that are essential for human body to function is well. These constitute the very fundamental part of human body.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>These are some basic or most essential nutrients, such as :</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>① Carbohydrates - provide instant energy.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>② Proteins - Building blocks of human body.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>③ Fats - Provide energy & maintain the temperature of body.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>④ Minerals</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>⑤ Water</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>⑥ Vitamins</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>⑦ Fibers.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>These nutrients play a key role to for a healthy development of the human body & brain.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Their usage, can be explained as follows :</p>

add more info

