

MPPSC - 2019-20

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physics + chemistry + bio. + math + stats

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भारत का नं. 1 शैक्षणिक
कौटिल्य अकादमी
राजस्थान का प्रवेश द्वार...

96/150

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुरिका
(Main Answer Sheet)

1	A	SI unit system
		is standard system for measuring quantities
		are decided by international organization + 19 - force.
		Basic units = 7
		time → second, mass = kilogram (kg)
		derived from force (Newton) kg ms^{-2}
1	B	Kirchoff's Law
		used in decided flow of electric current through circuit.
		$i_1 = i_2 + i_3 + i_4$
1	C	Buffer solution — chemical solution that has electrolytes and is used in electrolysis process.



मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

प्रश्न संख्या

1	D	<p>Carbon monoxide —</p> <ul style="list-style-type: none"> ◦ chemical formula — CO ◦ poisonous, colourless gas ◦ formed by incomplete complete combustion of carbon. ◦ used in making producer gas etc
1	E	<p><u>Antibodies</u> — these are substances that fight against antigens, foreign & microorganism causing disease</p> <p>Present in Plasma of human blood</p> <p>Recently plasma therapy used to transfer antibodies from cured Covid patient to unhealthy.</p>
1	(F)	<p><u>Reflex Action</u> → sudden action caused by body against foreign agents of heat, smell, hurt on body etc</p> <p>→ part of central nervous system</p> <p>→ protect body from harm</p> <p>→ is very quick.</p>

प्रश्न संख्या

मुख्य परीक्षा उत्तर पत्रिका
(Mains Answer Sheet)



भारत का नं. 1 संस्थान
कीर्ति एकेडमी
राजस्थान का प्रवेश द्वार

1 G Homi Jhanganji Bhabha - was great Indian scientist, an physicist.
• He is pioneer in set up nuclear research programme in India
• the Bhabha Atomic Research Centre (BARC) is named in his honor.

1 H Islet of Langerhans - It is a part of Pancreas in human body
- It causes to release Insulin in human body.
- It is beta (β) type
- protects body from getting high sugar levels (Diabetes)

1 I cost price = Rs 9600 = CP₁
(S.P)₁ = $9600 \times \frac{95}{100} = 96 \times 95 =$
with this he bought another item \Rightarrow
(C.P)₂ = (S.P)₁ = 96×95
Profit = 5% $\rightarrow 96 \times 95 \times \frac{105}{100}$
total profit = $\frac{96 \times 95 \times 105}{100} - 9600$
 $= 96 \times \frac{[95 \times 105 - 100]}{100}$

LAN $\frac{24}{100} \times 100 = 24$
100%

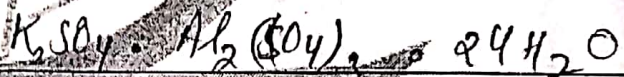
Intranet \rightarrow is a type of network connection

It is limited to particular region

eg. In [Company] use Intranet

\rightarrow protect data breach.

Potash Alum \rightarrow is an sulphate of potassium and aluminium



used in cleaning water

cleaning after shave.

24

Chandrasekhar Bhatt \rightarrow great environmentalist of India

\rightarrow He guided India's Chipko movement

\rightarrow He set up NGO protecting environment

13

प्रश्न
संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)



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

<input type="checkbox"/>	(14) <u>escape velocity</u> → minimum velocity to throw any object from gravity of earth.
<input type="checkbox"/>	• It's independent of body mass.
<input type="checkbox"/>	② • Its standard value is 11.2 km/s on earth surface.
<input type="checkbox"/>	• satellite required to move with this speed to go into orbit in space.
<input type="checkbox"/>	
<input type="checkbox"/>	M <u>Meiosis</u> is process of cell division
<input type="checkbox"/>	• Take place in animals, bacteria.
<input type="checkbox"/>	② • Responsible for cell division leading to formation of new cells.
<input type="checkbox"/>	O <u>Gibberellin</u> → is Plant hormone
<input type="checkbox"/>	→ responsible for growth & decides height
<input type="checkbox"/>	→ if low ⇒ dwarf plant
<input type="checkbox"/>	High ⇒ Tall plant.
<input type="checkbox"/>	②

6

मुख्य परीक्षा उत्तर पुस्तिका
 (Mains Answer Sheet)

प्रश्न संख्या

2	(B)	
		Fare for 1 st 5 km = x (1)
		next fare unit = Rs 13/km (2)
		Total payment = Rs 2402 (3)
		Total distance = 187 km (4)
		from 267 From ① ② & ③
		Total distance
		Total fare = x + (182) × 13
		187 - 5 km = 182 km fare at
		Rs 13/km
		= 2402
		⇒ 2402 x = 2402 - 182 × 13
		= 2402 - 2366
		= 36
		<u>x = 36</u>
		(u)

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका (Mains Answer Sheet)

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

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	mean and mode are measure of central tendency.
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Mean is sum of total values of all observations divided by total number of observation
<input type="checkbox"/>	<input type="checkbox"/>	Mean = $\frac{\text{sum of value of observation}}{\text{Total number of observation}}$
<input type="checkbox"/>	<input type="checkbox"/>	$\text{mean} = \frac{\sum_{i=1}^n x_i}{n}$
<input type="checkbox"/>	<input type="checkbox"/>	Mode is defined as the value of the most frequent term in the given observations.
<input type="checkbox"/>	<input type="checkbox"/>	- i.e. if any term comes most number of times then this is called mode of those observations.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Along with it median forms 3 central measures of central tendency.
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	



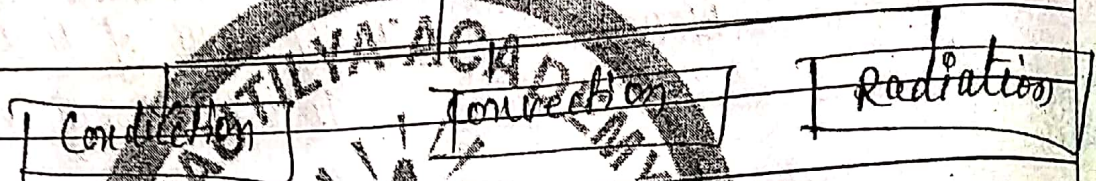
मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

प्रश्न संख्या

2 D

Heat is energy associated with high temperature. Main source is Sun.

methods of heat transfer

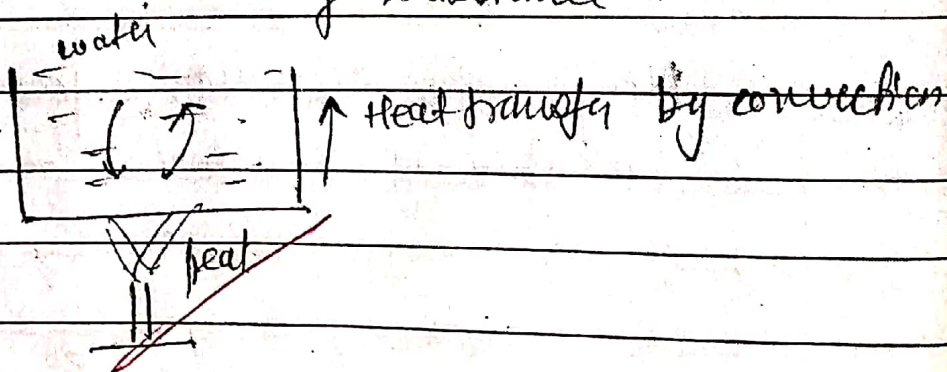


Conduction - transfer of heat when 2 surface are in contact



convection - Generally in liquid material

- Transfer of heat by movement of substance



प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

2	(E)	Acid & Base have the following differences	
<input type="checkbox"/>	<input type="checkbox"/>	Acid	Base
<input type="checkbox"/>	<input type="checkbox"/>	• Sour taste	• Bitter taste
<input type="checkbox"/>	<input type="checkbox"/>	• Gives H^+ ion on dissociation in water	• Gives OH^- ion on dissociation in water
<input type="checkbox"/>	<input type="checkbox"/>	• Gives electron (Lewis acid)	• Accepts electron (e^-) (Lewis base)
<input type="checkbox"/>	<input type="checkbox"/>	• Turn blue litmus red	• Turn Red litmus blue
<input type="checkbox"/>	<input type="checkbox"/>	• Turn methyl orange into pink	• Turn methyl orange unchanged
<input type="checkbox"/>	<input type="checkbox"/>	• Examples HCl, H_2SO_4, HNO_3	• examples $NaOH, NH_4OH$
<input type="checkbox"/>	<input type="checkbox"/>	• pH ranges between [0 - 7]	• pH ranges [7 - 14]
<input type="checkbox"/>	<input type="checkbox"/>	• uses →	• uses
<input type="checkbox"/>	<input type="checkbox"/>	• Oxalic acid - Tomatoes	- Caustic Soda - $NaOH$
<input type="checkbox"/>	<input type="checkbox"/>	• Malic acid - Apple	- Bile juice
<input type="checkbox"/>	<input type="checkbox"/>	• Acetic acid - Vinegar	
<input type="checkbox"/>	<input type="checkbox"/>	• Saliva	

25



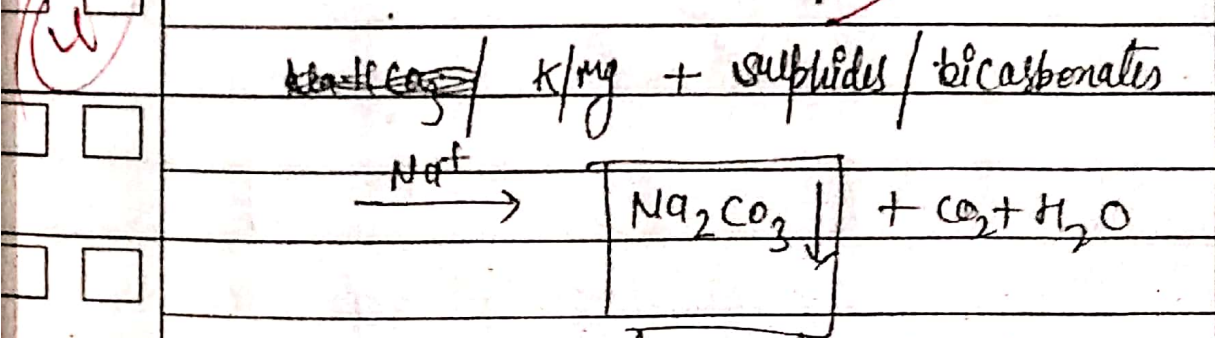
2 (F) Hardness of water is due to presence of soluble salts that reduces suds action of detergents and forms less froth in water.

ways to overcome it -

(I) ~~By~~ Removing temporary hardness
 By boiling hard water
 Turns insoluble salt into insoluble carbonates.

(ii) Permanent hardness of K/mg salt of sulphides and bicarbonates -

By ——— Clark process
 ——— Permut process.



Removing hardnesses protect clothes, metal from white scum formation.



2 4P

Virus — are microorganism that are harmful for human body.

Information on virus —

- They sequester human body as host to replicate
- They are generally unable to survive without host
- They are highly susceptible to mutations leading to causing some of deadly diseases

- ↳ eg — HIV/AIDS — no vaccine
- polio virus — polio vaccine.
- Covid-19 — ^{individual} vaccine / sputnik by Russia.

• There is cell division by mitosis process.

4

General mode of transfer is by Air, water, faecal-oral etc. Covid-19 by Corona virus is one of deadly virus disease.

प्रश्न संख्या

<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 (7) Digestive system includes many process — Ingestion, transportation, digestion, assimilation and defecation.
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	So there are various diseases related to it —
<input type="checkbox"/>	<input type="checkbox"/>	* GERD → a gastric disease, where Acid formed in stomach move back towards oesophagus.
<input type="checkbox"/>	<input type="checkbox"/>	* Diarrhoea → due to Bacteria; causes problem in intestine
<input type="checkbox"/>	<input type="checkbox"/>	* cholera disease due to contaminated food
<input type="checkbox"/>	<input type="checkbox"/>	* Acidity → use of Antacids like milk of magnesia.
<input type="checkbox"/>	<input type="checkbox"/>	* Diabetes → where insulin formation is stopped ↳ food intake is regulated especially sugar.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	* Lactose intolerance
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	These are some diseases related to digestive system.

16



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

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

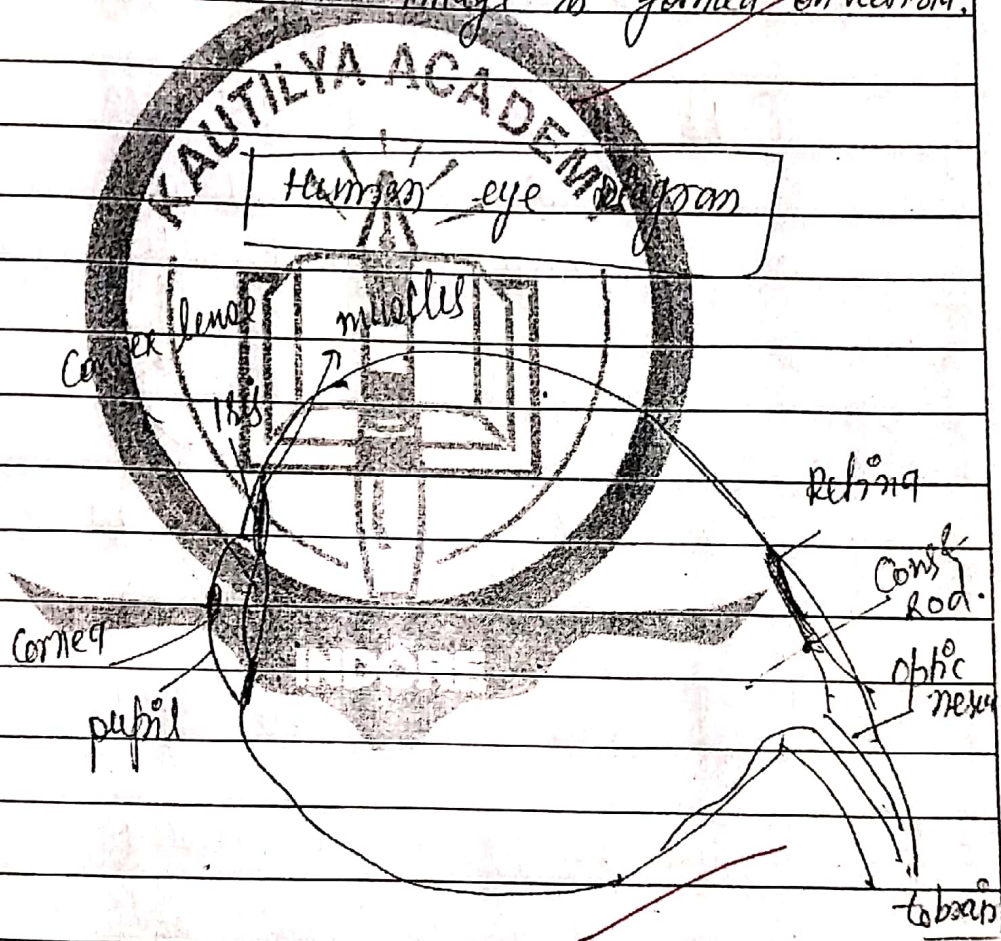
2	A	let total amount distributed be $4x$
		Amount that B should actually get $= \frac{3x}{2+3+4} = \frac{3}{9}x = \frac{x}{3}$ (1)
		Amount that A got by mistake $= \frac{2x}{7+2+5}$
		$\frac{2x}{14} = \frac{x}{7}$ (2)
		B gets Rs 40 less
		So from (1) & (2) $\frac{x}{3} - \frac{x}{7} = 40$
		$\frac{7x - 3x}{21} = 40 \Rightarrow x = 210$
		So, total amount = in x , = <u>Rs 210</u> Answer
		4/3



3 A

3 B

Human eye is system that enable us to see objects around us. It has a convex lens through which light enters and image is formed on Retina.



Formation of image →

Right light enters Cornea → Converged by Convex lens at Retina → Signal is sent to brain → It uprights image.

प्रश्न संख्या

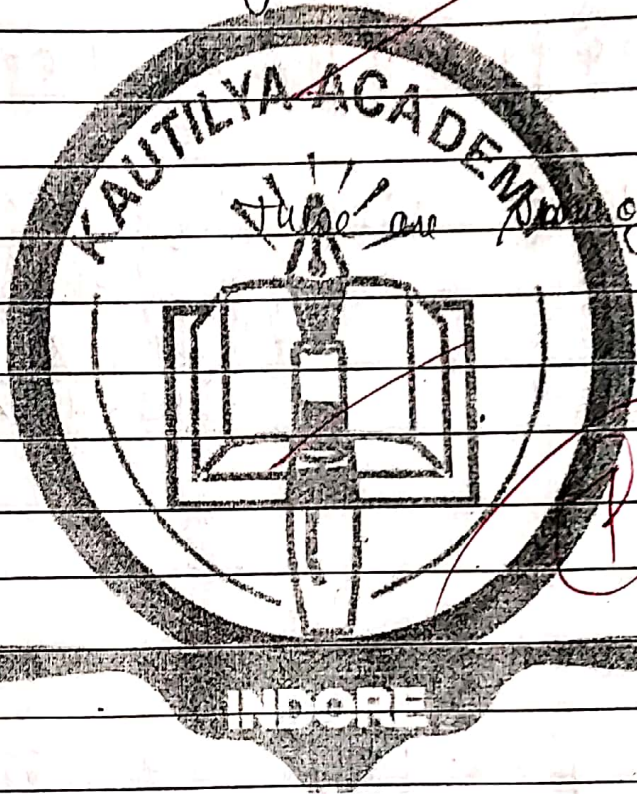
मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)



भारत का नं. 1 संस्थान
कौटिल्य एकेडमी
सफला का पथ है।

(3) Night blindness - due to deficiency of Retinol (Vitamin A).

(4) Color Blindness → inability to differentiate certain type of colors.



These are some of vision defects.



प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

3	(E)	
	(i)	No. of women going supermarket A $= \frac{34560 \times 55}{100} \quad \text{--- (1)}$
		No. of women going market C = $\frac{45640 \times 45}{100}$
		 Ratio A : C = $\frac{34560 \times 55}{45640 \times 45}$
		 $= \frac{384}{414}$
		 $= \frac{64}{69}$
	(ii)	No. of men going to D = $\frac{55500 \times 41}{100}$
		$= 555 \times 41$
		No. of total persons = 303600
		 Approx % = $\frac{555 \times 41}{303600} \times 100$
		 $= 7.04\%$



प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका
(Mains Answer Sheet)

<input type="checkbox"/>	<input checked="" type="checkbox"/>	No. of children to C = $45640 \times \frac{20}{100} \times \frac{1}{5}$
<input type="checkbox"/>	<input type="checkbox"/>	= $4564 \times 2 = 9128$
<input type="checkbox"/>	<input type="checkbox"/>	No. of children going to SM-F
<input type="checkbox"/>	<input type="checkbox"/>	= $59658 \times 14 \%$
<input type="checkbox"/>	<input type="checkbox"/>	= $\frac{59658 \times 14}{100} = 1193 \times 7$
<input type="checkbox"/>	<input type="checkbox"/>	% of Required = $\frac{9128}{1193 \times 7} \times 100$
<input type="checkbox"/>	<input type="checkbox"/>	= $\frac{9128}{8351} \times 100$
<input type="checkbox"/>	<input type="checkbox"/>	= 109.30%
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Total no. of children for B & D
<input type="checkbox"/>	<input type="checkbox"/>	= $65900 \times \frac{20}{100} + 55500 \times \frac{33}{100}$
<input type="checkbox"/>	<input type="checkbox"/>	= 31495 children.
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

प्रश्न संख्या

मुख्य परीक्षा उत्तर पुस्तिका (Mains Answer Sheet)



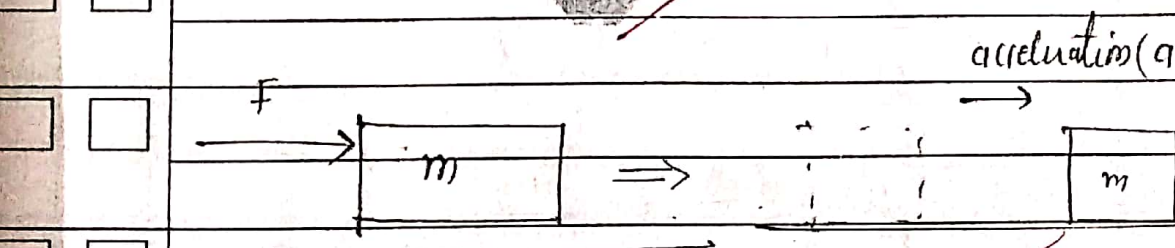
भारत का नं. 1 संस्थान
कौटिल्य एकेडमी
सफलता का प्रवेश द्वार

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Force is push or pull on object with mass that causes it to move or stop, changing its velocity and so causes acceleration.
-------------------------------------	-------------------------------------	---

<input type="checkbox"/>	<input type="checkbox"/>	Formula $\Rightarrow F = ma$
<input type="checkbox"/>	<input type="checkbox"/>	$F = \text{force}, m = \text{mass}, a = \text{acc}$
<input type="checkbox"/>	<input type="checkbox"/>	$a = \text{acceleration}$

<input type="checkbox"/>	<input type="checkbox"/>	About Force SI unit = Newton (N)
<input type="checkbox"/>	<input type="checkbox"/>	$\hookrightarrow \text{kgms}^{-2}$
<input type="checkbox"/>	<input type="checkbox"/>	Other unit - dyne etc

<input type="checkbox"/>	<input type="checkbox"/>	Force results into
<input type="checkbox"/>	<input type="checkbox"/>	change in velocity
<input type="checkbox"/>	<input type="checkbox"/>	can stop object moving
<input type="checkbox"/>	<input type="checkbox"/>	can move, stopped objects.



<input type="checkbox"/>	<input type="checkbox"/>	$F = ma$
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<input type="checkbox"/>	<input type="checkbox"/>	It is explained under second law of Newton.
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प्रश्न संख्या

There are 2 types of forces

Contact forces

Non Contact forces

- Tension force

- Frictional force

- Muscular force

- Gravitational

- magnetic

- Electrical force

- Nuclear force

(I) Contact force

* Tension force



pulling objects on both side like wire

causes its expansion.

* muscular force

↳ porter lifting luggage from ground to its head.



