TARGET BOARD EXAMINATION 2025-26

DAY 3
3/50

Social Science

Q1. Why is horizontal distribution of power sharing important? Explain. 2
Ans. ***(i)*** *In horizontal division of power, power can be shared among different organs of the government i.e., the legislatures the executive and the judiciary.*
(ii) *In horizontal division of power, different organs of government exercise different powers. This is a concept of separation of powers.*
*(**iii**) Horizontal distribution specifies the concept of checks and balances in order to check the exercise of unlimited powers of the organs***.***

Q2Differentiate between organised and unorganised sectors.
Ans. *Organised and unorganised sector:*
(i) *Organised sector enjoys security of employment while unorganised sector depends on requirement.*
(ii) *In organised sector employees get paid leave while unorganised sector does not provide paid leave.*
(iii) *Over time to be paid in organised sector while unorganised sector does not have it necessarily.*
(iv) *Government rules and regulations are applicable organised sector while unorganised sector has own rules and regulations.*
*(**v**) Organised sector may be controlled either by government or individuals while unorganised sector is controlled by individuals.*

Q3 Formal sector of credit is better than informal sector. Give arguments in support of your answer
Ans: *In India, more formal credit sources must be established.*
(i) To protect individuals from being exploited by the unorganised sector.
(ii) Loan interest rates are low at formal institutions.
(iii) To avoid getting into debt.
*(**i**v) It offers inexpensive and manageable credit.*
(v) The RBI also oversees the formal sector credit through a number of laws and guidelines, ensuring that banks lend money to small farmers

Bad effects of informal sources of credit on borrowers:
*(**i**) Higher interest rate.*
(ii) Higher cost of borrowing means a larger part of the earnings of the borrowers is used to repay the loan.
(iii) In certain cases, the high interest rate for borrowing can mean that the amount to be repaid is greater than the income of the borrower.
(iv) This could lead to increasing debt and debt trap.
(v) Any other relevant point.

Q4 . Analyse the advantages of Natural Gas as a source of energy.
Ans : *Natural gas is a valuable resource in a country with limited energy resources. It has many advantages.*
1. Natural gas helps generate electricity, heating homes and preparing food.
2. It can be utilised as a fuel. Building a natural gas-powered power plant takes less time. The petrochemical sector may utilise it as an industrial input.
3. It can be utilised to develop fertiliser facilities, boosting the usage of fertilisers. In this way, it may increase the output of agriculture.
4. It can be conveniently transported via pipes.
5. Compressed natural gas (CNG) is becoming increasingly popular throughout the nation as a liquid fuel substitute for automobiles

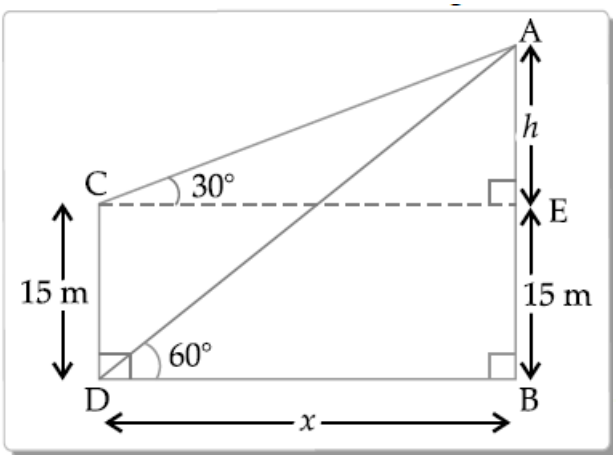
Q5.Differentiate between Primitive Subsistence and Commercial Farming.
Ans: Primitive Subsistence *Farming is primarily for self-sufficiency, with a minimal surplus for trade. It is small-scale and often practiced by indigenous or traditional communities with traditional*
farming methods, *while Commercial Farming is mainly for profit and market-oriented production. It has large-scale operations to maximise output and meet market demands by utilising modern agricultural machinery, echnology and scientific methods***.**

Q Differentiate between Rabi and Kharif cropping seasons.
Ans : 1. Rabi Crops: *Sown in winter, typically between October and December.*
Kharif Crops*: Sown in the monsoon season, typically between June and July.*
2. Rabi Crops: *Harvested in spring, usually between April and June.*
Kharif Crops*: Harvested in autumn, generally between September and October.*

MATHEMATICS

Q1. From the top of a 15 m high building, the angle of elevation of the top of a tower is found to be 30°. From the bottom of the same building, the angle of elevation of the top of the tower is found to be 60°. Find the height of the tower and the distance between tower and the building.

Ans:



Let AB = tower
CD = building
Such that $\angle ACE = 30°$
$\angle ADB = 60°$
$AE = h$ m
$EB = CD = 15$ m
& $BD = x$ m
$= CE$

Now, In DAEC, ĐE = 90° we have

tan 30= $\frac{h}{x} = \frac{1}{\sqrt{3}} = \frac{h}{x}$

x= $\sqrt{3}$ ***h***

$\Rightarrow \quad x = \sqrt{3}.h$ ...(i)

Again In ΔABD, $\angle B = 90°$, we have

$$\tan 60° = \frac{AB}{BD} \Rightarrow \sqrt{3} = \frac{h+15}{x}$$

$\Rightarrow \quad \sqrt{3}.(\sqrt{3}.h) = h + 15$ [$\because$ from (i) $x = \sqrt{3}.h$]

$\Rightarrow \quad 3h - h = 15 \Rightarrow h = 7.5$ m

$\Rightarrow \quad x = \sqrt{3}h = \sqrt{3} \times 7.5$

$\approx 1.732 \times 7.5$ m

$x \approx 12.99$ m

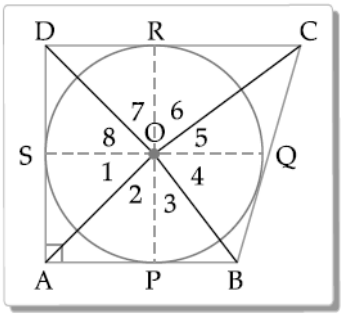
Hence height of the tower = 7.5 + 15 = 22.5 m

& distance between tower and building = 12.99 m

Q2. In the given figure, AB, BC, CD and DA are tangents to the circle with centre O forming a quadrilateral ABCD.

Show that ∠AOB + ∠COD = 180°

Ans: *Given A quad. ABCD circumscribes a circle with centre O.*



To Prove

$\angle AOB + \angle COD = 180°$

and $\angle AOD + \angle BOC = 180°$

Join OP, OQ, OR and OS.

We know that the tangent drawn from an external point of a circle subtends equal angles at the centre.

$\therefore \quad \angle 1 = \angle 2,$
$\angle 3 = \angle 4,$
$\angle 5 = \angle 6,$
$\angle 7 = \angle 8,$

And $\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5 + \angle 6 + \angle 7 + \angle 8$
$= 360°$ [$\angle$S at a Point]

$\Rightarrow 2(\angle 2 + \angle 3) + 2(\angle 6 + \angle 7) = 360°$
$2(\angle 1 + \angle 8) + 2(\angle 4 + \angle 5) = 360°$
$\Rightarrow \quad \angle 2 + \angle 3 + \angle 6 + \angle 7 = 180°$
$\angle 1 + \angle 8 + \angle 4 + \angle 5 = 180°$
$\Rightarrow \quad \angle AOB + \angle COD = 180°$
$\angle AOD + \angle BOC = 180°$

Q3.

Prove that $\sin^6\theta + \cos^6\theta = 1 - 3\sin^2\theta\cos^2\theta$.

L.H.S. $\sin^6\theta + \cos^6\theta$
$= (\sin^2\theta)^3 + (\cos^2\theta)^3$
$= (\sin^2\theta + \cos^2\theta)^3 - 3\sin^2\theta\cos^2\theta(\sin^2\theta + \cos^2\theta)$
$[a^3 + b^3 = (a + b)^3 - 3ab(a + b)]$
$= (1)^3 - 3\sin^2\theta\cos^2\theta\ (1)$
$= 1 - 3\sin^2\theta\cos^2\theta$ $(\sin^2\theta + \cos^2\theta = 1)$
$=$ R.H.S. Hence Proved

Q5. A wooden article was made by scooping out a hemisphere from each end of solid cylinder, as shown in the figure. If the height of the cylinder is 10 cm and its base is of radius 3.5 cm, find the total surface area of the article.

Q4. A dealer sells an article for ` 75 and gains as muchpercent as the cost price of the article. Find the cost price of the article.

Ans.

Let the cost price be ` x

price = ` 75

Gain = 75 – x

$$\text{Given, } \frac{75-x}{x} = \frac{x}{100}$$

$$7500 - 100x = x^2$$

$$x^2 + 100x - 7500 = 0$$

$$x^2 + 150x - 50x - 7500 = 0$$

$$x(x + 150) - 50(x + 150) = 0$$

$$(x + 150)(x - 50) = 0$$

(x + 150)(x – 50) = 0

if x + 150 = 0

x = –150 Not possible

(price cannot be negative)

x – 50 = 0

x = 50 Ans.

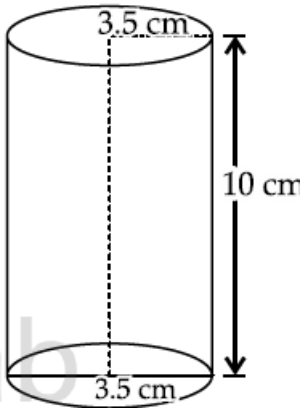
Sol. Given, Radius of cylinder = 3.5 cm

Height of cylinder = 10 cm

Total surface area of article

= Curved surface area of cylinder

+ Curved surface area of two hemisphere



Now, curved surface area of cylinder

$= 2\pi rh$

$= 2 \times \pi \times 3.5 \times 10$

= 70p

Surface area of a hemisphere

$= 2\pi r^2$

$= 24.5\pi$

Hence, Total surface area of article

$= 70p + 2(24.5\pi)$

$= 70p + 49\pi$

$= 119\pi \text{ cm}^2$

SCIENCE

Q1. ***List in proper sequence four steps of obtaining germinating dicot seeds.***

Ans. *(i) Soaking of seeds*

(ii) Emergence of radicle

(iii) Splitting of cotyledons

(iv) Emergence of plumule

Q2List two types of the transport system in human beings and write the functions of any one of these

Ans. *(i) Blood circulatory system*

(ii) Lymphatic system / lymph or tissue fluid

Functions of blood circulatory system :

(i) Transport of oxygen

(ii) Transport of digested food

(iii) Transport of carbon dioxide

(iv) Transport of nitrogenous waste

(v) Transport of salts

Functions of lymphatic system:

(i) Carries digested and absorbed fat

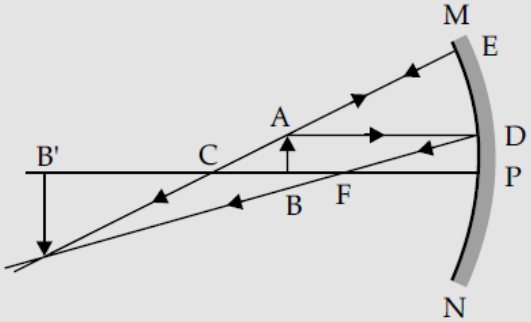
$$m = \frac{-v}{u} \quad \frac{1}{2}$$

$$= -\frac{90}{45} = -2$$

$$h' = -2 \times 6 \text{ cm}$$

$$= -12 \text{ cm} \quad \frac{1}{2}$$

Image formed will be real, inverted and enlarged.



Well labelled diagram

. (ii) Drains extra fluid from tissue (extra cellular space) back into the blood
Note : Two functions of any one of the transport system to be given

Q3. ***List three environmental consequences of using fossil fuels. Suggest three steps to minimise the pollution caused by various energy sources.***
Ans: Consequences:
(i) *Cause air pollution*
(ii) *The acidic oxides lead to acid rain*
(iii) *High concentration of green house gas (CO_2) and its effect*
(iv) *Global Warming (any 3 points)*
Steps to minimize the pollution:
(i) *Use of alternate source of energy*
(ii) *Use of various devices to reduce emission of harmful gases.*
(iii) *By increasing efficiency of combustion process*

Q4. A 6 cm tall object is placed perpendicular to the principal axis of a concave mirror of focal length 30 cm. The distance of the object from the mirror is 45 cm. Use mirror formula to determine the position, nature and size of the image formed. Also, draw labelled ray diagram to show the image formation in this case.
Ans.

Ans. Given:

$h = 6$ cm

$f = -30$ cm

$v = -45$ cm

By mirror formula,

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$

$$= -\frac{1}{30} - \frac{1}{(-45)}$$

$$= -\frac{1}{30} + \frac{1}{45} = -\frac{1}{90}$$

$f = -90$ cm from the pole of mirror

Size of the image

Q5. (a) Write Joule's law of heating.
(b) Two lamps one rated 100 W; 220 V, and the other 60 W; 220 V, are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line, if the supply voltage is 220V.
Ans.

(a) **Joule's law of heating:** Heat produced in a resistor is (i) directly proportional to the square of current for a given resistance, (ii) directly proportional to the resistance for a given current and (iii) directly proportional to the time for which the current flows through the resistor / $H = I^2Rt$ where, H = Heat produced, I = current, R = Resistance of the conductor and t = Time for which the current flows through the resistor.

Note : If the candidate gives only the expression $H = I^2Rt$ award ½ mark only.

(b) Current in 1st bulb

$$I_1 = \frac{P_1}{V} = \frac{100}{220} = \frac{5}{11} \text{ A or } 0.45 \text{ A}$$

Current in 2nd bulb

$$I_2 = \frac{P_2}{V} = \frac{60}{220} = \frac{3}{11} \text{ A or } 0.27 \text{ A}$$