TARGET BOARD EXAMINATION 2025-26

DAY 4
4/50

Social Science

Q1. The Silk route was a good example of vibrant premodern trade and cultural links between distant parts of the world." Explain the statement with any two examples.

Ans. *The following explains why the silk routes are an excellent illustration of commerce and cultural ties between distant regions of the world:*

(i) *Several land– and sea– based silk routes that connected Asia with Europe and Northern Africa as well as enormous swathes of Asia have been recognised by historians.*

(ii) *Through these paths, the China monopolised arts of silk weaving and sericulture expanded to Iran, Central Asia and other countries.*

(iii) *Gold and silver, two precious metals, were traded from Europe to Asia.*

(iv) *Buddhism originated in India and dispersed across the Silk Road's intersections in multiple directions.*

Q2. Why is power sharing desirable? Explain

Ans. Desirability of Power Sharing:

(i) *Power sharing is good because it helps to reduce the possibility of conflict between social groups.*

(ii) *Power sharing is the very spirit of democracy.*

Q3. Describe any three causes that led to the Non- Cooperation Movement.

Ans: ***(i)*** *Gandhiji launched the Non–Cooperation Movement with the aim of self– governance and obtaining full independence.*

(ii) *The Indian National Congress withdrew its support for British reforms against the Rowlatt Act and the Jallianwala Bagh incident.*

(iii) *Indian Muslims who had participated in the Khilafat Movement to restore the status of the Caliph (the spiritual leader of Muslims) gave their support to the Non-Cooperation Movement.*

Q4. Explain the process of formation of 'United Kingdom of Great Britain

Ans *:* ***(i)*** *Different Kingdoms: A long time ago, England, Scotland and Wales were separate kingdoms with their own rulers and ways of doing things.*

(ii) *One King for Two Kingdoms: In 1603, a guy named James VI of Scotland also became James I of England. So, he was the king of both countries, but they were still separate.*

(iii) *Joining Parliaments: In 1707, England and Scotland decided to join their parliaments (the people who make the laws) together. This made them one country called Great Britain.*

(iv) *Wales and Ireland: Wales had already been part of England for a while and in 1801, Ireland joined the mix. So, it became the United Kingdom of Great Britain and Ireland.*

(v) *Ireland's Split: Later on, in 1922, Ireland split from the United Kingdom and became its own country (except for Northern Ireland, which stayed part of the UK). So, the United Kingdom of Great Britain formed when England and Scotland joined forces, later adding Wales and Ireland into the mix.*

Q5. How did the ideology of 'liberalism' affect the Europe in early nineteenth century? Explain.

Ans: *The ideology of liberalism allied with nationalism in the following ways****:***

(i) *Liberalism stood for freedom for individual and equality of all before law.*

(ii) *It emphasised on the concept of government by consent.*

(iii) *It stood for the end of autocracy and clerical privileges****.***

(iv) *It believed in a constitution and representative government through Parliament****.***

(v) *The coming of the railways further linked harnessing economic interests to national unification as it helped stimulate mobility.*

MATHEMATICS

Q1. The sum of two numbers is 34. If 3 is subtracted from one number and 2 is added to another, the product of these two numbers becomes 260. Find the numbers.

Ans: *Let the first number be x and second number be y.*

According to question

$$x + y = 34$$

$$\Rightarrow \quad y = 34 - x \quad \text{...(i)}$$

$$\text{and} \quad (x-3)(y+2) = 260 \quad \text{...(ii)}$$

Substituting value of y from eq (i), in eq (ii), we get

$$(x-3)(34-x+2) = 260$$

$$\Rightarrow \quad (x-3)(36-x) = 260$$

$$\Rightarrow \quad 36x - x^2 - 108 + 3x = 260$$

$$\Rightarrow \quad x^2 - 39x + 368 = 0$$

On comparing the above quadratic equation with $ax^2 + bx + c = 0$, we get

$$a = 1, b = -39 \text{ and } c = 368$$

$$\therefore \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{39 \pm \sqrt{(-39)^2 - 4(1)(368)}}{2 \times 1}$$

$$x = \frac{39 \pm \sqrt{1521 - 1472}}{2}$$

$$= \frac{39 \pm \sqrt{49}}{2} = \frac{39 \pm 7}{2}$$

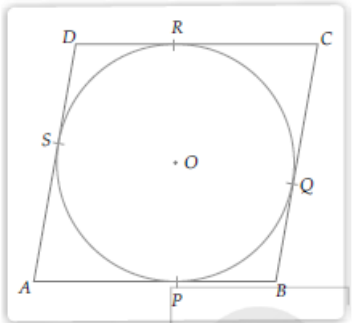
$$= \frac{39+7}{2} \text{ or } \frac{39-7}{2}$$

$$x = \frac{46}{2} \text{ or } x = \frac{32}{2}$$

Q2.Prove that a parallelogram circumscribing a circle is a rhombus.

Ans. *Let ABCD be a parallelogram.*

Therefore, opposite sides are equal



$$\therefore \quad AB = CD \quad \text{...(i)}$$

$$BC = AD \quad \text{...(ii)}$$

Now, $BP = BQ$ (Tangents from point B) ...(iii)

$CR = CQ$ (Tangents from point C) ...(iv)

$DR = DS$ (Tangents from Point D) ...(v)

$AP = AS$ (Tangents from point A) ...(vi)

On adding eqs. (iii), (iv), (v) and (vi), we get

$$BP + CR + DR + AP = BQ + CQ + DS + AS$$

On re-grouping, we get

$$(BP + AP) + (CR + DR) = (BQ + CQ) + (DS + AS)$$

$$\Rightarrow \quad AB + CD = BC + AD$$

$$\Rightarrow \quad AB + AB = BC + BC \quad \text{[from eqs. (i) and (ii)]}$$

$$\Rightarrow \quad 2AB = 2BC$$

$$\Rightarrow \quad AB = BC$$

Thus, $AB = BC = CD = DA$

This implies that all the four sides are equal.

Therefore, the parallelogram cicumscribing a circle is a rhombus.

Q3. The mode of a grouped frequency distribution is 75 and the modal class is 65-80. The frequency of the class preceding the modal class is 6 and the frequency of the class succeeding the modal class is 8. Find the frequency of the modal class.

Ans. *Given, Mode = 75*

Modal class = 65 – 80

Frequency of the class preceding the modal class, $f_0 = 6$

Frequency of class succeeding the modal class, $f_2 = 8$

$$\text{Mode} = l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$$

$$\Rightarrow \quad 75 = 65 + \left(\frac{f_1 - 6}{2f_1 - 6 - 8}\right) \times 15$$

[Here, lower limit of modal class, l = 65 and class size = 15]

$$\Rightarrow \quad 10 = \frac{f_1 - 6}{2f_1 - 14} \times 15$$

$$\Rightarrow \quad 20f_1 - 140 = 15f_1 - 90$$

$$\Rightarrow \quad 5f_1 = 50$$

$$\Rightarrow \quad f_1 = 10$$

Hence, frequency of modal class (f_1) is 10.

Q If the last term of an A.P. of 30 terms is 119 and the 8th term from the end (towards the first term) is 91, then find the common difference of the A.P. Hence, find the sum of all the terms of the A.P.

Ans. Given, last term, l = 119

No. of terms in AP = 30

8th term from the end = 91

Q4. **The curved surface area of a right circular cylinder is 176 sq cm and its volume is 1232 cu.cm. What is the height of the cylinder ?**

Ans. (a) Given, C.S.A of cylinder = 176 cm^2

$\therefore \quad 2\pi rh = 176 \quad ...(i)$

and volume of cylinder = 1232

$\therefore \quad \pi r^2 h = 1232 \quad ...(ii)$

On dividing eq (ii) by eq (i), we get

$$\frac{\pi r^2 h}{2\pi rh} = \frac{1232}{176}$$

$$\Rightarrow \quad \frac{r}{2} = \frac{1232}{176}$$

$$\Rightarrow \quad r = \frac{1232 \times 2}{176}$$

$$\Rightarrow \quad r = \frac{2464}{176} = 14 \text{ cm}$$

Now, from eq (i),

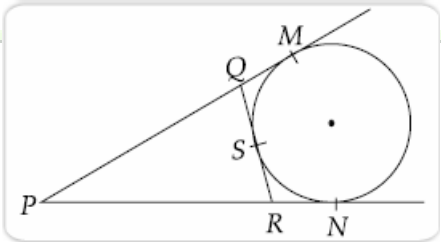
$$2\pi(14)\, h = 176$$

$$h = \frac{176 \times 7}{2 \times 22 \times 14}$$

$$= \frac{1232}{616} = 2 \text{ cm}$$

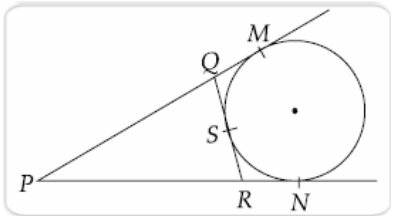
Hence, height of right circular cylinder = 2 cm

Q5. In fig. 2 if a circle touches the side QR of ΔPQR at S and extended sides PQ and PR at M and N, respectively, then



Prove that $PM = \frac{1}{2}(PQ + QR + PR)$

Ans : Given: A circle is touching a side QR of ΔPQR at point S.



Let d be the common difference and assume that the
first terms of AP is 119 (from the end)
Since, nth term of AP is
$\Rightarrow a_n = l + (n-1)\, d$
$\Rightarrow a_8 = 119 + (8-1)\, d$
$\Rightarrow 91 = 119 + 7d$
$\Rightarrow 7d = 91 - 119$
$\Rightarrow 7d = -28$
$\Rightarrow d = -4$
Now, this common difference is from the end of $A.P.$
So, common difference from the beginning = $-d$
= – (–4) = 4
Thus, common difference of the AP is 4.
Now, using formula

$$l = a + (n-1)\, d$$

$$\Rightarrow \quad 119 = a + (30-1)\, 4$$

$$\Rightarrow \quad 119 = a + 116$$

$$\Rightarrow \quad a = 119 - 116$$

$$\Rightarrow \quad a = 3$$

Hence, using formula for sum of n terms of an AP.

i.e., $$S_n = \frac{n}{2}[2a + (n-1)d]$$

$$S_{30} = \frac{30}{2}[2 \times 3 + (30-1) \times 4]$$

$$= 15\,(6 + 29 \times 4)$$
$$= 15\,(6 + 116)$$
$$= 15 \times 122$$
$$= 1830$$

Therefore, sum of 30 terms of an AP is 1830.

Q6. **Find the value of 'k' for which the quadratic equation $2kx^2 - 40x + 25 = 0$ has real and equal roots**

Ans: Given quadratic equation is

$2kx^2 - 40x + 25 = 0$

On comparing the above equation with

On comparing the above equation with

$ax^2 + bx + c = 0$, we get

We get,

$$a = 2k, b = -40, c = 25$$

For real and equal roots, $D = 0$

i.e., $b^2 - 4ac = 0$

or, $(-40)^2 - 4\,(2k)(25) = 0$

$\Rightarrow \quad 1600 - 200\,k = 0$

$\Rightarrow \quad 200\,k = 1600$

$\Rightarrow \quad k = 8$

Q7. In an A.P., the sum of first n terms is n/2 (3n + 5).
Find the 25th term of the A.P.
Ans:

PQ and PR are produced at M and N respectively.

To prove: $PM = \frac{1}{2}(PQ + QR + PR)$

Proof: $PM = PN$ ...(i)

(Tangents drawn from an external point P to a circle are equal)

$QM = QS$ ...(ii)

(Tangents drawn from an external point Q to a circle are equal)

$RS = RN$ ...(iii)

(Tangents drawn from an external point R to a circle are equal)

Now,

$$\begin{aligned} 2PM &= PM + PM \\ &= PM + PN \quad \text{[from eqs. (i)]} \\ &= (PQ + QM) + (PR + RN) \\ &= PQ + QS + PR + RS \\ &\quad \text{[from eqs. (i) \& (ii)]} \\ &= PQ + (QS + SR) + PR \\ &= PQ + QR + PR \end{aligned}$$

$$\therefore \quad PM = \frac{1}{2}(PQ + QR + PR)$$

Hence Proved

Ans. Given,

$$S_n = \frac{n}{2}(3n + 5)$$

$$\therefore \quad S_{n-1} = \frac{n-1}{2}[3(n-1) + 5]$$

or $$S_{n-1} = \frac{n-1}{2}(3n + 2)$$

Since,

$$\begin{aligned} a_n &= S_n - S_{n-1} \\ &= \frac{n}{2}(3n + 5) - \frac{n-1}{2}(3n + 2) \\ &= \frac{3n^2}{2} + \frac{5n}{2} - \frac{3n(n-1)}{2} - \frac{2(n-1)}{2} \\ &= \frac{3n^2}{2} + \frac{5n}{2} - \frac{3n^2}{2} + \frac{3n}{2} - n + 1 \\ &= \frac{8n}{2} - n + 1 \\ &= 4n - n + 1 \\ &= 3n + 1 \end{aligned}$$

Now, $a_{25} = 3(25) + 1$

or, $a_{25} = 75 + 1 = 76$

Thus, 25^{th} term of *A.P.* is 76.

SCIENCE

Q1. Define the term pollination. Differentiate between self pollination and cross pollination. What is the significance of pollination?

Ans: *The transfer of pollen grains from the anther to the stigma of a flower is known as pollination. The two types of pollination:*

(a) Self pollination: *When the pollen grains from the stamens of a flower fall on the stigma of the same flower, then it is called self pollination.*

(b) Cross pollination: *When pollen grains from the stamens of a flower fall on the stigma of another flower, it is called cross pollination.*

Significance of pollination:

(i) *It is a significant event because it precedes fertilization.*

(ii) *It brings the male and female gametes closer for the process of fertilization.*

(iii) *Cross-pollination introduces variations in*

Q5. (a) What is an electromagnet ? List any two uses.

(b) Draw a labelled diagram to show an electromagnet is made.

(c) State the purpose of soft iron core used in making an electromagnet.

(d) List two ways of increasing the strength of an electromagnet if the material of the electromagnet is fixed.

Ans*: a) Electromagnet: Magnet formed by producing magnetic field inside a solenoid.*

Uses of electromagnet:

Inside TVs, sound speakers and radios.

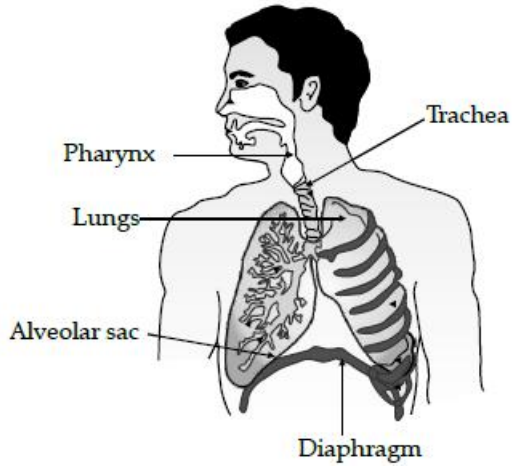
Inside a generator to transform mechanical energy to electrical energy.

(b) *Labelled diagram to show how an electromagnet is made:*

plants because of the mixing of different genes. These variations further increase the adaptability of plants towards the environment or surroundings.

Q2. Draw a diagram of human respiratory system and label - pharynx, trachea, lungs, diaphragm and alveolar sac on it.

Ans.



Q3. Why is there a difference in the rate of breathing between aquatic organisms and terrestrial organisms? Explain

Ans: *Terrestrial organism can obtain oxygen directly from the air and have slow breathing rate but; aquatic organisms have to obtain oxygen for respiration which is dissolved in water. Since, the amount of oxygen dissolved in water is fairly low as compared to the amount of oxygen in air; the rate of breathing in aquatic organisms is much faster.*

Q4. (a) Name the organs that form the excretory system in human beings.

(b) Describe in brief how urine is produced in human body.

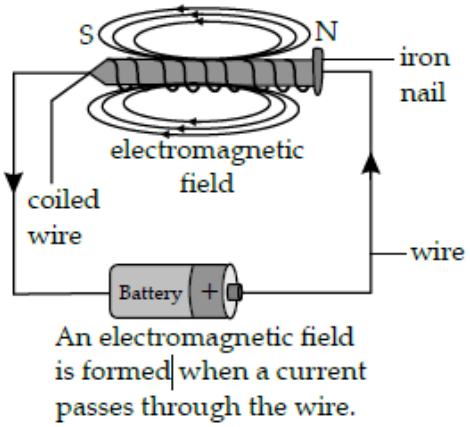
Ans : (a) Human excretory system comprises: *a pair of kidneys, a pair of ureters, a urinary bladder and a urethra.*

(b) Urine formation involves three steps:

(i) Glomerular filtration: *Nitrogenous wastes, glucose, water, amino acids filter from the blood into Bowman's capsule of the nephron.*

(ii) Tubular reabsorption: *Useful substances from the filtrate are reabsorbed back by capillaries surrounding the nephron.*

(iii) Secretion: *Urea, extra water and salts are secreted in the tubule which open up into the collecting duct and then into the ureter.*



An electromagnetic field is formed when a current passes through the wire.

(c) *Soft iron rod increases the magnetism of solenoid by a thousand fold. When the solenoid current is switched off, the magnetism is effectively switched off since the soft iron core has low retentivity.*

(d) *Ways to increase the strength of an electromagnet if the material of the electromagnet is fixed are :*

(i) *By increasing the amount of current flowing in the solenoid*

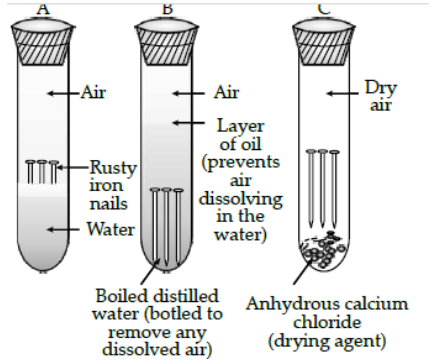
(ii) *By increasing the number of turns in the solenoid.*

Q6. What is 'rusting'? Describe with a labelled diagram an activity to investigate the conditions under which iron rusts. 3

Ans. Rusting: The process of acquiring a coating of a brown flaky substance called rust on iron when it is exposed to moist air for a long time.

Activity:

- Take three test tubes and label them as A, B and C.
- In each tube, place clean iron. Pour some water in test tube A and cork it.
- Pour distilled water in test tube B, add about 1 ml of oil and cork it.
- Put some anhydrous calcium chloride in test tube C and cork it.



Conclusion: Air and water both are essential conditions for rusting.