International Indian School Dammam

STUDY MATERIAL FOR TALENT SEARCH EXAM 2024-25

(Class: VIII)

SYLLABUS @ A GLANCE

1. 40% of the questions will be from the given portions including study material.
2. 60% of the question will be general related to the subject.

Talent Search Examination Portion: 2024 – 25

SUBJECT	WEIGHTAGE	CLASS VIII
ENGLISH	15	Reported Speech(Declaratives, Imperatives and Interrogatives) Conditional Clause (first, second, third) Subject Verb Agreement Active and Passive Voice Tenses (Present and Past Tense- Simple, Continuous, Perfect) Participles, Infinitives and Gerunds Kinds of Sentences Books, Authors, Literature Awards (From the given list)
MATHS	25	General Concept: Mental Maths, Logical Reasoning, Puzzle and Pattern, Odd one out, Geometrical Concept Syllabus based: L-3 Understanding Quadrilaterals, L-5 Square and Square roots, L-7 Comparing Quantities, L-9 Mensuration
SCIENCE & TECHNOLOGY	25	Annual exam portion from the science textbook and from the study material, L-1,Crop Production And Its Management, L-7, Reaching The Age Of Adolescence, L-10, Sound, L-11,Chemical Effects Of Electric Current, L-12, Some Natural Phenomenon, L-13,Light, Matter, Famous Inventors And Inventions Of India, Inventors/Discoverers And Their Inventions And Discoveries, Nobel Prize Winners, Human Anatomy, Deficiency Diseases, What Is Technology?

SOCIAL SC.	15	**HISTORY -** Chapter 7: Civilizing the native Educating, Chapter 8: Women, Caste and Reform, Chapter 9: The Making of the National Movement **GEOGRAPHY -** Chapter 2: Land, Soil, Water, Vegetation & Wild life, Chapter 4: Agriculture, Chapter 5: Industries, Chapter 6: Human Resources **CIVICS -** Chapter 5: Judiciary, Chapter 7: Understanding Marginalization **General Questions & Grade 8 Syllabus-**TSE will include questions based on topics covered in grade 8 Social Science syllabus study material and General questions related to history, geography and Civics.
GK / CURRENT AFFAIRS	20	Nobel Prizes, Space Missions, Mount Everest Climbing Records, Natural Disasters, Books and Authors, National Film Awards, International Film Festival of India, Sports Events, National sports Awards, who is who, important days, Current Affairs, and from the uploaded Study Material

SUBJECT: ENGLISH

I. REPORTED SPEECH (DECLARATIVE, IMPERATIVE, INTERROGATIVE)

Direct Speech: We use direct speech when we simply repeat what someone says, putting the phrase between speech marks / quotation marks:

Eg: Paul came in and said, “I’m really hungry.”

Indirect Speech: When we want to report what someone said without speech marks and without necessarily using exactly the same words, we can use indirect speech (also called reported speech).

For example: Direct Speech – He said, “I like to play badminton.”

Indirect Speech – He said that he liked to play badminton.

Tense changes with reported speech

Direct Speech	Indirect Speech
Simple Present (*am/is/are*)	Simple Past (*was/were*)
Present Continuous (*is eating*)	Past Continuous (*was eating*)
Present Perfect (*has/have eaten*)	Past Perfect (*had eaten*)
Simple Past (*ate*)	Past Perfect (*had eaten*)
Past Continuous (*was eating*)	Past Perfect Continuous (*had been eating*)
Simple Future (*will eat*)	Future-in-the-Past (*would eat*)

Note: The tense of reported speech may not change if reported speech is a universal truth or fact.

DECLARATIVE

Steps of changing direct speech into indirect speech

1. Remove comma and inverted commas.
2. Put "that" between the reporting and reported speeches.
3. Change the 1st letter of reported speech into small letter except for "I"
4. Change the pronoun of the direct speech according to the rules
5. Change the tense of the direct speech appropriately according to rules
6. Change the words expressing nearness in time or places of the direct speech into its appropriate words expressing distance

EXAMPLE:

She said, “I am not laughing”
She said that she was not laughing.

She said, “He has finished his work”
She said that he had finished his work.

CHANGE OF PRONOUNS

Direct Speech	Indirect Speech
I	He or She
You (Singular)	He or She
You (Plural)	They
My	Her or His
Your (Singular)	Her or His
Your (Plural)	Their
Me	Him or Her
You (Singular)	Him or Her
You (Plural)	Them
We	They
Our	Their
Us	Them

CHANGE OF PLACE AND TIME

Direct Speech	Reported Speech
today	that day
now	then / at the moment
yesterday	the day before
... days ago	... days before
last week	the week before
next year	the following year
tomorrow	the next day the following day
here	there
this	that
these	those
ago	previously / before
tonight	that night

Examples:

1. My mother says, “Honesty is the best policy.”
   A. My mother says that honesty is the best policy.
2. Tanya will say, “There is a change in the program.”
   A. Tanya will say that there is a change in the program.
3. He said, “Mustafa loves reading books.”
   A. He said that Mustafa loved reading books.
4. I said, “He jumped on the bed yesterday.”
   A. I said that he had jumped on the bed the previous day.
5. Neha said to Raj, “I am coming with you now.”
   A. Neha told Raj that she was coming with him then.
6. They said, “We all have reached home.”
   A. They said that they all had reached home.
7. He said, “Manoj was completing this project.”
   A. He said that Manoj had been completing that project.

8. “Injured were taken to the hospital”, I said.
   A. I said that injured had been taken to the hospital.
9. Teacher said, “We will go to lab today.”
   A. Teacher said that they would go to lab that day.

IMPERATIVE

Imperative sentences are of four types: command/order, request, advice or suggestion. According to the type of sentence the reporting verb ‘said that/told that’ are changed into commanded/ordered, requested, advised, suggested.

Remember rules for imperatives:

* remove comma and inverted comma in indirect speech (answer)

* For command, order, request and advice: use reporting verb + to

* For suggestion: use ‘suggested’ + that + pronoun + should

* remove comma and inverted comma in Indirect speech

* For command, order, request and advice: use reporting verb + to

* For suggestion: use ‘suggested’ + that + pronoun + should

Examples: (Imperatives)

1. I said to my sister, “Please, give me your mobile for a day.”
   A. I requested my sister to give me her mobile for a day.
2. Dad said to me, “Work hard to succeed.”
   A. Dad advised me to work hard to succeed.
3. Puja said to Rupa, “Do not touch my things.”
   A. Puja commanded Rupa not to touch her things.
4. Manager said to the employees, “Complete this presentation immediately.”
   A. Manager ordered the employee to complete that presentation immediately.
5. Father said to his son, “Let’s go to Canada for vacation.”
   A. Father suggested his son that they should go to Canada for vacation.

INTERROGATIVE

*Read the question carefully and check the answer orally.
* All ‘wh’+ ‘how’ question’s answer will be a sentence. If the answer is a sentence, then use same question word.
*If the answer is ‘yes’ or ‘no’ then no need to use same question word
instead use, ‘whether’ or ‘if’.

Grammar structure:

If the answer is a sentence → Who asked whom + 'wh' word + subject + verb in past tense + remaining sentence.

If the answer is in 'yes or no' → who asked whom + whether/if + subject + verb in past tense + remaining sentence.

Examples

1. The mother said to the daughter," Do you know where John is?"
   The mother asked the daughter whether she knew where John was.

1. He said to me, "When are you going on your vacation?"
   He asked me when I was going on my vacation.

2. "Do you speak English?" He asked.
   He asked me if I spoke English.

3. He said to me, "Did you come by train?"
   He enquired whether I had come by train.

4. Peter said to John, "Why are you so late?"
   Peter asked John why he was so late.

2. CONDITIONAL CLAUSES

Conditional Sentences are also known as Conditional Clauses or If Clauses. They are used to express that the action in the main clause (without if) can only take place if a certain condition (in the clause with if) is fulfilled. There are three types of Conditional Sentences.

THREE TYPES OF CONDITIONALS

Type 1

→ It is possible and also very likely that the condition will be fulfilled.

Form: if + Simple Present, will-Future

Example: If I find her address, I'll send her an invitation.

Type 2

→ It is possible but very unlikely, that the condition will be fulfilled.

Form: if + Simple Past, would + Infinitive

Example: If I found her address, I would send her an invitation.

Type 3

→ It is impossible that the condition will be fulfilled because it refers to the past.

Form: if + Past Perfect, would + have + Past Participle

Example: If I had found her address, I would have sent her an invitation.

EXERCISE

1. If you send(send) this letter now, she will receive (receive) it tomorrow. (Type 1)
2. If we had (have) a yacht, we would sail (sail) the seven seas. (Type 2)
3. If you had studied (study) for the test, you would have passed (pass) it. (Type 3)
4. We would take another route if they had not closed (close / not) the road.
5. If you hadn't lost our flight tickets, we would have been(be) on our way to the Caribbean now.

3. SUBJECT – VERB AGREEMENT

Subjects and verbs must agree in number.

1. If the subject is singular, the verb must be singular too.

Example: She writes every day.

2. If the subject is plural, the verb must also be plural.

Example: They write every day.

3. When the subject of the sentence is composed of two or more nouns or pronouns connected by *and*, use a plural verb.

Example: Tom and Jerry **are** best friends.

Exception: If two things refer to one idea, use a singular verb.

Example: Bread and butter ***is*** *my favorite breakfast.*

4. The words and phrases "each," "each one," "either," "neither," "everyone," "everybody," "anyone," "anybody," "nobody," "somebody," "someone," and "no one" are singular and require a singular verb.

Example: Each of the participants was willing to be recorded.

Neither alternative hypothesis was accepted.

5. **Plural Subjects: [both, few, several, many]**
   - Both tablets and syrup were available.
   - A Few report cards are on the teacher's table.
   - Many students learn art and craft in our school.
   - Several students in our class do their work on time.

6. **either/or, neither/nor**
   RULE: Check the second subject to decide the verb.
   If the second subject is singular, take singular verb. If the second subject is plural, take plural verb.
   Example: Either Asim or his parents have come. * here parents is plural
   Either the bears or the tiger has escaped from the zoo. * here tiger is singular

7. **along with, as well as, with**
   RULE: Check the first subject to decide the verb. If the first subject is singular, take a singular verb. If the first subject is plural, take plural verb.
   Example: Mother along with her children is going for vacation. * here mother is singular
   The owner as well as pets is enjoying morning walk in the garden. * here the owner is singular

8. **Measurements, Money and Distances:**
   When a measurement, distance, or amount is treated as a single unit, it takes a singular verb.

- Five kilometers **is** a long distance.
- Ten meters **is** enough for each row.
- Ten dollars is enough.

9. **When you have sentences that begin with 'here', 'there', 'this', 'that', 'those', 'these', etc. #**

   Always remember that the subject follows the verb and therefore the verb must be conjugated with reference to the subject.

- Here **is** your book.
- That **was** a great movie.
- There **have** been many changes in the timetable

10. **Abstract nouns are considered as singular subjects, so make sure you use a singular verb along with it.**

- Honesty **is** the best policy.
- Happiness **is** important.

Exceptions: **When referring to specific instances or individual elements of an abstract concept, plural verbs may be used.**

- His ideas on truth **are** widely accepted.

Exercise

1. Everyone has done his or her homework.
2. Each of the students is responsible for doing his or her work.
3. Either my father or my brothers are going to sell the car.
4. Neither my sisters nor my mother is going to sell the house.
5. Mary and John usually play together.
6. Either the boy or the girls walk in the evening.
7. The student, as well as his teacher, was going on the field trip.
8. Both of my roommates have decided to live in the dorms.

4. ACTIVE – PASSIVE VOICE

Active voice: When a subject is directly acting on the object, the sentence is written in Active voice.
Eg. I ate the strawberry pie.
Active voice: Subject + Verb + Object

Passive voice: When the object is acted upon by the subject, the sentence is written in Passive voice.
Eg. The strawberry pie was eaten by me.
Passive voice: Object + Verb + Subject

Rules for Active – Passive Voice Conversions

Rule 1. Identify the (S+V+O) Subject, Verb and object in the active sentence to convert to passive voice
Example:
He drives car. (Subject – He, verb – Drives, object – Car)

Rule 2. Interchange the object and subject with each other, i.e. object of the active sentence become the subject of the passive sentence.
Example :
Active voice : She knits sweater. (Subject – She, Verb – Knits, Object – Sweater)
Passive Voice : The sweater is knitted by her. (Object sweater is interchanged with the subject She).

Rule 3. Change the base verb in the active sentence into the past participle ie. third form verb in a passive sentence i.e. preceded by (By, With, to, etc). Base verbs are never used in passive voice sentences.

Example:
Active voice: She prepares dinner.
Passive voice: The dinner is prepared **by** her.

Rule 4. In passive voice sometimes the subject is not used, i.e. the subject in passive voice can be omitted if the sentence without it gives enough meaning.
Example :
Milk is sold in litres

- The rules for using auxiliary verbs in passive voice sentences are different for each tense.

Active to Passive Voice Conversion Chart

Tense	Active Voice	Passive Voice	Formula
Present Simple	She writes a letter.	A letter is written by her.	am/is/are + past participle
Past Simple	He painted the wall.	The wall was painted by him.	was/were + past participle
Future Simple	They will finish the project.	The project will be finished by them.	will be + past participle
Present Continuous	She is reading a book.	A book is being read by her.	am/is/are + being + past participle
Past Continuous	He was repairing the car.	The car was being repaired by him.	was/were + being + past participle
Present Perfect	They have completed the assignment.	The assignment has been completed by them.	has/have + been + past participle
Past Perfect	She had baked a cake.	A cake had been baked by her.	had + been + past participle
Future Perfect	He will have solved the problem.	The problem will have been solved by him.	will have been + past participle
Modals	They can fix the machine.	The machine can be fixed by them.	modal + be + past participle

Exercise

ACTIVE	PASSIVE
The insect bit the little girl .	The little girl was bitten by the insect .
Mr. Shyam teaches French.	French is taught by Mr. Shyam.
She has mastered the subject of design.	The subject of design has been mastered by her.
Divya is buying a new phone.	A new phone is being bought by Divya.
I did not scold her.	She was not scolded by me.
Have you completed your assignment ?	Has the assignment been completed by you ?
The Cheetah was staring at the kid.	The kid was being stared by the Cheetah.

5.TENSES – (PRESENT & PAST – SIMPLE, CONTINUOUS & PERFECT TENSES

- Tense is a form of the verb generally used to denote the time of an action.
- Present Tense- is used to denote an action that happens now.
- Past Tense- denotes an action that took place earlier.

PRESENT TENSES:
Simple Present Tense - **Subject + base verb (V1) (add -s/es with singular subject)**
Present Continuous Tense- **am/is/are + V1 + ing**
Present Perfect Tense- **has /have + verb in past participle form (V3)**

Examples: (Present Tense- all forms)

1. Nabila goes for a walk every morning. (go) (Simple Present Tense)
2. The soldiers exercise daily. (exercise) (Simple Present Tense)
3. I am playing guitar now so, don't disturb me. (play) (Present Continuous Tense)
4. Teacher is describing the wild life. (describe) (Present Continuous Tense)
5. We are staying at Taj Hotel this week. (stay) (Present Continuous Tense)
6. Bilal has completed his studies. (complete) (Present Perfect Tense)
7. They have carried that heavy stone. (carry) (Present Perfect Tense)

PAST TENSES
Simple Past Tense - **Subject + Past verb (V2)**
Past Continuous Tense - **Subject + was/were + base verb(V1) + ing**
Past Perfect Tense - **Subject + had + past participle (V3).**

Examples: (Past Tense- all forms)

1. The bird flew away long back. (fly) (Simple Past Tense)
2. We all jumped on the bed yesterday. (jump) (Simple Past Tense)
3. The king was fighting against the enemies. (fight) (Past Continuous Tense)
4. The sparrows were chirping in the garden. (chirp) (Past Continuous Tense)
5. Sameer had left that school last year. (leave) (Past Perfect Tense)
6. Mina and her sisters had baked the cake for my birthday party yesterday. (bake) (Past Perfect Tense)

6. PARTICIPLES, INFINITIVES AND GERUNDS

PARTICIPLES

- Participles are verbals that usually function as adjectives and occasionally function as adverbs.
- There are two types of participles: present participles and past participles.
- Present participles have an –ing ending.
- Past participles may have one of several past tense endings, including –ed, -en, and -d.

Examples:
Present participle: The *running* water provided a picturesque view.

Past participle: The *crushed* bug was an unpleasant sight.

Participial phrases: James, amused by the crowd's response, continued to perform magic tricks.

Infinitives

- Infinitives are verbals that are made up of the word '*to'* and a verb. **(to + V1)**
- Infinitives may function as nouns, adjectives or adverbs.

Examples:

1. She decided **to visit** her friend. (*Infinitive as the object*)
2. He works hard **to succeed**. (*Infinitive showing purpose*)

GERUNDS

Gerunds look like continuous tense (-ing) verbs but function as nouns.

Example – Swimming is my favourite hobby.

Gerunds are used:

- As the **subject** of a sentence. (*Swimming is fun.*)
- As the **object** of a verb. (*I enjoy reading.*)
- After prepositions. (*He's good at cooking.*)

EXERCISE

In the sentences below, fill in the blanks with a present or past participle, a gerund, or an infinitive.

1) The students were confused (confuse) by the professor's lecture.
2) I would like to buy (buy) a new dress for graduation.
3) Babysitting young children can be exhausting (exhaust) for many people.
4) Joe wanted to help (help) the neighbors with their garden.
5) Jane needed help with recovering (recover) some data.
6) The crying (cry) baby annoyed everyone on the plane.
7) We do not have time to discuss (discuss) this problem now!
8) When Dan gets bored (bore), Dan goes fishing.

7. KINDS OF SENTENCES

The four types of sentences according to function are:

- declarative (statements)
- interrogative (questions)
- imperative (commands)
- exclamatory (interjections and emotional statements)

Declarative sentences

A declarative sentence is a simple statement used to communicate a fact, an opinion, an observation, or an explanation.

- ✓ Declarative sentences always end in a period.

Examples

Bears don't eat when they hibernate.

He didn't like the movie as much as his partner did.

In my opinion, James Joyce's Ulysses is too long.

Interrogative sentences

Questions are known formally as interrogative sentences.

- ✓ Interrogative sentences end with a question mark.

examples

- *What is your next class?*
- *Did you see the fireworks last night?*
- *We're going in the right direction, aren't we?*

Imperative sentences

Imperative sentences are commands, instructions, or advice you give to others to tell them what to do.

- ✓ Imperative sentences usually end in a period, but they can also use an exclamation point if they're emphatic.

Examples

- *Sweep the floor before you mop it.*

- *Please type these notes and then email me a copy.*
- *Don't hang up!*

Exclamatory sentences

Exclamatory sentences behave just like declarative sentences, except with more emotion or urgency. Exclamatory sentences also include interjections like "Ouch!" or "Yippee!" to convey sudden emotion.

We show this extra emotion with an exclamation mark.

Examples

- Hurray, We have won the game!
- Wow! Such a beautiful dress.
- What a splendid match!

8. BOOKS AND AUTHORS

A passage to India **E.M.Forster**

A Suitable Boy **Vikram Seth**

A Tale of Two Cities **Charles Dickens**

A Week with Gandhi **Louis Fisher**

Adventures of Sherlock Holmes **Arthur Conan Doyle**

Adventures of Tom Saweyer **Mark Twain**

Alice in Wonderland **Lewis Carrol**

Antony and Cleopatra, The tempest - **Shakespeare**

Arabian Nights **Sir Richard Burton**

Arthashastra **Kautilya**

Avigyan Sakuntalam **Kalidas**

Ben Hur **Lewis Wallace**

Comedy of Errors, the Merchant of Venice - **William Shakespeare**

Communist Manifesto **Karl Marx**

Count of Monte Cristo **Alexander Dumas**

David Copperfield, Oliver Twist, Pickwick Papers - **Charles Dickens**

Discovery of India, Glimpses of World History **Jawaharlal Nehru**

Geetanjali **Rabindra Nath Tagore**

Gulliver's Travels **Jonathan Swift**

Invisible Man **H.G.Wells**

Jungle Book **Rudyard Kipling**

Les Miserable **Victor Hugo**

Literature Awards

1. Pulitzer Prize for Fiction (1961)- To Kill a Mockingbird by Harper Lee

2. Pulitzer Prize for Fiction (1982)- The Color Purple by Alice Walker

3. The Booker Prize (2022)- The Seven Moons of Maali Almeida by Shehan Karunatilka

4. The Booker Prize (1997)- The God of Small Things by Arundhati Roy

5. The Booker Prize (2006)- The Inheritance of Loss by Kiran Desai

6. Nobel Prize for Literature (2022)- Annie Ernaux

7. Nobel Prize for Literature (1993)- Toni Morrison

8. Nobel Prize for Literature (1913)- Rabindranath Tagore

9. Who is the youngest Nobel laureate for Literature? Rudyard Kipling

10. Which poet won the Pulitzer Prize four times? Robert Frost

SUBJECT: MATHS

Chapter 3 UNDERSTANDING QUADRILATERALS:

Quadrilaterals are one type of polygon which has four sides and four vertices and four angles along with 2 diagonals. There are various types of quadrilaterals.

Types of Quadrilaterals

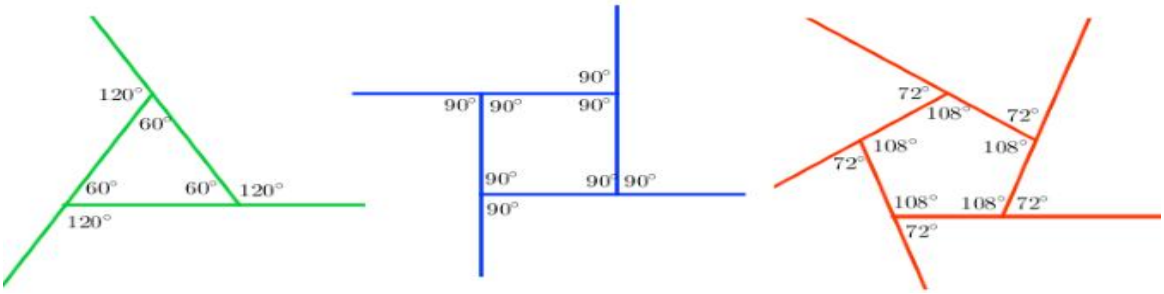
- Trapezium
- Kite
- Parallelogram

Some Special Parallelograms

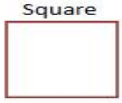
- Rhombus
- Rectangle
- Square

Sum of the Measures of the Exterior Angles of a Polygon

The sum of the exterior angles of any polygon will be 360°..



The table below shows the types of quadrilaterals and their properties.

Type	Properties
Parallelogram 	• Opposite sides are equal and parallel • Opposite angles are equal
Rectangle 	• Opposite sides are equal and parallel • All angles are right angles (90°)
Square 	• Opposite sides are parallel • All sides are equal • All angles are right angles (90°)
Rhombus 	• Opposite sides are parallel • All sides are equal • Opposite angles are equal • Diagonals bisect each other at right angles (90°)
Trapezoid 	• One pair of opposite sides is parallel
Kite 	• Two pairs of adjacent sides are equal • One pair of opposite sides are equal • One diagonal bisects the other • Diagonals intersect at right angle (90°)

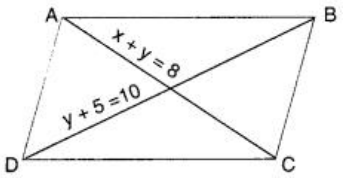
(Refer Textbook)

1.Which of the following statement is false?

(a) All the rectangles are parallelograms
(b) All the squares are rectangles
(c) All the parallelograms are rectangles
(d) All the rhombuses are parallelograms.

solution: (c)

2. ABCD is a parallelogram as shown. Find x and y.



(a) 1, 7 (b) 2, 6 (c) 3, 5 (d) 4, 4

solution: (c)

$x + y = 8$
$y + 5 = 10 \Rightarrow y = 5$
$\therefore x + 5 = 8 \Rightarrow x = 3$

3. The diagonal rectangle is 10 cm, and its breadth is 6 cm. What is its length?
(a) 6 cm (b) 5cm (c) 8cm (d) 4cm

solution: (c)

4.The number of sides of a regular polygon where each exterior angle has a measure of 45° is
(a) 8 (b) 10 (c) 4 (d) 6

solution: (a)

5.The adjacent sides of a parallelogram are 5 cm and 9 cm. Its perimeter is

(a) 28 (b) 10 (c) 18 (d)14

solution: (a)

Chapter 5 SQUARES AND SQUARE ROOTS

Square Numbers

If a natural number *m* can be expressed as n^2, where n is also a natural number, then *m* is a square number.

Example: 1, 4, 9, 16 and 25.

Numbers between Square Numbers

There are 2n non-perfect square numbers between squares of the numbers *n* and $(n + 1)$, where *n* is any natural number.

Square Root of a Number

Finding the number whose square is known is known as finding the square root. Finding square root is inverse operation of finding the square of a number.

For example:

$1^2=1$, square root of 1 is 1.

$2^2=4$, square root of 4 is 2.

$3^2=9$, square root of 9 is 3.

(Refer Textbook)

1.Given that $\sqrt{4096} = 64$, the value of $\sqrt{4096} + \sqrt{40.96}$ is

(a) 74 (b) 60.4 (c) 64.4 (d) 70.4

Solution: (d)

2. Find the greatest four-digit number that is a perfect square.

(a) 9990 (b) 9801 (c) 9999 (d) None of these

Solution: (b)

3. Which of the following is not a square number?

a) 4 (b) 1000 (c) 625 (d) 100

Solution: (b)

4. Which of the following can be a perfect square?

(a) A number ending in 3 or 7
(b) A number ending with odd number of zero
(c) A number ending with even number of zeros
(d) A number ending in 2.

Solution: (c)

5. A square garden has an area of 225 square feet. How much fencing will a gardener need to buy to place fencing around the garden?

(a) 56.25 ft (b) 112.5 ft (c) 15 ft (d) 60 ft

Solution: (d)

Chapter7 COMPARING QUANTITIES

Discounts:

A reduction (decrease) on the marked price is known as discount.

If the discount is given in numbers, then it is calculated by

Discount = Marked price – Sale price

If the discount is given in percentage, then it is calculated by:

Discount = Discount % of Marked price

Finding Discounts

Example: Marked price of a shirt is Rs 535. Its selling price is Rs 495. Find the discount.

Solution: Discount = Marked price – Sale price

Discount = Rs 535 – Rs 495 = Rs 40

Sales Tax / VAT

Sales tax or value added tax (VAT) is the tax that should be paid to the government on sale of an item, and it is added to the bill amount. Normally, VAT is included in the price of items like groceries.

Finding Sales Tax / VAT

Sales tax or VAT = Tax % of Selling price

Billing Amount = Selling price + VAT

Example: Megha bought a wristwatch for Rs 1,200 and VAT is charged at 8%. Calculate the VAT and billing amount.

VAT = Tax % of selling price

VAT = 8% of 1,200=8/100 ×1200=Rs 96

Billing amount = S.P + VAT = Rs 1,200 + Rs 96 = Rs 1296.

Compound interest

Compound interest is the interest calculated on the principal and the interest for the previous period. The principal amount increases with every time period, as the interest payable is added to the principal.

When compound interest is compounded annually,

$A = P(1+R/100)^n$

$CI = A - P$

(Refer Textbook)

1.On which figure the VAT of a product is calculated?

(a). S.P (b) C.P (c) market price (d) none of these

Solution: (a)

2. If MP of a box is Rs 10 and a discount of 10% is allowed then what should be the sale price?

(a) Rs 10 (b) Rs 9 (c) Rs 11 (d) none of these

Solution: (b)

3. what is the ratio of 25 kg to 200 g?

(a) 120: 123 (b) 125: 1 (c) 100: 110 (d) 115: 123

Solution: (b)

4. what is the percentage of discount, if the product that costs Rs.35,000 is sold for Rs.33,250?

(a) 2% (b) 3% (c) 4% (d) 5%

Solution: (d)

5. After getting 16% discount, a saree was bought at Rs 504/-. Then the marked price of saree = _____ .

(a) ₹ 585/- (b) ₹ 600/- (c) ₹ 604/- (d) none

Solution: (b)

Chapter 9 MENSURATION

Mensuration deals with the measurement of area, perimeter, surface area and volume of different types of shapes.

The important formulas covered in this chapter are as follows:

Area of Trapezium	height x (sum of parallel sides)/2
Area of Rhombus	½ x d_1 x d_2
Area of Special Quadrilateral	½ x d x (h_1 + h_2)
Surface area of Cuboid	2(lb + bh + hl)
Surface area of Cube	$6a^2$
Surface area of cylinder	$2\pi r(r + h)$
Volume of Cuboid	l × b × h
Volume of Cube	a^3
Volume of cylinder	$\pi r^2 h$

Volume and capacity are almost similar to each other.

- A volume is the amount of space occupied by a three-dimensional object
- Capacity is the quantity of liquid contained in an object
- 1 mL = 1 cm^3
- 1 L = 1000 cm^3
- 1 m^3 = 1000000 cm^3 = 1000 L

1. The area of a trapezium is 480 cm^2, the distance between two parallel sides is 15 cm and one of the parallel side is 20 cm. The other parallel side is:

(a). 20 cm (b)34 cm (c)44 cm (d) 50 cm

Solution: (c)

Area of trapezium = ½ h (a+b)

a=20cm, h = 15cm, Area = 480 sq.cm

480 = ½ (15) (20+b)

20+b = (480 x 2)/15

20+b=64, ∴ b=44cm

2. The height of a cuboid whose volume is 275 cm^3 and base area is 25 cm^2 is:

(a) 10 cm (b)11 cm (c) 12 cm (d) 13 cm

Solution: (b)

Explanation: Volume of a cuboid = Base area × Height

Height = Volume / Base area

H = 275/25 = 11 cm

3. Find the length of the edge of a cube whose surface area is given as 54 cm^2.

(a)6 cm (b)9 cm (c) 3 cm (d) 12 cm

Solution: (c)

4. A cuboidal box has its length, breadth and height given to be 10 cm, 5 cm and 15 cm, respectively. Find the total surface area for the cuboid

(a)1000 cm^2 (b) 600 cm^2 (c) 550 cm^2 (d) 800 cm^2

Solution: (c)

5. 1litre = _____ cubic centimeters?

(a)10 cm^3 (b) 10000 cm^3 (c) 100 cm^3 (d) 1000 cm^3

Solution: (d)

Logical Reasoning:

Logical reasoning consists of aptitude questions that require a logical level of analysis to arrive at the correct solution. Most of the questions are constructed based on concepts and the rest are out of the box thinking ones.

Steps To Solve Logical Reasoning Based Questions

1. Read and understand the information carefully.
2. Analyze critical logical information.
3. Think of all the viable solutions.
4. Compare the answer obtained with other possibilities.
5. Come to a correct logical conclusion.

1. Look at this series: 2, 1, (1/2), (1/4), … What number should come next?
a). (1/3) (b)(1/8) c) (2/8) (d)(1/16)

Solution: (b)

It's a division series. Every number is half of the previous number. The number is divided by 2 successively to get the next result. 4/2 = 2. 2/2 = 1. 1/2 = ½. (1/2)/2 = ¼. (1/4)/2 = 1/8 and so on

.

2. Look at this series: 80, 10, 70, 15, 60, … What number should come next?
(a) 20 (b)25 (c)30 (d) 50

Solution: (a).

This is an alternating addition and subtraction series. In the first pattern, 10 is subtracted from each number to arrive at the next. In the second, 5 is added to each number to arrive at the next.

3. SCD, TEF, UGH, ____, WKL
(a)CMN (b)UJI (c)VIJ (d)IJT

Solution: (c)

There are two alphabetical series here. The first series is with the first letters only: STUVW. The second series involves the remaining letters: CD, EF, GH, IJ, KL.

4. Look at this series: 53, 53, 40, 40, 27, 27, ... What number should come next?

(a)12 (b)14 (c) 27 (d) 53

Solution: (b)

In this series, each number is repeated, then 13 is subtracted to arrive at the next number.

5. Look at this series: 9 11 33 13 15 33 17…. What numbers should come next?

(a) 19 33 (b) 33 35 (c) 33 19 (d) 15 33

Solution: (a)

In this alternating repetition series, a random number, 33, is interpolated every third number into a simple addition series, in which each number increases by 2.

Mental Math's:

Mental math is, in a nutshell, the act of solving math problems in your head! As learners progress, they will be expected to gradually solve more and more complex problems, so it's important that the techniques and skills that they use to achieve this are mastered at an early age.

1.An accurate clock shows 8 o'clock in the morning. Through how may degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

(a)144° (b)150° (c)168° (d)180°

Solution: (d)

Explanation:

Angle traced by the hour hand in 6 hours =	$\left(\frac{360}{12} \times 6\right)^\circ$				= 180°.

2.Which one of the following is not a prime number?

(a)31 (b)61 (c)71 (d)91

Solution: (d)

Explanation:

91 is divisible by 7. So, it is not a prime number.

.

3.Find 617 + 6.017 + 0.617 + 6.0017 = ?

(a)6.2963 (b)62.965 (c)629.6357 (d)None of these

Solution: (c)

4.The sum of the two numbers is 11 and their product is 30, then the numbers are____

(a) 8, 3 (b) 9, 2 (c) 7, 4 (d) 6, 5

Solution: (d)

5.The sum of first five prime numbers is:

(a) 7 (b) 11 (c) 18 (d) 28

Solution: (d)

Patterns in Math's

What are Patterns in Mathematics?

In mathematics, a pattern is a sequence of numbers that are formed in a particular way. Every pattern contains a specific rule. For example, the sequence of even numbers is a pattern since each number is obtained by adding 2 to the previous number.

i.e., 2, 4, 6, 8, 10, 12, 14,….

Here, 2 + 2 = 4

4 + 2 = 6

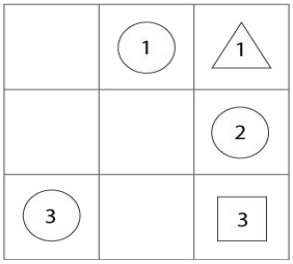
6 + 2 = 8

8 + 2 = 10 and so on.

Puzzles in Mathematics

A mathematical puzzle is a type of problem or game that involves using mathematical concepts, logic, and reasoning to find a solution. These puzzles often require creative thinking and a deep understanding of mathematical principles to solve.

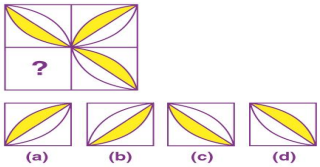
Which 4 shapes and number combinations are needed to complete the shape box ?



In each row all three shapes are there in first row 1 square, 2nd row one square and one triangle with 2 inside and in third row one triangle is missing

Practice Questions:

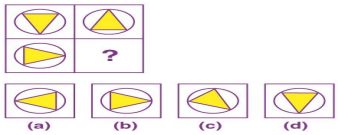
1. **Observe the below figure and identify the missing part.**



i) a ii) b iii) c iv) d

Ans: (ii)

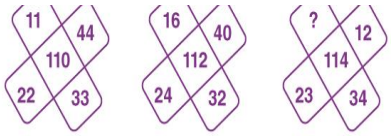
2. Observe the following figure and choose the correct option.



i) a ii) b iii) c iv) d

Ans : (i)

3. Observe the pattern given below. Find the missing number.



i) 21 ii) 25 iii) 45 iv)36

Ans : (iii)

Hints the given figure, we can observe that the sum of the four numbers is equal to the number written in the middle of the shape.

4. What will be the next number of the given sequence? 1, 5, 12, 22, 35, ?

i) 15 ii) 16 iii) 18 iv) 19

Ans: (iv)

Hints: Let's write the difference between consecutive numbers.

5 – 1 = 4

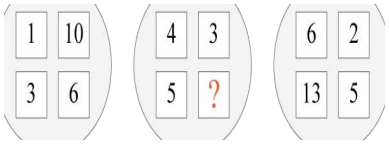
12 – 5 = 7

22 – 12 = 10

35 – 22 = 13

35 - ? = 16

5. Which number completes the sequence?

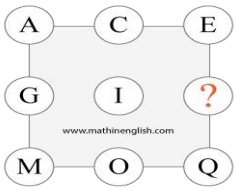


i) 10 ii) 11 iii) 12 iv) 15

Ans : (iii)

6. What is the missing letter in the following letter sequence ?

i) B ii) D iii) F iv) H

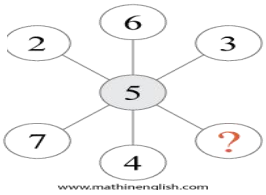


Ans: (i)

Hint : The letter value increased by 2 each next cell

7. What is the missing number in this puzzle?

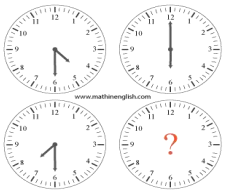
i) 1 ii) 9 iii) 8 iv) 10



Ans : (iii)

8. What time is it on the 4th clock ?

i) 6.30 ii) 12.30 iii) 8 iv) 9



Ans : (iv)

9. What kind of pattern in this 88,77,66,55,44,33.

i) growing ii) shrinking iii) natural iv) repeating

10. What type of pattern rule is this? 500, 100, 20

i) division by 5 ii) division by 10 iii) division by 50 iv)division by 2

Ans : (i)

ODD ONE OUT

Odd one out is a phrase that is commonly used in mathematics where one number or value in a group is different from the others. The first step is to identify the common characteristics or relationships shared by the group. The second step is to check each option and find the one that do not display the relation.Picking the "Odd one out" is an activity designed to develop a learner's observation, application, and analytical skills.

Example 1: Which one is the odd one out?

a) 40 b) 60 c) 90 d) 100

Answer: d) 100 (It is the only number that is a perfect square.)

Example 2: Which number is the odd one out?

a) 9862 b) 4377 c) 8454 d) 9831

Answer: a) 9862 (Sum of the digits of all other numbers is 21, but sum of the digits 9862 is 25)

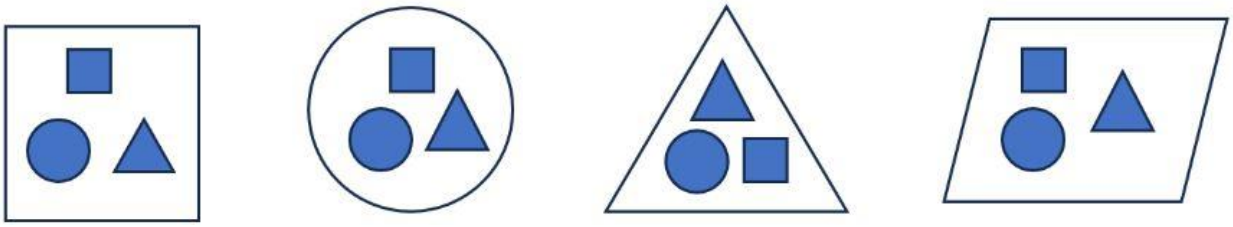
Example 3: Which alphabet is the odd one out

a)  b)  c)  d) 

Answer: c) All the other letters have rounded or curved segments in their designed

While E has straight lines and angles

Example 4: Look at the given figures and find the odd one out:



a) b) c) d)

Answer: d) In each of the figure, one of the inner shapes is same as the outer shape and the rest two of the shapes are different, except in (d), where there is no parallelogram as the inner shape.

Example 5: Pick the odd ones out from the given fractions:

a) $\frac{2}{3}$ b) $\frac{6}{11}$ c) $\frac{8}{7}$ d) $\frac{1}{5}$

Answer: c) The odd one out is 8/7, as it is an improper fraction.

BASIC GEOMETRICAL CONCEPT

Geometry is the branch of mathematics that deals with shapes, angles, figures, dimensions, and sizes of a variety of things we see in everyday life,

The word Geometry is derived from the Greek word ‘geometron' is made of two words ‘Geo’ means 'Earth' and ‘Metron' means ‘measurement’.

In a plane geometry two dimensional shapes such as triangles, squares, rectangles, circles are also called flat shapes. In solid geometry, three dimensional shapes such as cube, cuboid, cylinder, cone …etc. are also called solid shapes.

Basic Geometry terms: Point, line, line segment, ray, vertex, angle, collinear points, non collinear points, intersecting lines, parallel lines, perpendicular lines.

Q1) A polygon with four sides is called a _____

Ans) Quadrilateral

Q2) The point where two lines meet to form an angle is called the _____.

Ans) Vertex

Q3) The distance around a circle is called its _____.

Ans) Circumference

Q4) If three or more points do not lie on a single straight line, they are called _____ points.

Ans) Non-collinear points

Q5) An angle which measures more than 180° but less than 360° is called a _____ .

Ans) Reflex angle

Q6.)An angle divides a plan in how many regions

a)2 b)3 c)4 d)5

Ans) (b)

Q7) If a bicycle wheel has 36 spokes, then the angle between a pair of two consecutive spokes are_____. **Ans. 10^0**

SUBJECT: SCIENCE & TECHNOLOGY

L-1,CROP PRODUCTION AND ITS MANAGEMENT

Types of Crops Based on Their Uses

1. **Food Crops**

Cereals: Wheat, rice, barley, millet, oats, rye, sorghum. Provide starch, protein, fiber, and nutrients, crucial for the daily diet, especially in developing countries.
Seeds: Includes cereals, nuts, legumes, and some spices. High in fiber, fats, vitamins, minerals, and antioxidants.
Fruits: Apples, pears, citrus, stone fruits, tropical fruits, berries. Rich in fiber, vitamins, minerals, and antioxidants.
Vegetables: High in water content, low in calories, and rich in fiber, antioxidants, minerals, and vitamins (especially A and C).

Types:

- Root: Beets, carrots, sweet potatoes, turnips.
- Tubers: Potatoes, yams.
- Stem: Asparagus, kohlrabi, celery.
- Leafy green: Lettuce, spinach, silverbeet.
- Allium: Garlic, leeks, onions, shallots.
- Head/Flower: Artichokes, cabbage, cauliflower.
- Cucumber family: Pumpkin, cucumber, zucchini.

Spices: Pepper, ginger, cardamom, clove. Enhance flavor and aroma, with essential oils and alkaloids aiding digestion.

2, Forage Crops: Grown for livestock consumption, essential in pasture management. Types: Sorghum, alfalfa, barley, oats, millet, soybeans, wheat, maize.

Classified into:

- **Hay**: Forage cut, dried, and stored.
- **Silage**: Forage harvested and fermented, includes perennial and annual grasses and legumes.

3.Fiber Crops: Grown for textiles, cordage, filling, and paper production. Examples: Cotton, hemp, jute, kenaf, flax.

4.Oil Crops: High in oils, dietary fibers, proteins, minerals, and vitamins. Used for human consumption and in industries like soaps, paints, and fuels. Examples: Soybeans, sunflower seeds, rapeseed, canola, peanuts.

5. Ornamental Crops: Grown for decorative purposes in parks, gardens, and landscaping. Examples: Ivy, oleander, holly, tulips, azaleas.

6. **Industrial Crops:** Known as cash crops, these generate high incomes for farmers.
   Examples: Tobacco, cotton, jute, sugarcane, sugarbeet, coffee, tea, coconut, soybeans.

Types of Crops Based on Life Cycle

Crops undergo stages of growth, from germination to seed production, and their total life cycle duration varies. Based on their life cycle, crops are categorized into three types: **Annual**, **Biennial**, and **Perennial**.

Annual Plants
- Life cycle: One year
- Must be replanted each season
- Examples: Tomatoes, radishes, eggplant, peas, beans, squash, lettuce, mustard, sunflowers, grains

Biennial Plants
- Life cycle: Two years (two growing seasons)
- Year 1: Vegetative growth (leaves, stems, roots)
- Year 2: Flowering, seed development, and ripening; plant dies after seed production
- Examples: Carrots, beets, turnips, onions, cabbage, parsley, coriander

Perennial Plants
- Life cycle: More than two growing seasons
- Grow new herbaceous parts from an existing root system each season
- Examples: Pears, apples, almonds, peaches, walnuts, hazelnuts

Green Revolution:

The **Green Revolution** refers to a series of research, development, and technology transfer initiatives that significantly increased agricultural production worldwide, particularly in developing countries, from the 1940s to the 1960s. The revolution aimed to improve food security and combat hunger through the use of high-yielding crop varieties, chemical fertilizers, pesticides, and advanced irrigation techniques.

Key components of the Green Revolution include:

1. **High-Yielding Variety (HYV) Seeds**: These were specially developed to produce higher crop yields, especially for staple crops like wheat, rice, and maize.
2. **Chemical Fertilizers and Pesticides**: These were used to enhance plant growth and protect crops from pests, leading to higher yields.
3. **Irrigation Techniques**: Improved methods of irrigation, such as drip and sprinkler systems, helped increase water efficiency for crop production.
4. **Mechanization**: The use of machinery like tractors and harvesters increased the efficiency of farming, reducing labor needs and boosting productivity.
5. **Training and Education**: Farmers received guidance on how to best utilize the new technologies.

Animal Husbandry

Animal husbandry is a scientific management of domestic animals in an efficient manner to obtain food and other useful products from them.

Cattle Farming

Cattle farming is the practice of rearing and managing cattle such as cows, bulls, and buffaloes for milk, meat, labor, and other products like hide and manure.

Types of cattle:

→ Cow (Bos indicus)
→ Buffalo (Bos bubalis)

Types of Cattle Farming

1. Dairy Farming:
   a) Focuses on milk production.
   b) High-yielding breeds like Holstein Friesian and Jersey are commonly used.
   c) Products include milk, butter, cheese, and other dairy items.
2. Beef Production:
   a) Involves raising cattle for meat.
   b) Breeds like Angus and Hereford are reared for their high-quality beef.
3. Draught Cattle Farming:
   a) Cattle like oxen and bulls are trained for labor-intensive tasks such as plowing fields and transportation.

Importance of Cattle Farming

1. Economic Benefits: Provides income to farmers through the sale of milk, meat, and by-products.
2. Employment: Generates employment opportunities in rural areas.
3. Sustainable Farming: Cattle manure is used as organic fertilizer, improving soil fertility.
4. Food Security: Ensures a consistent supply of dairy and meat products.

Management Practices in Cattle Farming

1. Housing and Hygiene:
   a) Cattle should be kept in clean, well-ventilated shelters.
   b) Proper waste disposal systems should be in place to prevent diseases.
2. Nutrition:
   a) A balanced diet comprising green fodder, dry fodder, and nutritional supplements is essential.
   b) Access to clean water is crucial.
3. Health and Disease Management:
   a) Regular vaccinations to prevent diseases like foot-and-mouth disease, brucellosis, and anthrax.
   b) Regular check-ups to ensure the well-being of animals.
4. Selective Breeding:
   a) High-yield breeds are selectively bred to improve milk production, disease resistance, and adaptability.

5. Record Keeping:
Maintaining records of feed, health, production, and breeding helps optimize farming practices.

Challenges in Cattle Farming

1. Disease outbreaks can lead to significant losses.
2. Lack of proper infrastructure and veterinary services in rural areas.
3. Climatic conditions and water scarcity may impact productivity.

Poultry:

Definition

Poultry refers to domesticated birds that are raised for human consumption, primarily for meat, eggs, and feathers. The most common types of poultry are chickens, ducks, turkeys, and geese.

Types of Poultry

1. Broilers:
   a) Raised primarily for meat production.
   b) These birds grow quickly and are slaughtered at around 6-8 weeks of age.
   c) Broiler farming is intensive, with controlled feeding to maximize growth.
2. Layers:
   a) These birds are raised primarily for egg production.
   b) Layers start laying eggs at around 18-20 weeks of age and continue laying for about 1-2 years.
   c) The management practices focus on maximizing egg production and quality.
3. Dual-purpose Breeds:
   a) These breeds are suitable for both meat and egg production.
   b) They are not as high-yielding in either category as specialized breeds but offer a balance of both.

Common Poultry Breeds

1. Chickens:
   a) White Leghorn: Known for its high egg production, primarily used for commercial egg production.
   b) Rhode Island Red: A hardy breed, good for both meat and egg production.
2. Ducks:
   a) Pekin: Raised mainly for meat production, known for its fast growth.
   b) Khaki Campbell: A prolific layer, known for high egg production.
3. Turkeys:
   a) Broad Breasted White: Commonly used for meat production due to its large size.
   b) Narragansett: A heritage breed, known for good meat quality and hardiness.
4. Geese:
   a. Known for their meat and feathers. Breeds like the Embden are raised for meat, while Toulouse geese are prized for their ability to produce foie gras.

Diseases in Poultry and Prevention

1. Common Poultry Diseases:
    a. Newcastle Disease: Highly contagious and affects respiratory, nervous, and digestive systems.
    b. Avian Influenza (Bird Flu): A viral infection that affects both wild and domestic birds, leading to high mortality in poultry.
    c. Fowl Pox: A viral disease causing lesions on the skin and mucous membranes.
2. Prevention and Control:
    a. Vaccination programs to protect against common diseases.
    b. Maintaining biosecurity measures such as controlling the movement of people and equipment to prevent disease spread.
    c. Good farm hygiene practices to prevent infections, including regular cleaning and disinfecting of equipment and housing.

L-7, REACHING THE AGE OF ADOLESCENCE

Key Aspects of Adolescence.

1. **Physical Changes**
   The onset of adolescence is marked by puberty, triggered by hormonal changes in the body.
   a) Boys: Growth of facial and body hair, deepening of voice, broadening of shoulders, and development of reproductive organs.
   b) Girls: Development of breasts, widening of hips, onset of menstruation, and growth of body hair.
   c) Growth Spurt: Adolescents experience a rapid increase in height and weight, often referred to as the adolescent growth spurt.
2. **Hormonal Changes**
   a) Hormones such as testosterone (in boys) and estrogen (in girls) are responsible for the physical transformations.
   b) These hormones also contribute to mood swings and emotional sensitivity during this phase.
3. **Emotional and Psychological Changes**
   Adolescents often experience emotional turbulence due to hormonal shifts and the search for personal identity.
   a) Increased self-awareness and self-consciousness.
   b) Frequent mood swings and heightened sensitivity.
   c) Development of critical thinking and decision-making abilities.
4. **Social Changes**
   a) Adolescents begin to form stronger peer relationships, which significantly influence their thoughts and behavior.
   b) They start to explore their roles in society and develop a sense of independence.
   c) Social skills, including communication and empathy, become more refined.
5. **Cognitive Development**
   The adolescent brain undergoes significant changes, leading to improvements in:
   a) Abstract thinking and problem-solving.
   b) Logical reasoning and planning.
   c) Ability to reflect on moral and ethical dilemmas.

Challenges Faced During Adolescence

1. Identity Crisis: Adolescents may struggle to define their individuality and values.
2. Peer Pressure: The desire to fit in with peers can lead to risky behaviors.
3. Emotional Vulnerability: Adolescents are prone to stress, anxiety, and depression due to academic and social pressures.

Role of Guidance

Parents, teachers, and mentors play a vital role in helping adolescents navigate this transformative period:

1. Providing a supportive and understanding environment.
2. Encouraging open communication about physical and emotional changes.
3. Educating them about healthy habits, self-care, and decision-making.

GLAND:

A gland is an organ, which produces and releases substances that perform a specific function in the body. There are two types of gland. Endocrine glands(refer textbook) and exocrine glands.

What are exocrine glands?

Exocrine glands release (secrete) substances through openings (ducts) onto your body surfaces. Exocrine glands secrete sweat, tears, saliva, milk and digestive juices. Exocrine glands are found in many different organs in your body.

What are the different types of exocrine glands?

Many organs in your body use exocrine glands to function properly. Examples of exocrine glands include:

a. Sweat glands: Your sweat glands create and secrete sweat. A type of sweat gland called eccrine sweat glands covers almost your entire body surface. These sweat glands produce clear, non-oily sweat that helps control your body temperature.
b. Sebaceous glands: Your sebaceous glands are also on your skin. But they open into your hair follicles. Sebaceous glands secrete sebum. Sebum is an oily substance that lubricates and protects your hair and skin.
c. Salivary glands: Your salivary glands create and secrete saliva. Salvia helps you chew, swallow and digest your food. It also helps lubricate and protect the inner lining of your tissues.
d. Lacrimal glands: Your lacrimal glands are your tear glands. Your lacrimal glands are located above your upper eyelids. They create and secrete a fluid that gets into your eyes every time you blink. This fluid helps keep your eyes moisturized.
e. Mammary glands: Your mammary glands produce milk. Your milk is nutrient-rich and helps protect your baby's developing immune system.
f. Ceruminous glands: Your ceruminous glands are glands in your ears. They help produce ear wax (cerumen). Ear wax protects your ears from physical damage and infection.
g. Stomach glands: Glands in your stomach release enzymes that help break down food. They also help your body absorb important nutrients.

h. Brunner glands: The Brunner glands are located in the first part of your small intestine. This is called your duodenum. The Brunner glands produce mucus that protects your duodenum from stomach acid. They also help your body digest food and absorb nutrients.

liver and pancreas are exocrine glands too. liver secretes bile through ducts into the gastrointestinal tract. pancreas secretes pancreatic juices through ducts into gastrointestinal tract. But liver and pancreas are also considered endocrine glands. They have dual roles. They also secrete hormones directly into your bloodstream.

Endocrine glands	Exocrine glands
do not have any ducts	have ducts that release substances
only secrete hormones	secrete various substances, including sweat, sebum, enzymes, and mucus
secrete hormones directly into the bloodstream	secrete substances into an organ or onto the surface of the body

L-10, Sound

- **Sound in Technology**:
  Sound is widely used in various technological applications, enhancing communication, measurement, and entertainment.

- **Technologies Using Sound:**
  - **Acoustic Devices**:
    - Microphones: Convert sound waves into electrical signals.
    - Speakers: Convert electrical signals back into sound waves.
    - Hearing Aids: Amplify sound for those with hearing impairments.
  - **Ultrasonics:**
    - Used in medical imaging (Ultrasound) for internal body scans.
    - Employed in cleaning, welding, and material testing.
  - **Sonar:**
    - Sound Navigation and Ranging (Sonar) uses sound waves to detect objects underwater, widely used in submarines and ships.
  - **Echo Location:**
    - Used by animals (e.g., bats, dolphins) and in technology like radar systems and robotics.
  - **Speech Recognition:**
    - Technology that converts spoken language into text or commands (e.g., Siri, Alexa).
  - **Noise-Canceling Technology:**
    - Uses sound waves to cancel out unwanted ambient noise, found in headphones and audio systems.

- **Applications of Sound in Technology:**
  - **Medical Field:**
    - **Ultrasound Imaging**: Non-invasive scanning to visualize organs and monitor pregnancies.
    - **Acoustic Therapy**: Used in treating certain conditions like kidney stones.
  - **Entertainment:**
    - **Sound Systems**: Advanced sound reproduction systems in cinema, concerts, and home theaters.
    - **Virtual Reality**: Immersive sound technology for an enhanced user experience.
  - **Communications:**
    - **Telecommunication**: Converting human speech into signals for phones, radio, and internet calls.
    - **Voice Assistants**: AI-driven systems that interpret and respond to voice commands.
  - **Security:**
    - **Acoustic Sensors**: Detect and interpret sound patterns for security systems (e.g., glass break detection).
  - **Automotive Industry:**
    - **Acoustic Sensors**: Used in parking sensors and to reduce noise in vehicle cabins.

- **Challenges in Sound and Technology:**
  - **Sound Quality:** Balancing clarity and distortion in various devices.
  - **Noise Pollution:** Managing excessive sound in urban environments and workplaces.
  - **Hearing Protection:** Technology to protect against harmful noise levels in industrial and entertainment settings.

- **Future Trends:**
  - **Advanced Sound Recognition:** AI and machine learning for more accurate speech recognition and emotion detection in voice.
  - **3D Audio Technology:** Enhancing immersive experiences in gaming and virtual environments.
  - **Smart Environments:** Integrating sound for interactive home automation systems.

L-11,Chemical Effects of Electric Current

The chemical effects of electric current refer to the changes in the chemical composition of substances when an electric current passes through them. This phenomenon is harnessed in various technological processes that are integral to industries ranging from manufacturing to energy production. Here's an overview of these effects and their technological applications:

1. **Electrolysis and Its Applications**
   Electrolysis is the primary chemical effect of electric current, where an electrolyte undergoes decomposition when a current is passed through it. This process is used in many technologies:
   - Water Splitting: Electrolysis is used to split water into hydrogen and oxygen. Hydrogen produced in this way is a crucial element for fuel cells and clean energy technologies.
   - Electroplating: This process uses electrolysis to deposit a thin layer of metal (like gold, silver, or chrome) onto an object, enhancing its appearance and resistance to corrosion. This is vital in electronics, jewelry, and automotive industries.
   - Electrorefining: Metals like copper are purified through electrolysis, which is crucial for producing high-purity metals used in electronics and other high-tech applications.
2. **Electrochemical Cells and Energy Storage**
   The chemical effects of electric current are foundational to the development of batteries and fuel cells, which are key to modern energy storage and portable power sources:
   - Batteries: In batteries, chemical reactions occur as electric current is drawn, converting stored chemical energy into electrical energy. Lithium-ion and lead-acid batteries, which power everything from smartphones to electric vehicles, rely on these reactions.
   - Fuel Cells: Fuel cells use electrochemical reactions to convert hydrogen and oxygen into water, releasing electricity. This technology is seen as a cleaner alternative to traditional combustion engines for cars and as a potential energy source for buildings and grids.
3. **Chlor-Alkali Process**
   The chlor-alkali process involves the electrolysis of sodium chloride (salt) solution to produce chlorine gas, hydrogen gas, and sodium hydroxide. This process is crucial in the production of chemicals for industries such as plastics (PVC), disinfectants, and pharmaceuticals. It also serves as a source of chlorine, which is used in water purification and the manufacturing of various chemicals.
4. **Electrosynthesis and Chemical Manufacturing**
   The chemical effects of electric current are also employed in electrosynthesis, a process used to create a variety of chemicals in the laboratory and industrial settings:
   - This process allows for the synthesis of compounds like organic acids, alcohols, and other chemicals used in pharmaceuticals, agrochemicals, and petrochemical industries.

- Electrosynthesis offers more environmentally friendly alternatives to traditional chemical synthesis methods, reducing the need for high temperatures or toxic chemicals.

5. **Environmental and Industrial Technologies**
   - Corrosion Prevention: In industries, the chemical effects of electric current are used in cathodic protection to prevent the corrosion of metals. By applying a small electric current to metal structures like pipelines and storage tanks, corrosion is prevented, thus extending the lifespan of the infrastructure.
   - Waste Treatment: Electrochemical methods are employed in waste treatment technologies, where electric currents are used to treat wastewater or to break down toxic chemicals in industrial waste.
6. **Development of Clean Energy Technologies**
   Electric current's chemical effects are pivotal in the development of clean energy technologies. Electrolysis, for instance, plays a critical role in producing hydrogen for fuel cells, which are seen as an environmentally friendly alternative to fossil fuels. Additionally, electrochemical cells are being used to develop efficient, low-cost storage systems for renewable energy, such as solar and wind power.

L-12, Some natural phenomenon

A **natural disaster** is a catastrophic event caused by natural processes of the Earth. These events can result in significant damage to life, property, and the environment. Natural disasters are often sudden and can vary in scale and impact. Here's a detailed overview:

Types of Natural Disasters

1. **Geological Disasters**
   - **Earthquakes:** Sudden shaking of the Earth's surface due to the movement of tectonic plates. Example: 2004 Indian Ocean earthquake (causing a massive tsunami).
   - **Volcanic Eruptions:** Explosive release of magma, ash, and gases from a volcano. Example: Mount Vesuvius eruption in AD 79.
   - **Landslides:** The sliding down of rock, soil, or debris on slopes due to gravity, often triggered by rainfall or earthquakes.
2. **Hydrological Disasters**
   - **Floods:** Overflow of water submerging land that is usually dry. Caused by heavy rainfall, storm surges, or dam breaks. Example: 1931 China floods.
   - **Tsunamis:** Large sea waves caused by underwater earthquakes, volcanic eruptions, or landslides.
3. **Meteorological Disasters**
   - **Hurricanes/Cyclones/Typhoons:** Intense tropical storms with strong winds and heavy rain. Example: Hurricane Katrina (2005).
   - **Tornadoes:** Violently rotating columns of air in contact with the ground. Example: 2013 Moore tornado in Oklahoma.
   - **Droughts:** Prolonged periods of insufficient rainfall, causing water shortages.
   - **Heatwaves:** Extended periods of excessively hot weather, often accompanied by high humidity.

4. **Climatological Disasters**
    - **Wildfires:** Uncontrolled fires in forests or grasslands, often due to dry conditions and high temperatures. Example: 2019-2020 Australian bushfires.
    - **Cold Waves:** Periods of extreme cold that can disrupt daily life and agriculture.
5. **Biological Disasters**
    - **Epidemics/Pandemics:** Outbreaks of diseases affecting large populations. Example: COVID-19 pandemic.
6. **Space-Related Disasters**
    - **Meteorite Impacts:** Rare events when celestial objects hit Earth, potentially causing widespread damage.
    - **Solar Storms:** Disturbances caused by solar flares affecting satellite communications and power grids.

Causes

- Natural Processes: Earth's dynamic systems, such as plate tectonics, ocean currents, and atmospheric conditions.
- Climate Change: Exacerbates the frequency and severity of disasters like hurricanes, droughts, and wildfires.
- Human Activities: Deforestation, urbanization, and greenhouse gas emissions can increase vulnerability.

Impacts

- Human Loss: Deaths, injuries, and displacement of people.
- Economic Damage: Destruction of infrastructure, agriculture, and businesses.
- Environmental Effects: Loss of biodiversity, soil erosion, and contamination of water sources.
- Health Issues: Outbreaks of diseases and mental health problems among affected populations.

Preparedness and Mitigation

1. Early Warning Systems: Using technology like satellite imaging and weather forecasts.
2. Infrastructure Design: Building disaster-resistant structures.
3. Community Awareness: Education on safety measures and evacuation plans.
4. Emergency Response: Rapid deployment of aid, medical services, and disaster relief teams.
5. Sustainable Practices: Reducing human impact on ecosystems to minimize vulnerability.

Natural disasters are an inevitable part of Earth's processes, but through preparedness, mitigation, and global cooperation, their impact can be significantly reduced.

L-13,LIGHT

Properties of Light

- Nature: Light is a form of electromagnetic radiation.
- Speed: Travels at a speed of approximately 300,000 kilometers per second in a vacuum.
- Dual Nature: Exhibits both particle-like and wave-like properties (wave-particle duality).
- Spectrum: Includes visible light and other wavelengths like infrared, ultraviolet, X-rays, etc.

Types of Light

- Natural Light: Emitted by the Sun, stars, and fire.
- Artificial Light: Produced by man-made sources like bulbs, LEDs, and lasers.
- Visible Light: The range of electromagnetic waves detectable by the human eye (400-700 nm wavelength).

Behavior of Light

- Reflection: Light bounces off surfaces.
- Refraction: Bending of light as it passes through different media.
- Diffraction: Spreading of light when it encounters an obstacle or slit.
- Absorption: Light energy is absorbed by a material, often converting to heat.

Applications of Light

- Illumination: Providing visibility and lighting in spaces.
- Communication: Used in fiber-optic communication systems.
- Medical Uses: In lasers for surgeries and phototherapy.
- Photography and Imaging: Capturing visual information.
- Energy: Solar panels convert sunlight into electricity.

Importance of Light

- Ecosystem Role: Essential for photosynthesis in plants.
- Time Regulation: Determines day-night cycles and biological rhythms.
- Cultural Significance: Symbolizes knowledge, hope, and positivity in many traditions.

Natural Phenomenon: Aurora Borealis (Northern Lights)

- What it is: A natural light display predominantly seen in high-latitude regions around the Arctic and Antarctic.
- Cause:
    a) Occurs when charged particles from the Sun collide with Earth's atmosphere.
    b) These particles are directed by Earth's magnetic field to the polar regions.

c) The interaction with atmospheric gases, such as oxygen and nitrogen, produces colorful lights.

- Colors:
  a) Green: Most common, caused by oxygen molecules.
  b) Red: Rare, also caused by oxygen but at higher altitudes.
  c) Purple, pink, and blue: Caused by nitrogen molecules.
- Location:
  a) Best viewed in polar regions like Norway, Iceland, Alaska, and Canada.
  b) Southern Hemisphere equivalent is called Aurora Australis (Southern Lights).
- Timing:
  a) Visible during dark, clear nights, usually in winter.
  b) Activity peaks during solar maximum, part of an 11-year solar cycle.

- Scientific Importance:
  a) Helps scientists study solar wind and Earth's magnetic field.
  b) Indicates solar activity levels, which can impact satellite communication and power grids.

Matter:

Matter is anything that has mass and occupies space. It is the physical material of the universe and exists in various forms.

Characteristics of Matter

1. Has mass: All matter, regardless of its state, has mass.
2. Occupies space: Matter takes up physical space, displacing any other matter in that space.
3. Made up of particles: Matter consists of tiny particles that are in continuous motion and interact with one another.

States of Matter

Matter can exist in three main states:

1. Solid
   - Fixed shape and volume.
   - Particles are closely packed with strong intermolecular forces.
   - Particles can only vibrate about their fixed positions.
   - Examples: Ice, wood, metals.
2. Liquid
   - Fixed volume but no fixed shape; takes the shape of its container.
   - Particles are less closely packed than in solids.
   - Particles can slide over each other, allowing liquids to flow.
   - Examples: Water, oil, milk.
3. Gas
   - Neither fixed shape nor fixed volume.
   - Particles are widely spaced with negligible intermolecular forces.
   - Particles move freely and at high speeds.
   - Examples: Air, oxygen, carbon dioxide.

Other States of Matter

4. Plasma
   - Ionized gas with free electrons and ions.
   - Found in stars and neon signs.
5. Bose-Einstein Condensate (BEC)
   - Formed at extremely low temperatures, close to absolute zero.
   - Particles clump together and behave as a single quantum entity.

Properties of Matter

1. Physical Properties
   - Observable without changing the composition of matter.
   - Examples: Density, melting point, boiling point, color, texture.
2. Chemical Properties
   - Describe how matter interacts with other substances to form new compounds.
   - Examples: Reactivity, flammability, acidity.

Classification of Matter

Matter can be classified based on composition:

1. Pure Substances
   - Made up of only one type of particle.
   - Fixed composition.
   - Examples:
     - Elements: Consist of only one type of atom (e.g., gold, oxygen).
     - Compounds: Consist of two or more types of atoms chemically combined (e.g., water, carbon dioxide).
2. Mixtures
   - Consist of two or more substances physically combined.
   - Variable composition.
   - Examples:
     - Homogeneous Mixture: Uniform composition (e.g., saltwater, air).
     - Heterogeneous Mixture: Non-uniform composition (e.g., sand and water, oil and water).

Changes in States of Matter

Matter can change from one state to another through physical processes:

1. Melting: Solid to liquid (e.g., ice to water).
2. Freezing: Liquid to solid (e.g., water to ice).
3. Vaporization: Liquid to gas (e.g., water to steam).
4. Condensation: Gas to liquid (e.g., steam to water).
5. Sublimation: Solid to gas without passing through the liquid state (e.g., camphor, dry ice).
6. Deposition: Gas to solid without passing through the liquid state (e.g., frost formation).

FAMOUS INVENTORS AND INVENTIONS OF INDIA

Inventors Name	Inventions
Prafulla Chandra Ray	India's first pharmaceutical company.
Salim Ali	Naturalist who helped develop Ornithology
Srinivasa Ramanujan	mathematical analysis, number theory, infinite series, and continued fractions
C. V. Raman	He was a physicist who won the Nobel Prize in 1930 for his Raman Effect.
Homi Jehangir Bhabha	The chief architect of the Indian atomic energy program.
Jagadish Chandra Bose	pioneered the investigation of radio and microwave optics.
Satyendra Nath Bose	Mathematician and physicist;
A.P.J. Abdul Kalam	development of India's missile and nuclear weapons programs.
Har Gobind Khorana	A biochemist who won the Nobel Prize
S.S. Abhyankar	contributions to algebraic geometry.
Meghnad Saha	Astrophysicist
Subrahmanyan Chandrasekhar	Astrophysicists won the Nobel Prize in 1983
Raj Reddy	A.M. Turing Award-winning computer scientist
Birbal Sahni	Paleobotanists are known for their research on the fossils of the Indian subcontinent.
INPrasanta Chandra Mahalanobis	Statistician and physicist who founded the Indian Statistical Institute.

INVENTORS/DICOVERERS AND THEIR INVENTIONS AND DISCOVERIES

Sl#	Invention/Discovery	Name of the Inventor
1	Air Conditioner	Willis Carrier
2	Atom Bomb	Julius Robert Oppenheimer
3	Airplane	Wilber and Orville Wright
4	Aspirin	Dr. Felix Hoffman
5	Bifocal Lens	Benjamin Franklin
6	Barometer	Evangelista Torricelli
7	Celluloid	Alexander Parkes

8	Diesel Engine	Rudolf Diesel
9	Electroscope	William Gilbert
10	Electric Fan	Schuyler Wheeler
11	Electric Battery	Volta
12	Elevator	Elisha G. Otis
13	Electric Motor (DC)	Thomas Davenport
14	Helicopter	Igor Sikorsky
15	Laser	Theodore Maiman
16	Machine Gun	Richard Gatling
17	Theory of Relativity	Albert Einstein
18	Ozone	Christian Schonbein
19	Printing Press	Johannes Gutenberg
20	Periodic Table	Dmitri Mendeleev
21	Petrol for Motor Car	Karl Benz
22	Refrigerator	William Cullen
23	Rubber (vulcanized)	Charles Goodyear
24	Personal Computer	Steve Wozniak and Steve Jobs
25	Radio	Guglielmo Marconi
26	Steam Boat	Robert Fulton
27	Internet	Vint Cerf and Bob Kahn
28	Stethoscope	Rene Laennec
29	Soft Contact lenses	Otto Wichterle
30	Xerox Machine	Chester Carlson

Nobel Prize winners

Physics

- 2024: John J Hopfield and Geoffrey Hinton for foundational discoveries and inventions that enable machine learning with artificial neutral networks.
- 2023: Pierre Agostini, Ferenc Krausz, and Anne L'Huillier for methods generating attosecond light pulses.
- 2022: Alain Aspect, John F. Clauser, and Anton Zeilinger for quantum entanglement experiments.
- 2021: Syukuro Manabe, Klaus Hasselmann, and Giorgio Parisi for climate models and disordered systems research.
- 2020: Roger Penrose, Reinhard Genzel, and Andrea Ghez for discoveries on black holes.

Chemistry

- 2024: Demis Hassabis, John Jumper, and David Baker for contributions to protein structure prediction through AI and computational biology
- 2023: Moungi G. Bawendi, Louis E. Brus, and Alexei I. Ekimov for the discovery and synthesis of quantum dots.
- 2022: Carolyn R. Bertozzi, Morten Meldal, and K. Barry Sharpless for bioorthogonal chemistry.
- 2021: Benjamin List and David W.C. MacMillan for organocatalysis.
- 2020: Emmanuelle Charpentier and Jennifer Doudna for developing CRISPR-Cas9 genetic editing.

Physiology or Medicine

- 2024: Victor Ambros and Gary Ruvkun for discovering microRNA and its role in gene regulation.
- 2023: Katalin Karikó and Drew Weissman for nucleoside base modifications enabling mRNA vaccines.
- 2022: Svante Pääbo for research on extinct hominin genomes and human evolution.
- 2021: David Julius and Ardem Patapoutian for receptors for temperature and touch.
- 2020: Harvey J. Alter, Michael Houghton, and Charles M. Rice for discovering the Hepatitis C virus.

Human Anatomy

The branch of science that studies the structure of living organisms, including their organs, tissues, and systems.

Importance of Human Anatomy

Studying human anatomy is vital for:

1. Understanding diseases and their treatments.
2. Performing medical procedures like surgeries.
3. Developing new healthcare technologies.

Levels of Organization

The human body is organized into hierarchical levels:

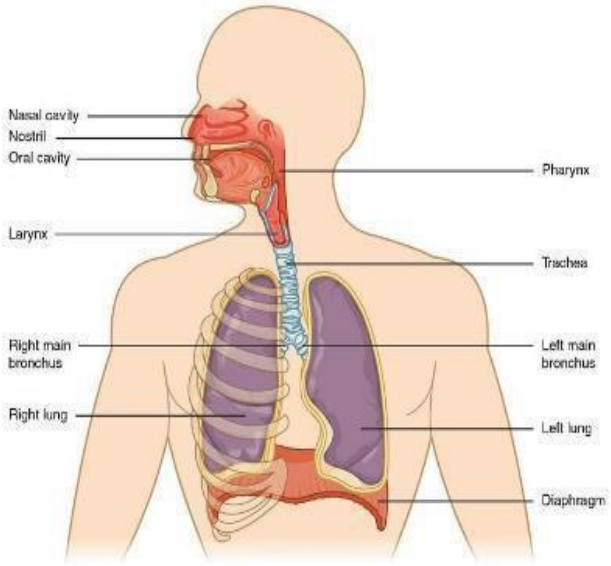
1. Cells: The basic units of life that perform essential biological functions.
2. Tissues: Groups of similar cells performing a specific function, categorized into four types:
   a) Epithelial: Covers body surfaces and lines cavities.
   b) Connective: Provides support and binds tissues.
   c) Muscle: Facilitates movement.
   d) Nervous: Conducts impulses for communication.
3. Organs: Complex structures made of multiple tissue types, such as the heart, liver, and brain.
4. Organ Systems: Groups of organs working together to perform vital functions.

The human body consists of 11 major organ systems:

1. Nervous System

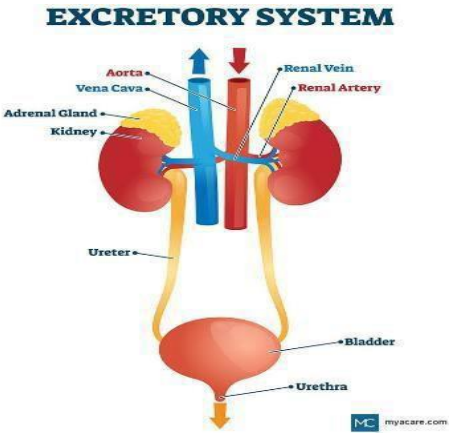
a) Controls how the body interacts with its environment and regulates organ functions in other systems.
b) The key organs include the brain, spinal cord, and sensory organs, connected by neurons to transmit signals.
c) The nervous system is divided into two parts: the Central Nervous System (CNS), comprising the brain and spinal cord, and the Peripheral Nervous System (PNS), made up of nerves that transmit signals to and from the CNS.
d) The brain has three main parts: cerebrum (controls thought and voluntary movement), cerebellum (coordinates balance and posture), and medulla oblongata (regulates vital functions).
e) The study of the nervous system is known as Neurology.

3. Respiratory System



a) Facilitates breathing by allowing air to enter the lungs and exchange oxygen and carbon dioxide.
b) The system includes the nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, and lungs, which work together to maintain respiration.
c) Respiratory muscles, such as the diaphragm, aid in the process of inhalation and exhalation.
d) The study of the respiratory system is called Pulmonology.

4. Excretory System



a) Removes waste products from the body by producing and excreting urine to maintain fluid and electrolyte balance.
b) Composed of kidneys (filter blood), ureters (carry urine to the bladder), the urinary bladder (stores urine), and the urethra (expels urine).
c) The nephron, the functional unit of the kidney, plays a crucial role in filtering and reabsorbing essential substances.
d) The field of study focusing on kidneys is Nephrology, while the study of the entire urinary system is Urology.

4. Muscular System

a) Includes all muscles in the body, enabling movement, posture maintenance, and heat production.
b) Notable muscles include the tongue, which is the strongest, gluteus maximus, the largest (located in the buttocks), and stapedius, the smallest (in the ear).
c) The study of muscles is known as Myology.

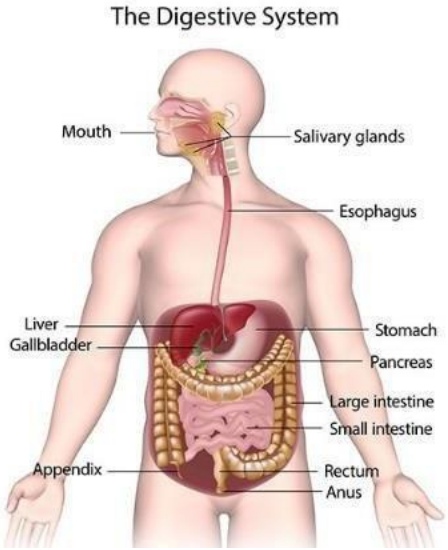
5. Endocrine System

a) Consists of glands that secrete hormones directly into the bloodstream to regulate various physiological processes.
b) Key glands include the pineal gland, pituitary gland, thyroid gland, thymus, pancreas, adrenal glands, ovaries, and testes.
c) Hormones control growth, metabolism, reproduction, and other critical functions.
d) The study of this system is referred to as Endocrinology.

6. Integumentary System

a) Covers and protects the body with skin, sweat glands, and sensory receptors, forming a barrier against external damage.
b) The skin, the largest organ, prevents water loss, regulates body temperature, and synthesizes vitamin D under sunlight.
c) It also contains sensory receptors to detect pain, pressure, and temperature changes.
d) The study of the integumentary system is called Dermatology.

7. Digestive System



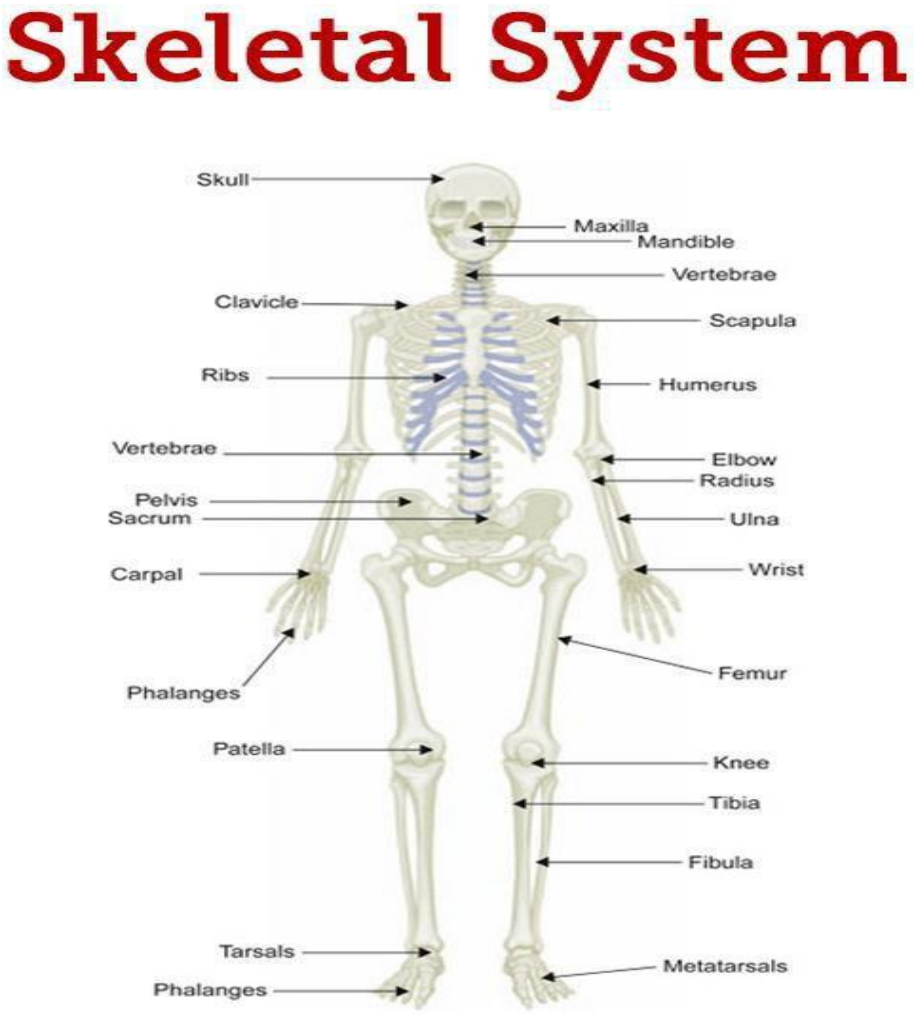
a) Breaks down food into smaller components for nutrient absorption and energy production.

b) It includes the alimentary canal (mouth, esophagus, stomach, intestines, anal canal) and accessory organs (tongue, salivary glands, liver, pancreas, gallbladder).

c) The liver, the largest gland, produces bile to aid digestion, which is temporarily stored in the gallbladder.

d) The study of this system is known as Gastroenterology.

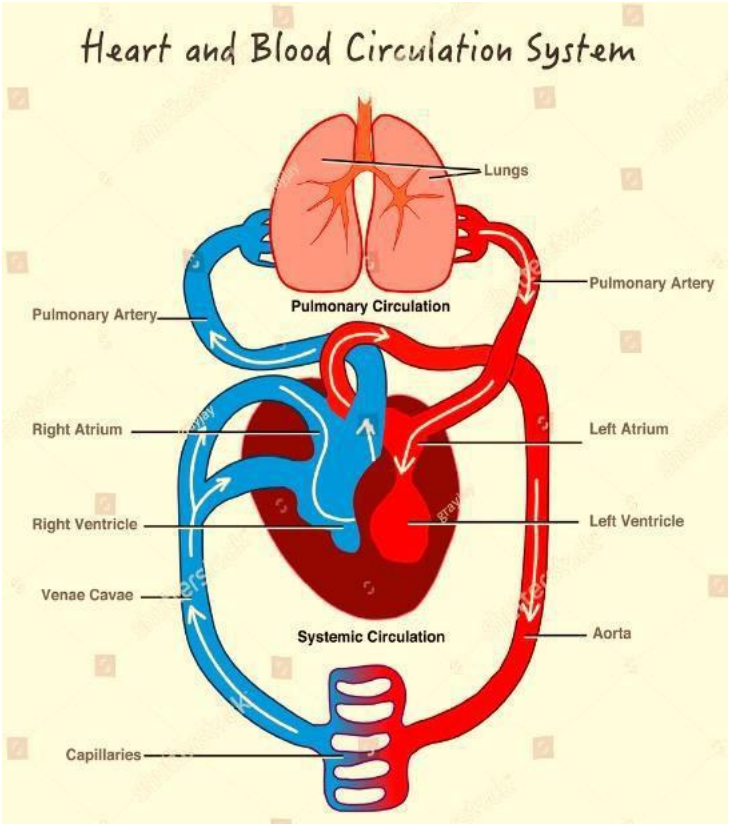
8. **Skeletal System-** Provides structural support, protects internal organs, and enables movement through a framework of bones, ligaments, and cartilage.



a) The adult human skeleton consists of 206 bones, with the largest being the femur (thigh bone) and the smallest, the stirrup (in the ear).

b) The field of study associated with bones is Orthopedics.

9. Circulatory System

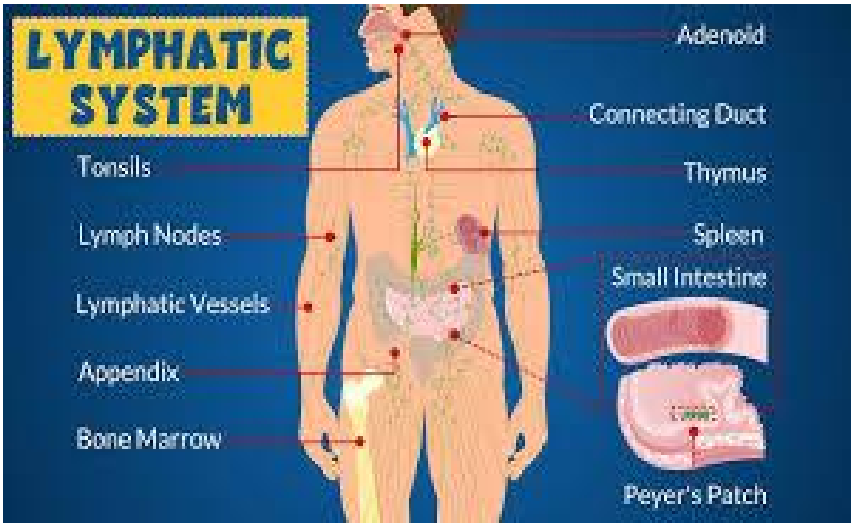


a) Distributes oxygen, nutrients, hormones, and removes waste products through blood circulation.
b) It includes the heart (a four-chambered muscular pump), blood vessels, and blood.
c) The largest artery is the aorta, and the largest vein is the vena cava. Blood consists of red cells, white cells, platelets, and plasma.
d) The study of this system is called Cardiology.

10. Reproductive System

a) Enables reproduction through specialized male and female organs, which differ significantly between genders.
b) Male organs include the testes and penis, while female organs consist of ovaries, uterus, and vagina.
c) The study of the male system is called Andrology, and the female system is Gynecology.

11. Lymphatic (Immune) System



a) Removes toxins, waste, and excess fluid from tissues and defends the body against infections and diseases.
b) It consists of lymph, lymphatic vessels, lymph nodes, and lymphoid organs like the spleen and thymus.
c) The lymphatic system also recirculates proteins and supports immune responses.

DEFICIENCY DISEASES:

Beriberi:
Cause: Thiamine (Vitamin B1) Deficiency: Beriberi is primarily caused by a deficiency of thiamine, a crucial vitamin for energy metabolism.
Symptoms:
Weakness and Fatigue: Generalized weakness and tiredness.
Peripheral Neuropathy: Numbness, tingling, and pain in the extremities.
Cardiovascular Issues: Enlarged heart, rapid heart rate, and shortness of breath. Muscle Wasting: Loss of muscle mass and strength.
Edema: Swelling, particularly in the lower limbs, due to fluid retention.

Glossitis:
Cause: Vitamin B12 Deficiency: Glossitis is often associated with a deficiency of vitamin B12, which is essential for red blood cell formation and neurological function.
Symptoms:

- Red and Inflamed Tongue: Inflammation and changes in the color and texture of the tongue. Pain and Discomfort: Tongue tenderness and discomfort while eating or swallowing.
- Difficulty Speaking and Eating: Due to tongue swelling and discomfort. Mouth Ulcers: Sores or ulcers in the mouth.
- Impaired Taste: Changes in taste perception.

Pellagra:
Cause: Niacin (Vitamin B3) Deficiency: Pellagra is caused by a deficiency of niacin, a B-vitamin essential for cellular metabolism.
Symptoms:

- Dermatitis: Inflammation and irritation of the skin, leading to a characteristic rash. Diarrhea: Frequent and watery bowel movements.
- Dementia: Cognitive impairment, including confusion and memory loss. Photosensitivity: Increased sensitivity to sunlight.
- Swollen, Bright Red Tongue: Inflammation and changes in the color and texture of the tongue.

Anaemia:
Cause: Iron Deficiency: Anemia is often caused by insufficient iron, a key component of hemoglobin, the oxygen-carrying protein in red blood cells.
Symptoms:

- Fatigue: Generalized weakness and tiredness.
- Pale Skin: Reduced red blood cells result in paleness.
- Shortness of Breath: Difficulty breathing, especially during physical exertion. Headaches: Due to decreased oxygen delivery to the brain.
- Dizziness and Fainting: Insufficient oxygen reaching the brain.

Burning Feet (Peripheral Neuropathy):
Cause: Nerve Damage: Burning feet can result from nerve damage, often associated with diabetes or other metabolic disorders.
Symptoms:

- Burning Sensation: Persistent burning or tingling sensation in the feet. Numbness: Reduced sensation or loss of feeling in the feet.
- Sharp or Shooting Pain: Intermittent or constant pain in the feet.
- Sensitivity to Touch: Increased sensitivity or pain in response to touch. Muscle Weakness: Loss of strength in the affected areas.

Nerve Disorders:
Cause: Various Causes: Nerve disorders can result from injuries, infections, autoimmune conditions, or genetic factors.
Symptoms:

- Numbness and Tingling: Altered sensations, such as numbness or tingling. Muscle Weakness: Reduced strength or difficulty moving limbs.
- Pain: Sharp, shooting, or persistent pain.
- Loss of Coordination: Impaired balance and coordination.

Paralysis: In severe cases, complete loss of movement in affected areas.
Scurvy:
Cause: Vitamin C Deficiency: Scurvy is caused by a lack of vitamin C, essential for collagen synthesis.
Symptoms:

- Fatigue: Generalized weakness and tiredness.

- Swollen and Bleeding Gums: Inflammation and bleeding from the gums. Joint Pain: Pain and swelling in the joints.
- Anemia: Reduced red blood cell production.
- Skin Bruising: Easy bruising and skin discoloration.

Night Blindness:
Cause: Vitamin A Deficiency: Night blindness is often associated with a deficiency of vitamin A, crucial for vision.
Symptoms:

- Difficulty Seeing in Low Light: Impaired vision in dimly lit environments. Slow Adjustment to Darkness: Takes longer for eyes to adjust to darkness. Dry Eyes: Insufficient tear production and dryness.
- Increased Susceptibility to Infections: Compromised immunity affecting eye health. Blind Spots: Reduced peripheral vision in low-light conditions.

Rickets:
Cause: Vitamin D, Calcium, or Phosphate Deficiency: Rickets is caused by a lack of essential nutrients for proper bone development.
Symptoms:

- Softening of Bones: Weakening and softening of the bones, leading to deformities. Delayed Growth and Development: Impaired growth and short stature.
- Skeletal Deformities: Bowlegs, knock-knees, or spinal deformities. Muscle Weakness: Weakness and pain in the muscles.
- Delayed Closure of Fontanelles: Soft spots on the skull may take longer to close in infants.

Blood Clotting Disorders:
Cause: Various Causes: Blood clotting disorders can result from genetic factors, medications, or underlying health conditions.
Symptoms:

- Excessive Bleeding: Prolonged bleeding after injuries or surgeries. Easy Bruising: Spontaneous bruising with minimal trauma.
- Heavy Menstrual Periods: Excessive bleeding during menstruation. Frequent Nosebleeds: Unexplained and recurrent nosebleeds.
- Hematomas: Formation of large bruises or hematomas.

Hemophilia:
Cause: Genetic Mutation: Hemophilia is a genetic disorder caused by mutations in genes responsible for producing blood clotting factors, leading to deficiencies in these clotting factors.
Symptoms:

- Excessive Bleeding: Prolonged bleeding after injuries, surgeries, or minor cuts.
- Bruising: Easy and spontaneous bruising, often without apparent cause. Joint Pain and Swelling: Bleeding into joints, particularly knees and elbows, causing pain and swelling.
- Nosebleeds: Frequent and prolonged nosebleeds.
- Blood in Urine and Stool: Bleeding in the urinary and gastrointestinal tracts.

Celiac Disease:
Cause: Autoimmune Reaction to Gluten: Celiac disease is an autoimmune disorder triggered by the consumption of gluten, a protein found in wheat, barley, and rye.
Symptoms:

- Digestive Issues: Diarrhea, abdominal pain, bloating, and constipation.
- Weight Loss: Unintended weight loss and malnutrition due to nutrient malabsorption. Fatigue: Generalized weakness and tiredness.
- Skin Rash: Dermatitis herpetiformis, an itchy skin rash with small blisters. Joint Pain: Pain and inflammation in the joints, resembling arthritis.

What is Technology?

Technology refers to the application of scientific knowledge to create tools, systems, and devices that solve problems and improve lives.
Role of Technology

- Enhances productivity and convenience.
- Advances communication and learning.
- Contributes to healthcare, science, and transportation.

Evolution of Technology
Stone Age

- Tools made of stone and wood.
- Invention of fire and wheel.

Industrial Revolution

- Steam engines and factories.
- Transportation and mass production.

Modern Era

- Computers, AI, robotics, and space exploration.

Computer and Its Components:
Basic Components:

1. Input Devices: Devices used to input data (e.g., keyboard, mouse, microphone).
2. Processing Unit:
   a) CPU: The "brain" of the computer, processes instructions.
   b) GPU: Handles graphics processing (used in gaming or video editing).
3. Memory:
   a) RAM: Temporary storage for running programs.
   b) ROM: Permanent storage for essential data.
4. Output Devices: Devices that output results (e.g., monitor, printer, speakers).
5. Storage Devices: Hard drives, SSDs, USB drives.

Types of Computers

1. Supercomputer: Used for high-speed calculations (e.g., weather prediction, space research).
2. Mainframe: Handles large-scale processing (e.g., banking systems).
3. Personal Computer (PC): For personal use (e.g., desktops, laptops).
4. Embedded Systems: Found in appliances like microwaves, washing machines, and cars.

Advanced Programming Concepts

1. What is Programming?
   Programming is writing instructions for computers to execute specific tasks.
2. Examples of Programming Languages:
   a) Python (used in AI, web development).
   b) JavaScript (for web design).
   c) C++ (for applications like games).
3. Algorithm and Flowchart:
   a) Algorithm: A step-by-step process to solve a problem.
   b) Flowchart: A diagram showing the flow of instructions.

Networking Concepts

1. What is a Network?
   A network is a group of interconnected computers that share data.
2. Types of Networks:
   a) LAN (Local Area Network): Limited to a small area like a school or office.
   b) WAN (Wide Area Network): Covers a large area (e.g., the Internet).
3. Important Terms:
   a) IP Address: Unique address of a device on the network.
   b) DNS: Domain Name System converts domain names into IP addresses.
   c) Router: Device that connects different networks.

Cybersecurity

Cyber Threats:

- Hacking: Unauthorized access to computer systems.
- Phishing: Fake emails or websites to steal personal data.
- Viruses and Malware: Harmful programs that damage devices.

File Extensions

1. DOC - Document File
2. JPEG - Joint Photographic Experts Group (Image File)
3. MP3 - MPEG Audio Layer 3 (Music File)
4. PNG - Portable Network Graphics (Image File)
5. MP4 - MPEG-4 (Video File)

Social Media & Communication

1. SMS - Short Message Service
2. FAQ - Frequently Asked Questions
3. GIF - Graphics Interchange Format
4. LAN - Local Area Network
5. VPN - Virtual Private Network

SUBJECT: SOCIAL SCIENCE

GEOGRAPHY

Eratosthenes, the ancient Greek scholar is called the 'father of geography'. He was the first one to use the word geography. **Geography** literally means 'writing about the Earth'. It is the study of places and the relationships between people and their environments.

GEOGRAPHY TERMS

- **Archipelago** - A group or chain of islands.

- An **atoll** is a ring-shaped island, including a coral rim that encircles a lagoon.
- **Canyon** - A valley that is deep and has steep sides.
- **Antipodes** - Two points that are on the exact opposite sides of the earth, for example, the North and South Poles.
- **Paleontology** - The study of fossils
- **Meteorology** - The scientific study of the atmosphere that focuses on weather processes and weather forecasting.
- **Reef**: A growth of coral which forms around an island and creates a lagoon
- **Savanna**: Massive grasslands of Africa.
- **Pampas**: Massive grasslands that are found in South America.

SAVANNA

PAMPAS

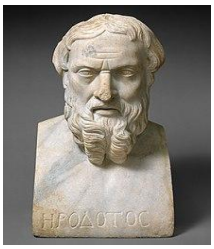
- **Ecology** - The study of how organisms interact with one another and with their physical environment
- **Agronomy** is the science of soil management and crop production.

DID YOU KNOW?

- The Himalayas, or Himalaya is a mountain range in Asia, separating the plains of the Indian subcontinent from the Tibetan Plateau.
- **Alps** : The mountain range stretches approximately 750 miles (1,200 kilometers) in a crescent shape across eight Alpine countries.

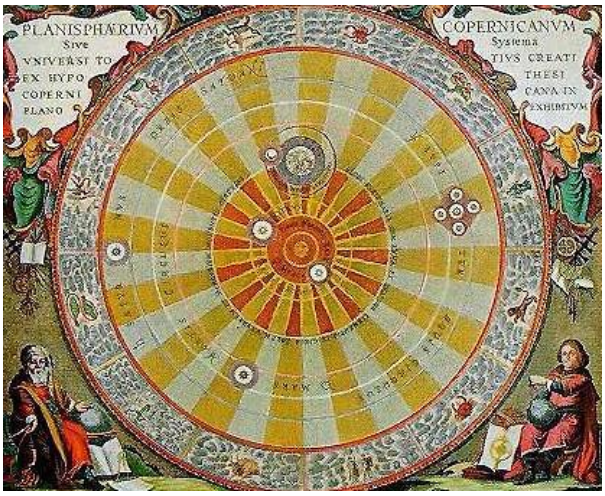
- Maldives is the smallest country in Asia by land.
- Nile is the **longest river** in the world. Two major tributaries of Nile – White Nile and Blue Nile.
- The **Ganges** river in India is more than 2,500km long and has the most populated river basin in the world
- **Bramaputra** river is the deepest river in India with depths reaching up to 380 feet.
- **Narmada**,the oldest river system in India, originates from Amarkantak in Madhya Pradesh, flows east-west, and joins with the Gulf of Cambay on the Arabian Sea.
- **Amazon** is the world's largest river. It is also known as 'The River Sea.
- The **Caspian** has characteristics common to both seas and lakes. It is often listed as the world's largest lake, although it is not fresh water.
- The **Sargasso Sea** is a vast patch of ocean named for a genus of free-floating seaweed called Sargassum. **Sargasso Sea** is the only sea with no coast.
- **Lake Superior** is the largest freshwater lake in the world by surface area.

History



- The famous Greek historian, **Herodotus** is recognized as the 'Father of History'.

- Anthropology - The scientific study of humans, human behavior and societies in the past and present.
- **Nicolaus Copernicus** was a Polish astronomer who put forth the theory that the Sun is at rest near the center of the Universe, and that the Earth, spinning on its axis once daily, revolves annually around the Sun. This is called the heliocentric, or Sun-centered, system.



Nicolas Copernicus's illustration of his idea

- **Archaeology** is the study of the ancient and recent human past through material remains.
- The word "archaeology" comes from the Greek word 'arkhaios' which means ancient.

- Civilizations first emerged in modern-day Iraq, Egypt, India, China, Peru and Mexico, beginning between approximately 4000 and 3000 B.C.

- **Mesopotamia**(4000-3500 B.C.)Meaning “between two rivers” in Greek. Mesopotamia (located in modern-day Iraq, Kuwait and Syria) is considered the birthplace of civilization.

- One of the earliest written scripts is **cuneiform**, which first developed in ancient Mesopotamia between 3400 and 3100 BCE.

- The above cuneiform text dates back to the 6th year of prince Lugalanda who ruled about 2370 B.C. in southern Mesopotamia.

- Ancient Egypt was the pre-eminent civilization in North-eastern Africa that dates from the 4th millennium BCE.

- **THE PYRAMIDS OF GIZA**, C. 2600 B.C. THEY ARE THE OLDEST OF THE SO-CALLED SEVEN WONDERS OF THE ANCIENT WORLD.

- The African continent has a unique place in human history. Widely believed to be the “cradle of humankind,” Africa is the only continent with fossil evidence of human beings (Homo sapiens) and their ancestors through each key stage of their evolution.

- The **Indus Valley Civilisation** also known as the **Indus Civilisation**, was a Bronze Age civilisation in the northwestern regions of South Asia, lasting from 3300 BCE to 1300 BCE.

- The medieval era, often called The Middle Ages or the Dark Ages, began around 476 A.D. following a great loss of power throughout Europe by the Roman Emperor. The Middle Ages span roughly 1,000 years, ending between 1400 and 1450.

- The **Modern Era**, also known as the Modern Age or Modern Period, was a historical time period that spanned the years 1500 to 1945. The Modern Era occurred following the Middle Ages and can be further divided into two time periods: **Early Modern Period** and the **Late Modern Period**.

- The Early Modern Period occurred from 1500 to 1800.The Late Modern era was primarily focused on key historical events that happened in the 19th and 20th centuries, concluding with the end of World War II in 1945.

- **World War I,** also known as the Great War, started in 1914 after the assassination of Archduke Franz Ferdinand of Austria. His murder catapulted into a war across Europe that lasted until 1918.

  During the four-year conflict, Germany, Austria-Hungary, Bulgaria and the Ottoman Empire (the Central Powers) fought against Great Britain, France, Russia, Italy, Romania, Canada, Japan and the United States (the Allied Powers).

  By the time the war was over and the Allied Powers had won, more than 16 million people—soldiers and civilians alike—were dead.

- **World War II** was the biggest and deadliest war in history, involving more than 30 countries. Sparked by the 1939 Nazi invasion of Poland, the war dragged on for six bloody years until the Allies defeated the Axis powers of Nazi Germany, Japan and Italy in 1945.

INDIAN HISTORY

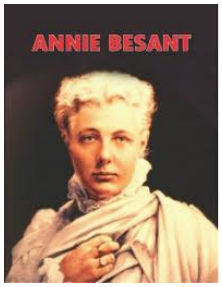
- The first Indian woman to be elected as President of United Nations General Assembly- Vijaya Lakshmi Pandit.
- The Bharata Natyam is indigenous to the state of Tamil Nadu
- Ram Mohan Roy, the Indian social reformer is known as the Father of Modern India
- First Home minister and Deputy Prime Minister of India - Sardar Vallabhai Patel
- First President of Indian National Congress – W.C. Banerjee
- First Education Minister of India – Maulana Abdul Kalam Azad
- Rabindranath Tagore (1861 – 1941) is best known as a poet, and in 1913 was the first non-European writer to be awarded the Nobel Prize for Literature.
- **Sarvepalli Radhakrishnan** was a scholar and statesman who was the president of India from 1962 to 1967.
- Who is known as the‘Grand old man of India’? Dadabhai Naoroji
- Lord Cornwallis is considered as the ‘Father of Indian Civil Services’.

INDIAN NATIONALISM AND STRUGGLE FOR FREEDOM

The Birth of Indian National Congress:
The growing feeling of nationalism resulted in the formation of Indian National Congress in **1885**. The first session of the Congress was held at **Bombay in December 1885**, under the initiative of the retired British officer, **Allan Octavian Hume**. Some of the founding members were Dadabhai Naoroji, W C Bonnerjee, Pherozshah Mehta, Surendranath Banerjee, Badruddin Tyabji etc. The first president of INC was **W C Bonnerjee.**

The Minto-Morley Reforms: It brought about a limited increase in the involvement of Indians with governance of British India. The size of the legislatures was enlarged. Indians were elected to the various legislative councils, but separate representation was granted to the Muslims to divide the Hindu-Muslim Unity.

Home Rule League: It was launched by Annie Besant in 1916 with a demand of self-government for India under the British Crown. **Annie Besant became the First Woman President of the INC.**



Montague Chelmsford reforms: It was introduced to set up bicameral legislatures (two houses) and set up 'dyarchy' or duel government system in the provinces.

Rowlatt Act of 1919: The Act curbed the fundamental rights of the people such as freedom of expression and also authorized the government to imprison a person without trial or conviction in the court of law.

Round Table Conference: The three Round Table Conferences of 1930–32 were a series of peace conferences organized by the British Government and Indian national congress to discuss constitutional reforms in India.

- **1st RTC**: It was held in November 1930 at London. The congress and its leaders boycotted the meeting, and no decisions were made.
- **Gandhi-Irwin Pact:** An agreement signed between Lord Irwin and Gandhiji in1931. As per this Act, Gandhiji agreed to stop the Civil Disobedience Movement. In turn, the government released all the prisoners and amended the Salt Law.
- **2nd RTC**: It was held in September,1931 at London. Gandhiji represented the Congress in the conference. The British did not accept any basic demands of the Congress. After which, Gandhiji resumed the Civil Disobedience Movement.
- **3rd RTC**: The Congress boycotted the conference held at London in November 1932 and was a failure.

Cripps Mission: The Viceroy, without consulting the representatives and leaders of the INC, announced that India was automatically involved in Britain's war against Germany in world war 2.

In 1942, the British Government send a Mission headed by **Sir Stafford Cripps** with a key objective to secure Indian cooperation and support for the British war efforts of World War II. The mission failed because the British government refused to accept the demand of transfer of power to the Indians.

Quit India Resolution: On the failure of the Cripps Mission, the Congress decided to take active steps to compel the British to quit India. Gandhiji and the Congress launched the **Quit India Movement in August 1942.**

Cabinet Mission: In March 1946, the British Government sent a **three-member mission** headed by **Lord Pethick Lawrence**, to India. The mission discussed the terms to transfer the power to India and proposed an Interim government.

Birth of a new Nation: On 20 February 1947, **Clement Attlee, the Prime Minister of Britain**, declared that British would quit India. **Lord Louis Mountbatten** became the Viceroy in March 1947. It was decided that India would be free but nor united. India would be partitioned, and a new country called Pakistan was created along with free India.


The Hindustan Times

END OF 200-YEAR-OLD BRITISH RULE IN INDIA

ROYAL ASSENT TO INDEPENDENCE BILL

BRIEF BUT COLOURFUL CEREMONY IN LORDS

Two Dominions Created

UNION'S RELATIONSHIP WITH RULERS

PROVISION FOR PROVINCES' JURISDICTION IN STATES

CIVICS

- The Constitution of India is the supreme law of India.
- The Indian constitution is the lengthiest constitution in the world.
- Every year on November 26, India commemorates Constitution Day, a day dedicated to recognizing the adoption of the Indian Constitution in 1949.
- The Constituent Assembly met for the first time on December 5, 1946.
- Directive Principles are classified under the following categories: Economic and Socialistic, Political and Administrative, Justice and Legal, Environmental, Protection of Monuments, Peace and Security.
- There are 448 articles in the Indian Constitution (originally 395 articles were there).
- Article 14, 15 and 16 establish principles of equality and social Justice.
- Article 19Protection of certain rights regarding freedom of speech, expression, etc.
- Article 21-Right to life and personal liberty
- Article 21A Right to education
- Article 23- Prohibition of traffic in human beings and forced labour.
- Article 29- Protection of interest of minorities.
- Article 32Remedies for enforcement of fundamental rights
- Minimum age required to contest for Presidentship is 35 years.
- The first general election held in India in 195152
- The president of India is the head of state and the commander-in-chief of the Indian Armed Forces.
- The President is responsible for appointing the governors of the 28 states; the chief justice; other judges of the court.
- The vice president is the second-highest constitutional position in India after the president.

The Finance minister of India usually presents the annual union budget in the parliament on the last working day of February.

SUBJECT: GENERAL KNOWLEDGE & CURRENT AFFAIRS

Nobel Prize Winners List 2024

Category	Nobel Prize Winners 2024 Name With Country	Awarded For
Nobel Prize Winners 2024 For Physiology or Medicine	Gary Ruvkun (USA) and Victor Ambros (USA)	"for their discoveries Medicine for their discovery of microRNAs, a class of small molecules essential for gene regulation"
The Nobel Prize 2024 In Physics	John Hopfield (USA) and Geoffrey Hinton (UK)	“for foundational discoveries and inventions that enable machine learning with artificial neural networks”
The Nobel Prize in Chemistry 2024	David Baker (USA) Denis Hassabis (UK) John M.Jumper (UK)	David Baker “for computational protein design” Demis Hassabis and John M. Jumper“ for protein structure prediction”
Nobel Prize For Literature 2024	Han Kang (South Korea)	“for her intense poetic prose that confronts historical traumas and exposes the fragility of human life”
Nobel Peace Prize 2024 Winner	Nihon Hidankyo	"for his efforts to achieve a world free of nuclear weapons and for demonstrating through witness testimony that nuclear weapons must never be used again"
Nobel Prize in Economics 2024	Daron Acemoglu, Simon Johnson, James A. Robinson	"for studies of how institutions are formed and affect prosperity"

The Nobel Prize is one of the prestigious awards for persons who made discoveries for the person who conferred the greatest benefit to humankind in the fields of physics, chemistry, physiology or medicine, literature, and peace, collectively referred to as the Nobel Prizes.

Alfred Nobel (1833-1896) was born in Stockholm, Sweden, on October 21, 1833. He is known for inventing dynamite. Agency responsible for selection is specifically designated by Alfred Nobel.

Nobel prizes are awarded by the list of organizations provided below.

Nobel Prize Category	Awarded By
Nobel Prize in Physics	Royal Swedish Academy of Sciences
Nobel Prize in Chemistry	Royal Swedish Academy of Sciences
Nobel Prize in Economic Sciences	The Royal Swedish Academy of Sciences
Nobel Prize in Peace	Norwegian Nobel Committee
Nobel Prize in Literature	Swedish Academy
Nobel Prize in Physiology and Medicine	Karolinska Institute

Nobel Prize facts

- Marie Curie is the only one woman who has been honoured twice, with the 1903 Nobel Prize in Physics and the 1911 Nobel Prize in Chemistry.
- John Bardeen is the only Nobel Laureate who has been awarded the Nobel Prize in Physics twice, in 1956 and 1972.
- Despite being nominated five times, Mohandas Karamchand Gandhi (Mahatma Gandhi) never won the Nobel Prize
- John B. Goodenough is the oldest recipient of this prize in Chemistry 2019 at the age of 97yrs.
- Malala Yousafzai is the youngest Nobel Laureate to get the Peace Prize in 2014 at the age of 17 yrs.
- The first Indian to receive the Nobel Prize was Rabindranath Tagore.

SPACE MISSION

Here is the list of ISRO's upcoming space missions.

Year	Mission Name	Mission Description
2024	Gaganyaan-1	The first test flight of the Gaganyaan spacecraft, designed to carry three astronauts.
2024	NISAR	A joint project with NASA to launch the first dual-band

		radar imaging satellite for remote sensing.
2025	Gaganyaan-2	The second test flight before the inaugural crewed mission.
2025	Venus Orbiter Mission (Shukrayaan)	An orbiter mission to study the atmosphere of Venus.

- ISRO chief Somnath wins 'IAF World Space Award 2024' for Chandrayaan-3. The award, presented in Milan, Italy, recognizes individuals who make significant contributions to space science and technology.
- Major lunar mission was approved by the Cabinet in 2024 - Chandrayaan-4 mission

MOUNT EVEREST CLIMBING RECORDS

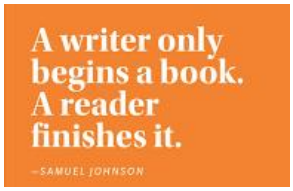
- Kami Rita Sherpa reached the Everest summit for the 30th time, successfully completing the 30th ascent.
- Dawa Finjok Sherpa- Fastest man to climb Everest
- Phunjo Lama- Fastest woman to climb Everest
- Sir Edmund Hillary (New Zealand)and Tenzing Norgay(Nepal) - First climbers confirmed as having reached the summit
- Junko Tabei - First woman to reach the summit

LIST OF NATURAL DISASTERS IN INDIA IN 2024

- Cyclone Remal, the first storm of the 2024 North Indian Ocean cyclone season, struck West Bengal and Bangladesh's Sunderban Delta.
- Cyclone Fengal, which made landfall near Puducherry.
- Devastating landslide in Kerala's Wayanad.
- The Vijaywada floods, caused by heavy rains and overflowing rivers.
- Between June and August, Himachal Pradesh witnessed 51 cloudburst and flash flood incidents.

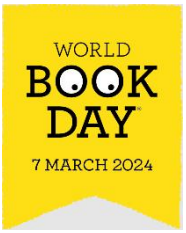
BOOKS AND AWARDS

- Orbital: A Novel by Samantha Harvey has been named the winner of the Booker Prize 2024.
- Night Watch, a novel by Jayne Anne Phillips, won the Pulitzer Prize 2024 for fiction.



- 2024 Booker International Prize Winner: Kairos by Jenny Erpenbeck translated by Michael Hofmann
- Renowned Urdu poet Gulzar and Sanskrit scholar Jagadguru Rambhadracharya have been named the recipients of the 58th Jnanpith Award 2024.
- Booker Prize-winning author Arundhati Roy was honoured with the prestigious Pen Pinter Prize 2024 for her “unflinching and unswerving” writings

Most Read Books in 2024 For Children



- Kareem Between by Shifa Saltagi Safadi
- The Dictionary Story by Oliver Jeffers & Sam Winston
- Insectarium by Dave Goulson & Emily Carter (illustrator)
- Olivetti by Allie Millington
- Circus Maximus: Return of the Champion by Annelise Gray

Greatest Books Ever Written for children

- Harry Potter series by J.K. Rowling
- The Chronicles of Narnia by C.S. Lewis
- Percy Jackson & the Olympians by Rick Riordan
- The Hobbit by J.R.R. Tolkien
- Charlotte's Web by E.B. White
- Anne of Green Gables by L.M. Montgomery
- The Secret Garden by Frances Hodgson Burnett
- Alice's Adventures in Wonderland by Lewis Carroll
- Matilda by Roald Dahl
- The Little Prince by Antoine de Saint-Exupéry

70th NATIONAL FILM AWARDS (2024)

The 70th National Film Awards ceremony was held at Vigyan Bhavan on October 8, where the film industry's top talents were honoured for their outstanding contributions in 2022. President Droupadi Murmu presented the prestigious awards, including the Dadasaheb Phalke Award to veteran actor Mithun Chakraborty.

Category	Winner	Film
Best Feature Film	Aattam	Aattam
Best Actor	Rishab Shetty	Kantara
Best Actress	Nithya Menen, Manasi Parekh	Tiruchitrabalam, Kutch Express

Best Director	Sooraj Barjatya	Uunchai
Best Supporting Actress	Neena Gupta	Uunchai
Best Supporting Actor	Pawan Malhotra	Fouja
Best Feature Film Providing Wholesome Entertainment	Kantara	Kantara
Best Non-Feature Film Promoting Social and Environmental Values	Kutch Express	Kutch Express

55th INTERNATIONAL FILM FESTIVAL OF INDIA, IFFI (2024)

Satyajit Ray Lifetime Achievement Award: Australian filmmaker Phillip Noyce

Award	Winner	Film/Project
Golden Peacock (Best Film)	Saulė Bliuvaitė	Toxic
Silver Peacock (Best Director)	Bogdan Muresanu	The New Year That Never Came
Silver Peacock (Best Actor – Male)	Clément Faveau	Holy Cow
Silver Peacock (Best Actor – Female)	Vesta Matulytė, Ieva Rupeikaitė	Toxic
Special Jury Award	Louise Courvoisier	Holy Cow
Best Debut Feature Film	Sarah Friedland	Familiar Touch
Best Debut Director of Indian Film	Navjyot Bandiwadekar	Gharat Ganpati
ICFT-UNESCO Gandhi Medal	Levan Akin	Crossing
Best Web Series (OTT)	Nipun Dharmadhikari	Lampan
Indian Film Personality of the Year	Vikrant Massey	12th Fail

SPORTS

India at the 2024 Summer Olympics

India competed at the 2024 Summer Olympics in Paris, France, held from 26 July to 11 August 2024.The Indian contingent consisted of 110 athletes who competed in 16 sports. P.V. Sindhu and Sharath Kamal were the flag-bearers for the opening ceremony. Manu Bhaker and P. R. Sreejesh carried the Indian flag during the closing ceremony. India won six medals including a silver and five bronze to be ranked 71st amongst the 206 NOCs.

Manu Bhaker	Bronze	Women's 10m air pistol shooting
Manu Bhaker-Sarabjot Singh	Bronze	Mixed team 10m air pistol shooting
Swapnil Kusale	Bronze	Men's 50m rifle 3 positions shooting
Indian hockey team	Bronze	Men's hockey
Neeraj Chopra	Silver	Men's javelin throw
Aman Sehrawat	Bronze	Men's 57kg wrestling

India's Paralympic Story: A Tale of Inspiration and Achievement

India's para-athletes delivered their best-ever performance at the Paris Games, earning an incredible 29 medals—7 gold, 9 silver, and 13 bronze—securing an 18th-place finish in the overall medal tally. This achievement represents a watershed moment for Indian para-sports, showcasing the potential of Indian athletes on the global stage.

Gold medalist are - Avani Lekhara (Shooting (Women's 10m air rifle SH1)), Nitesh Kumar (Badminton (Men's singles SL3)), Sumit Antil (Athletics (Men's Javelin throw F64)), Harvinder Singh (Archery (Men's individual Recurve)), Dharambir (Athletics (Men's club throw F51)), Navdeep Singh Athletics ((Men's Javelin F41)), Praveen Kumar (Athletics (Men's high jump T64))

CRICKET

- India won the T20 World Cup in 2024, with Jasprit Bumrah named the man of the series
- The Kolkata Knight Riders (KKR) clinched the IPL 2024 title
- In the IPL 2024, the Orange Cap was won by Virat Kohli.
- Harshal Patel of Punjab Kings with 24 wickets was the winner of the Purple Cap in IPL 2024
- The country which won ICC Women's T20 World Cup 2024 is New Zealand
- BCCI President – Roger Binny
- Team India men's captain - Rohit Sharma
- Team India T20I Captain: Suryakumar Yadav
- Team India women's captain - Harmanpreet Kaur
- Team India Head Coach – Gautam Gambhir
- Jasprit Bumrah has broken Kapil Dev's record by becoming the fastest Asian bowler to take 50 wickets in Australia.

FOOTBALL

- FIFA- The Federation International de Football Association
- FIFA President – Giovanni Vincenzo Infantino
- FIFA Men's Player of the Year 2024 - Lionel Messi
- Men's Ballon d'Or 2024 Winner - Rodri
- Women's Ballon d'Or 2024 Winner - Aitana Bonmatí
- Isaah Yeo has become the first Australian player to win the IRL Golden Boot in seven years.
- The host for the FIFA World Cup 2034 has been confirmed as Saudi Arabia

HOCKEY

- The Canadian women's national team claimed gold at the 2024 IIHF Women's World Championship in Utica, New York, with a thrilling overtime win over the United States, marking Canada's 13th title.
- The 2024 Men's FIH Hockey5s World Cup was the first edition of the Hockey5s World Cup, held in Muscat, Oman. The Netherlands emerged victorious, defeating Malaysia in the final to claim their first title
- In 2024, the Indian men's hockey team achieved significant success by winning the bronze medal at the Paris 2024 Olympics.

BADMINTON

- BWF World Ranking is the official ranking of the Badminton World Federation.
- It is used to determine the qualification for the World Championships and Summer Olympic Games, BWF World Tour tournaments.

- A seven-member Indian team, including two-time Olympic medallist PV Sindhu, competed at the Paris 2024 Olympics badminton tournament.
- Lakshya Sen created history by becoming the first male Indian badminton player to make the semi-finals at the Summer Games. However, he fell one win short of a medal.

Men's BWF Singles World Rankings	Women's BWF Singles World Rankings
1. Shi Yuqi (PR China)	1. An Seyoung (Republic of Korea)
2. Anders Antonsen (Denmark)	2. Wang Zhiyi (PR China)

KABBADI

Pakistan defeated the United States to lift the second New Zealand Kabaddi World Cup in Auckland

KHO-KHO

- The Kho Federation of India (KKFI) on Friday named the 24 nations that will participate in the inaugural Kho World Cup, scheduled to take place in January 2025, at New Delhi's IGI Stadium.

BILLIARDS

- The Prime Minister, Shri Narendra Modi today lauded Pankaj Advani on being crowned Billiards Champion at World Snooker Championships 2024 as a phenomenal accomplishment

MOTOR RACING

- 2024 Formula One World Championship/Winner- Max Verstappen
- The 2024 United States Grand Prix was a Formula One motor race held, at the Circuit of the Americas in Austin, Texas, United States. Charles Leclerc won a U.S. Grand Prix
- Red Bull's Max Verstappen won the tirle of Spanish Grand Prix 2024
- Japanese Grand Prix - The 2024 Japanese Grand Prix (officially known as the Formula 1 MSC Cruises Japanese Grand Prix 2024) was a Formula One motor race held on 7 April 2024 at the Suzuka International Racing Course in Suzuka, Japan.
- It was won by polesitter Max Verstappen driving for Red Bull, with teammate Sergio Pérez and Ferrari driver Carlos Sainz Jr. behind him.

- World Constructors' Championship- McLaren – clinched the 2024 Constructors' Championship at the season finale in Abu Dhabi
- **CHESS**
- Viswanathan Anand won the 2024 Lyon Master Chess Championship for the 10th time

- India's D. Gukesh beat China's Ding Liren in the 14th round to claim the 2024 World Chess Championship at the Resorts World Sentosa in Singapore

LAWN TENNIS

Grand Slam Tournaments - In running order, the four grand slam events held each year are: Australian Open, French Open, Wimbledon, US Open. The French Open is played on clay, Wimbledon on grass and the remaining two are held on hard courts.

Men's Grand Slam Title 2024 Winners		
TOURNAMENT	WINNER	RUNNER-UP
U.S. Open	Jannik Sinner	Taylor Fritz
Wimbledon	Carlos Alcaraz	Novak Djokovic
French Open	Carlos Alcaraz	Alexander Zverev
Australian Open	Jannik Sinner	Daniil Medvedev
Women's Grand Slam Title 2024 Winners		
TOURNAMENT	WINNER	RUNNER-UP
U.S. Open	Aryna Sabalenka	Jessica Pegula
Wimbledon	Barbora Krejcikova	Jasmine Paolini
French Open	Iga Swiatek	Jasmine Paolini

Australian Open	Aryna Sabalenka	Zheng Qinwen

DAVIS CUP Italy were crowned tennis champions of the world in Málaga, Spain

THE 2024 CHAMPIONS OF THE EARTH - the United Nations' highest environmental honor, were awarded to six extraordinary individuals and organizations for their outstanding leadership

Meet the 2024 Champions of the Earth

1. Sonia Guajajara (Brazil) – Policy Leadership

2. Amy Bowers Cordalis (United States) – Inspiration and Action

3. Gabriel Paun (Romania) – Inspiration and Action

4. Lu Qi (China) – Science and Innovation

5. Madhav Gadgil (India) – Lifetime Achievement

6. SEKEM Initiative (Egypt) – Entrepreneurial Vision

International Current affairs

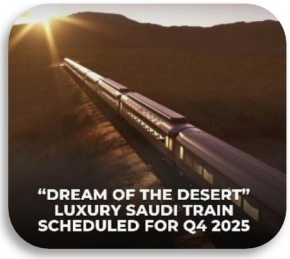
- The country which hosted the 16th BRICS Summit in 2024 is Russia.
- The country which will host the ASEAN Summit in 2025 is Malysia.
- India will host the Quad Leaders' Summit in 2025.
- The country that has recently launched the world' first 6G communication satellite is China
- The 18th Pravasi Bharatiya Divas 2025 will be held at Bhubaneshwar, Odisha
- Claudia Sheinbaum was sworn in as Mexico's first female President in 2024.
- The Bihar government has approved the development of Kaimur Wildlife Sanctuary as a tiger reserve
- Miss Universe 2024 - was the 73rd Miss Universe pageant, held at the Arena CDMX in Mexico City, Mexico. Sheynnis Palacios of Nicaragua crowned Victoria Kjær Theilvig of Denmark as her successor at the end of the event.
- The 2024 G20 Rio de Janeiro summit was the nineteenth meeting of Group of Twenty (G20), a Heads of State and Government meeting held at the Museum of Modern Art in Rio de Janeiro from 18–19 November 2024. It was the first G20 summit to be hosted in Brazil
- The Ramon Magsaysay Award the Ramon Magsaysay Award winners for 2024: Hayao Miyazaki, Phuntsho Karma, Nguyen Thi Ngoc Phuong, Farhan Farwiza, Rural Doctors Movement
- The Indira Gandhi Prize for Peace, Disarmament and Development for 2024 has been conferred on former Chilean president and prominent human rights voice Michelle Bachelet

Saudi Arabia Current affairs & facts

- IOC Announces Olympic Esports Games to Be Hosted in The Kingdom of Saudi Arabia
- The International Olympic Committee, announced that it has partnered

with the National Olympic Committee of Saudi Arabia to host the inaugural Olympic Esports Games 2025 in the Kingdom of Saudi Arabia

- India Welcomes Egypt, Iran, UAE, Saudi Arabia and Ethiopia Joining BRICS
- Saudi Arabia Names Faisal bin Saud Al-Mejfel as Ambassador to Syria



- Indian Engineering Exports Surge: UAE, Russia, and Saudi Arabia Lead the Way
- UN Appoints Saudi Arabia to Lead Women's Rights Forum Despite Criticism
- Rumi Alqahtani, a 27-year-old model and influencer from Saudi Arabia, announced on Instagram that she will be the first participant from the country in the Miss Universe competition.
- Max Verstappen Triumphs at Saudi Arabian Grand Prix
- Saudi Arabia's First Luxury Train 'Dream of the Desert' is Launched First in The Middle East
- India, Saudi Arabia Explore New Avenues of Defence Cooperation
- Qiddiya City is an entertainment development project, spanning more than 334 square kilometers on the outskirts of Riyadh.
- Saudi Arabia officially announced as the 2034 World Cup host.
- The 2029 Asian Winter Games, to be held in Trojena, Saudi Arabia
- Cristiano Ronaldo, 38, joined Al-Nassr in early 2023 and signed a contract that runs until June 30, 2025. During his time in Saudi Arabia, he has continued to demonstrate his goal-scoring ability and has become an emblem of the Saudi league, attracting global attention.

Riyadh Season 2024 will kick offed in October, 2024, and will run until May 2025, making it one of the longest entertainment events in the world.