

3274 MCQs



SAMPLE CONTENT

**25**  
YEARS

1999 – 2023

**PREVIOUS  
SOLVED  
PAPERS**

**MHT-CET**

CHAPTER-WISE & TOPIC-WISE

**BIOLOGY**

▶ Quick Review

▶ Smart Keys

▶ Statistical analysis of all the shifts of 2023

**Target** Publications® Pvt. Ltd.

**25**  
YEARS  
1999 - 2023

**MHT-CET**

# PREVIOUS SOLVED PAPERS

## BIOLOGY

### Chapter-wise & Topic-wise

#### Salient Features

- A compilation of 25 years of MHT-CET questions (1999-2023) that aligns with the most recent MHT-CET syllabus
- '3274' unique MCQs
- Chapter-wise and Topic-wise segregation of MCQs
- MCQs arranged in year-wise flow in each topic
- Quick Review provided for the revision of concepts
- Includes Important Study Techniques for holistic learning:
  - **Thinking Hatke**
  - **Caution**
  - **Smart Code**
  - **Smart Tip**
- Solutions provided for better understanding.
- Trend analysis of all the shifts of MHT-CET 2023 examination in the form of:
  - Graphs of difficulty levels of each shift
  - Tables of Chapter-wise analysis of all shifts

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## PREFACE

Target's 'MHT-CET Biology: Previous Solved Papers (PSP)' is a compilation of past 25 years' (1999-2023) questions asked in the MHT-CET examinations conducted by State Common Entrance Test Cell, Maharashtra State. This book is curated as per the **latest MHT-CET syllabus**.

The book consists of chapter-wise categorization of questions. Each chapter goes with a topic-wise flow. All the questions pertaining to a topic are arranged year-wise in a flow that concludes with the latest year. A special topic **Concept fusion** is drafted at the end of the MCQ section to cover multifarious questions. We have provided answers to all the questions and detailed solutions are given wherever required. The solutions will serve as valuable learning tools in understanding the concepts.

Selection of **unique MCQs** is prioritized while making this book to prevent the recurrence of identical questions. This will enable students to save time spent on repetitive questions.

We have infused several **Smart Keys** such as **Cautions, Thinking Hatke, Smart Code and Smart Tip**. Important Study Techniques are created to help students with key objectives such as time management, easy memorization, revision and non-conventional yet simple methods for MCQ solving. To ensure adequate revision, each chapter begins with a **Quick review**.

A statistical analysis of the number of questions asked per chapter in each shift of MHT-CET 2023 examination is offered in tabular form. This analysis would help students understand the weighting allotted to each chapter. A graphical representation of analysis of all the papers (12 papers of PCB group) is also included at the start of the book to elaborate on the breakdown of the difficulty level of questions asked in the examination. Studying these representations should undoubtedly aid students in planning their study strategy for the examination. *There is a possibility that the weightage to a chapter and the level of difficulty of the question paper in the future examination may vary.*

This book would provide students with confidence regarding their exam preparedness. We are confident that this book will comprehensively cater to the needs of students and effectively assist them to achieve their goal.

Publisher

**Edition:** First

The journey to create a complete book is strewn with triumphs, failures and near misses. If you think we've nearly missed something or want to applaud us for our triumphs, we'd love to hear from you.

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*A book affects eternity; one can never tell where its influence stops.*

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### Disclaimer

This reference book is transformative work based on the latest Textbooks of Std. XI and XII Biology published by the Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune. We the publishers are making this reference book which constitutes as fair use of textual contents which are transformed by adding and elaborating, with a view to simplify the same to enable the students to understand, memorize and reproduce the same in examinations.

This work is purely inspired upon the course work as prescribed by the Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune. Every care has been taken in the publication of this reference book by the Authors while creating the contents. The Authors and the Publishers shall not be responsible for any loss or damages caused to any person on account of errors or omissions which might have crept in or disagreement of any third party on the point of view expressed in the reference book.

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## FEATURES

**Quick Review** includes tables/charts to summarize the key points/important chemical reactions in the chapter. This is our attempt to help students to reinforce key concepts.

Quick Review

Topic-wise Segregation

MCQs are **segregated topic-wise** in each chapter. This is our attempt to cater to individualistic pace and preferences of studying a chapter in students and enable easy assimilation of questions based on the specific concept.

**Concept Fusion** topic encompasses questions whose solutions require knowledge of concepts covered in different topics from same chapter or from different chapters.

Concept Fusion

Smart Tip

**Smart Tip** can be used to memorise or revise the key points at a glance.

**Thinking Hatke** reveals quick witted approach to crack the specific question.

Thinking Hatke

Caution

**Caution** apprises students about mistakes often made while solving MCQs.

**Smart Code** showcases simple and smart mnemonic created for selected concepts.

Smart Code

## INDEX

Sr. No.	Textbook Chapter No.	Chapter Name	Page No.
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Evaluating your grasp of the content through chapter-specific tests is the most effective method for gauging your readiness with each topic.

Scan the adjacent QR code to know more about our **"MHT-CET Biology Test Series with Answer Key & Solutions"** book for the MHT-CET Entrance examination.



Practice test Papers are the only way to assess your preparedness for the Exams.

Scan the adjacent QR code to know more about our **"MHT-CET 21 Question Paper Set (PCB Group)"** book for the MHT-CET Entrance examination.



A competitive exam book should contain comprehensive subject coverage, practice questions and effective examination strategies.

Scan the adjacent QR code to know more about our **"MHT-CET Triumph Biology"** book for the MHT-CET Entrance examination.



## MHT-CET PAPER PATTERN

- There will be three papers of Multiple Choice Questions (MCQs) in ‘Mathematics’, ‘Physics and Chemistry’ and ‘Biology’ of 100 marks each.
- Duration of each paper will be 90 minutes.
- Questions will be based on the syllabus prescribed by Maharashtra State Board of Secondary and Higher Secondary Education with approximately 20% weightage given to Std. XI and 80% weightage will be given to Std. XII curriculum.
- Difficulty level of questions will be at par with JEE (Main) for Mathematics, Physics, Chemistry and at par with NEET for Biology.
- There will be no negative marking.
- Questions will be mainly application based.
- Details of the papers are as given below:

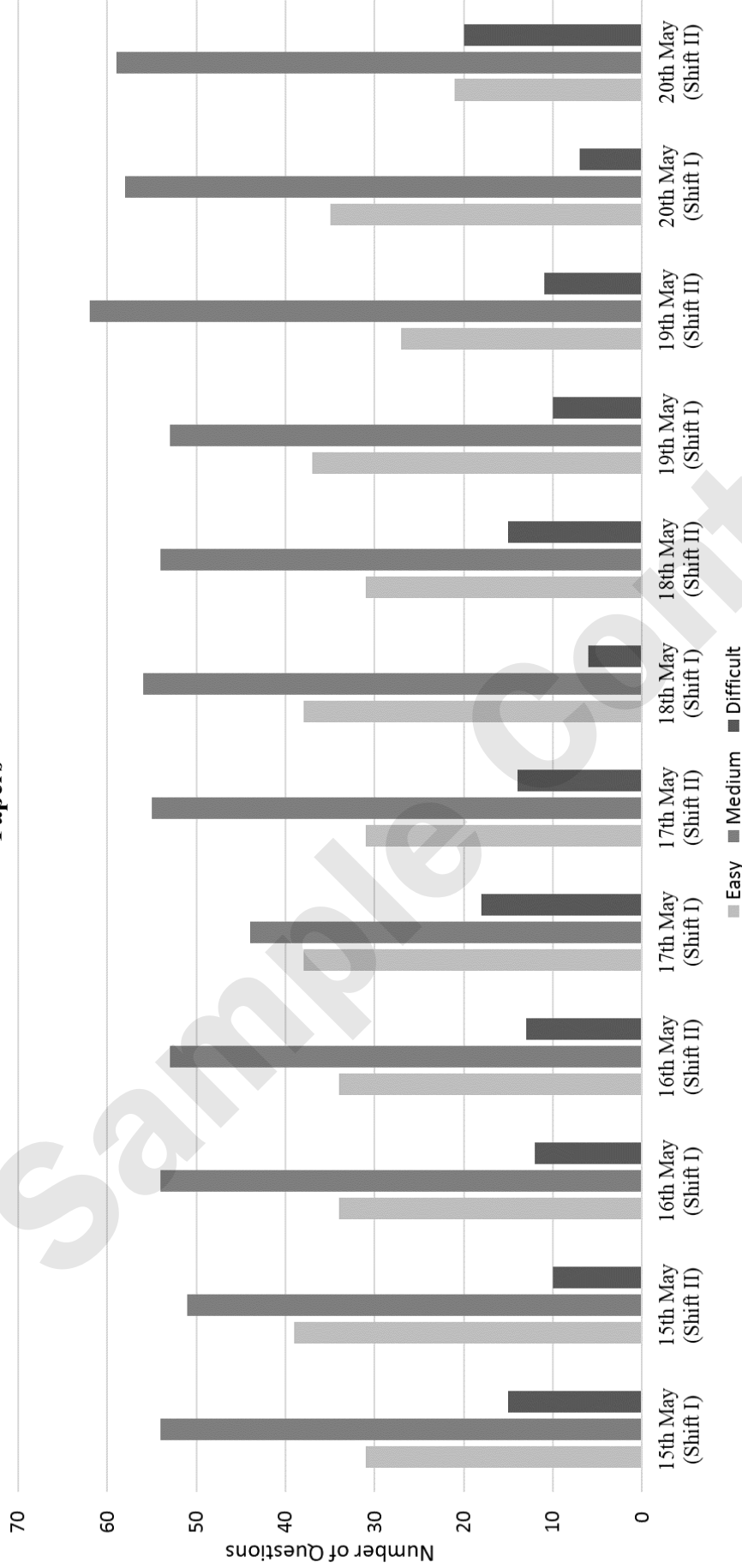
Paper	Subject	Approximate No. of Multiple Choice Questions (MCQs) based on		Mark(s) Per Question	Total Marks
		Std. XI	Std. XII		
Paper I	Mathematics	10	40	2	100
Paper II	Physics	10	40	1	100
	Chemistry	10	40		
Paper III	Biology	20	80	1	100

- Questions will be set on
  - i. the entire syllabus of Std. XII of Physics, Chemistry, Mathematics and Biology subjects prescribed by Maharashtra Bureau of Textbook Production and curriculum Research, Pune, and
  - ii. chapters / units from Std. XI curriculum as mentioned below:

Sr. No.	Subject	Chapters / Units of Std. XI
1	Physics	Motion in a plane, Laws of motion, Gravitation, Thermal properties of matter, Sound, Optics, Electrostatics, Semiconductors
2	Chemistry	Some Basic Concepts of Chemistry, Structure of Atom, Chemical Bonding, Redox Reactions, Elements of Group 1 and Group 2, States of Matter: Gaseous and Liquid States, Basic Principles of Organic Chemistry, Adsorption and Colloids, Hydrocarbons
3	Mathematics	Trigonometry - II, Straight Line, Circle, Measures of Dispersion, Probability, Complex Numbers, Permutations and Combinations, Functions, Limits, Continuity
4	Biology	Biomolecules, Respiration and Energy Transfer, Human Nutrition, Excretion and osmoregulation



**BIOLOGY**  
**Difficulty level-wise Analysis of MHT-CET 2023 Exam Papers**  
**Papers**



**E – Easy:** Questions whose answers can be directly and easily answered by the information given in Std. XI and XII Textbooks.

**M – Medium:** These questions require students to identify and apply the appropriate concepts which they studied from Std. XI and XII Textbooks.

**D – Difficult:** The most Challenging Questions that require application of various concepts and encourage students to think beyond the information given in the textbooks.

**Analysis**

➤ **Analysis of questions by difficulty level:** Although the proportion of easy, medium, and difficult questions changes over the twelve papers, there are more medium questions than easy ones and a handful of difficult questions.

This indicates that the entrance exam emphasizes on careful reading, comprehension of the text and application of concepts. Students are advised to study each chapter thoroughly and apply the scientific knowledge of the studied concepts while preparing for the entrance exam.



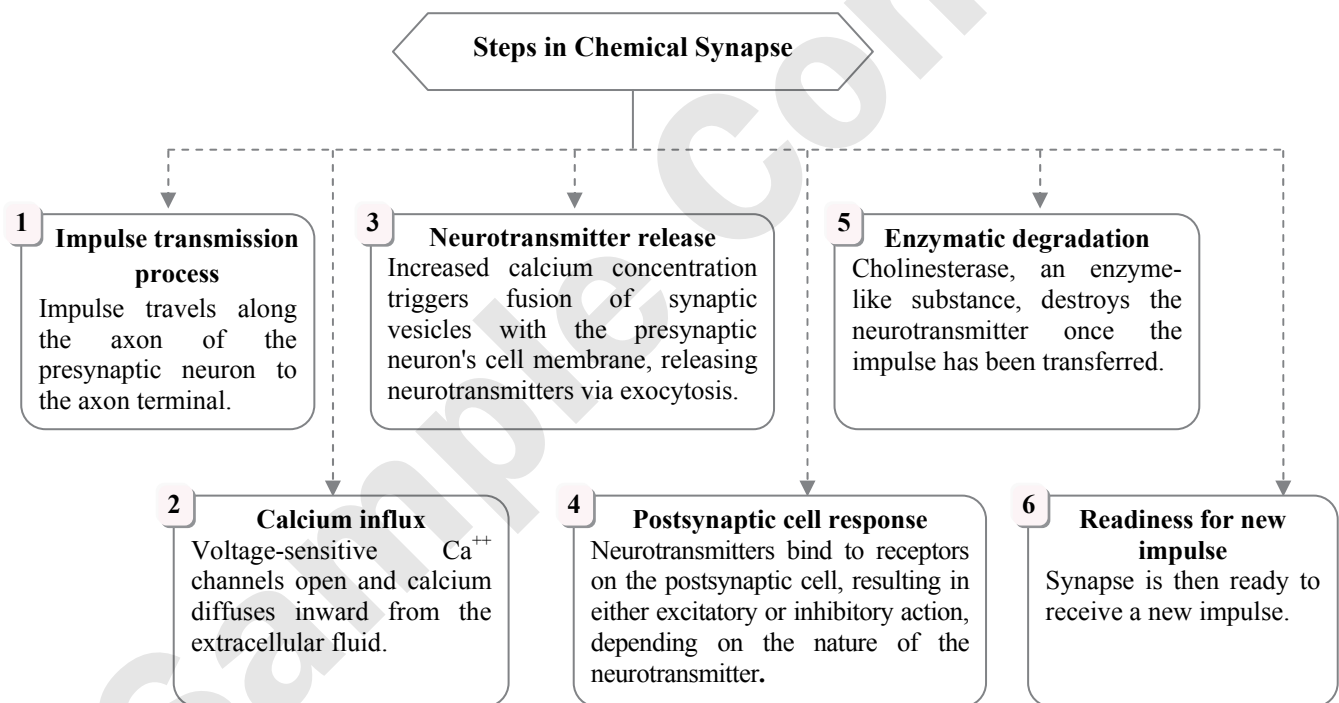
Sample Content

# 9 Control and Co-ordination

9.0	Introduction	9.6	Human Nervous System
9.1	Nervous System in <i>Hydra</i>	9.7	Sensory Receptors
9.2	Nervous System in <i>Planaria</i> (Flatworm)	9.8	Disorders of Nervous System
9.3	Neural Tissue	9.9	Endocrine System
9.4	Synapse	9.10	Major Endocrine Glands
9.5	Transmission of Nerve Impulse		

## Quick Review

### ➤ Steps in Chemical Synapse:

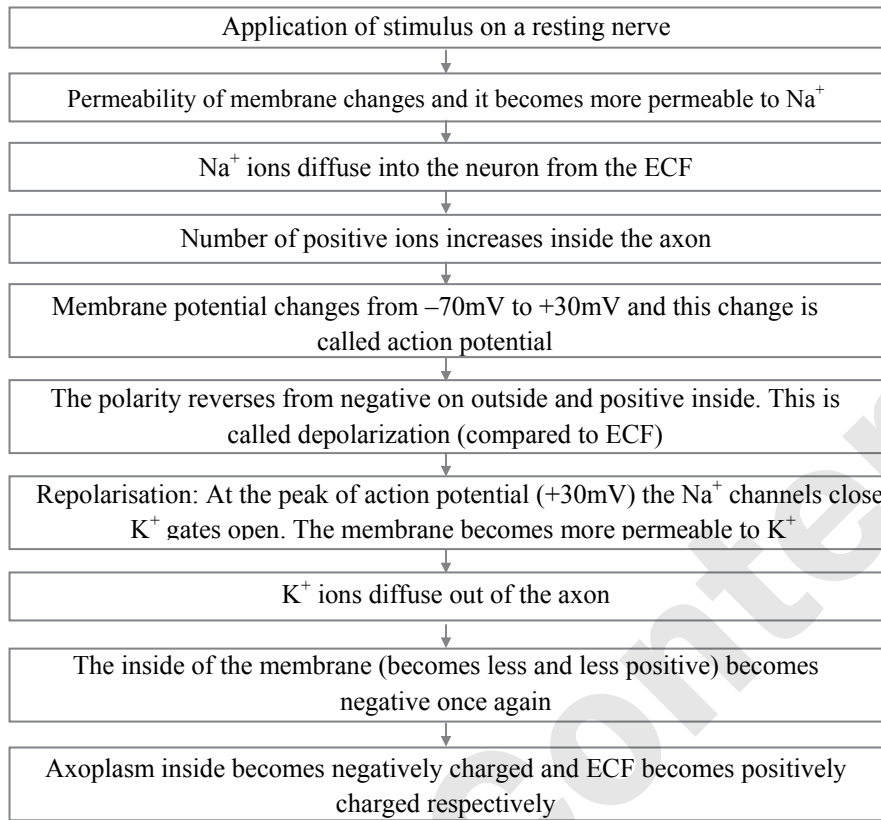


### ➤ Transmission of Nerve Impulse:

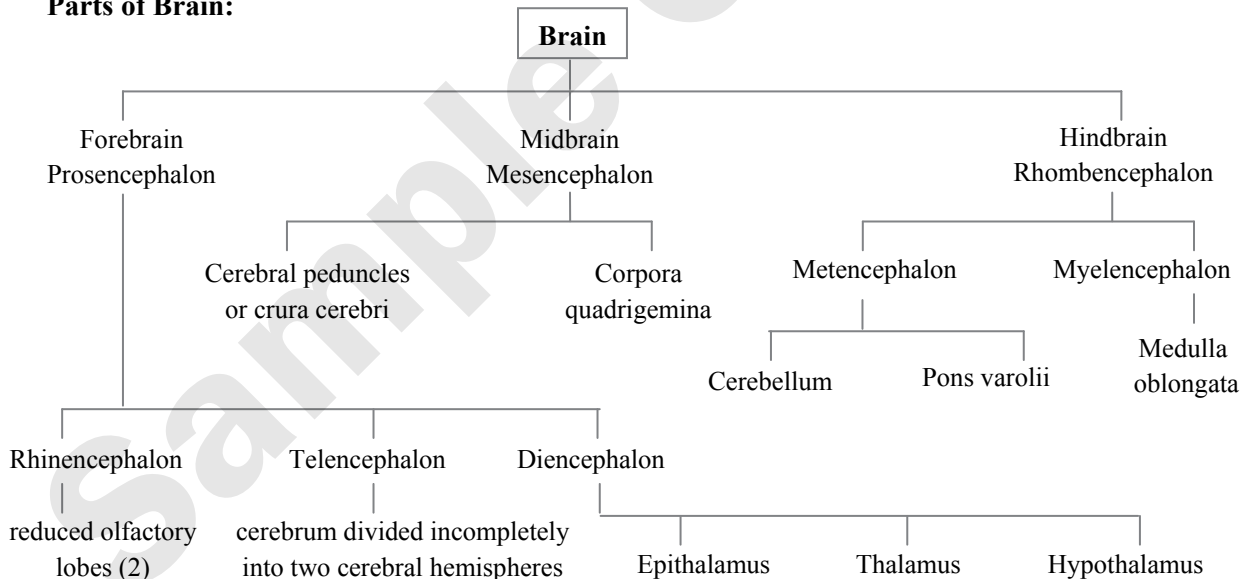
<b>Resting state</b>	Polarized state with excess $\text{Na}^{+}$ on the outer side and excess $\text{K}^{+}$ on the inner side of the membrane
<b>Resting potential</b>	Potential difference of $-50$ to $-100$ millivolts (average is $-70$ millivolts) due to differential permeability of the membrane to $\text{K}^{+}$ and $\text{Na}^{+}$ ions
<b>Resting potential maintenance</b>	During resting potential, both $\text{Na}^{+}/\text{K}^{+}$ gated channels are closed, and the resting potential is maintained
<b>Action potential</b>	Membrane potential change in response to a stimulus, enabled by the opening of voltage-gated channels



➤ **Generation of Nerve Impulse:**



➤ **Parts of Brain:**



**Cerebellum**

Second largest part of the brain

Composed of white matter with a thin layer of grey matter, the cortex

Regulates neuromuscular activities

Controls rapid activities like walking, running, speaking, etc.

Maintains equilibrium, posture, balancing orientation, moderation of voluntary movements and muscle tone



**Medulla Oblongata**

Controls involuntary vital functions like heartbeat, respiration, vasomotor activities and peristalsis

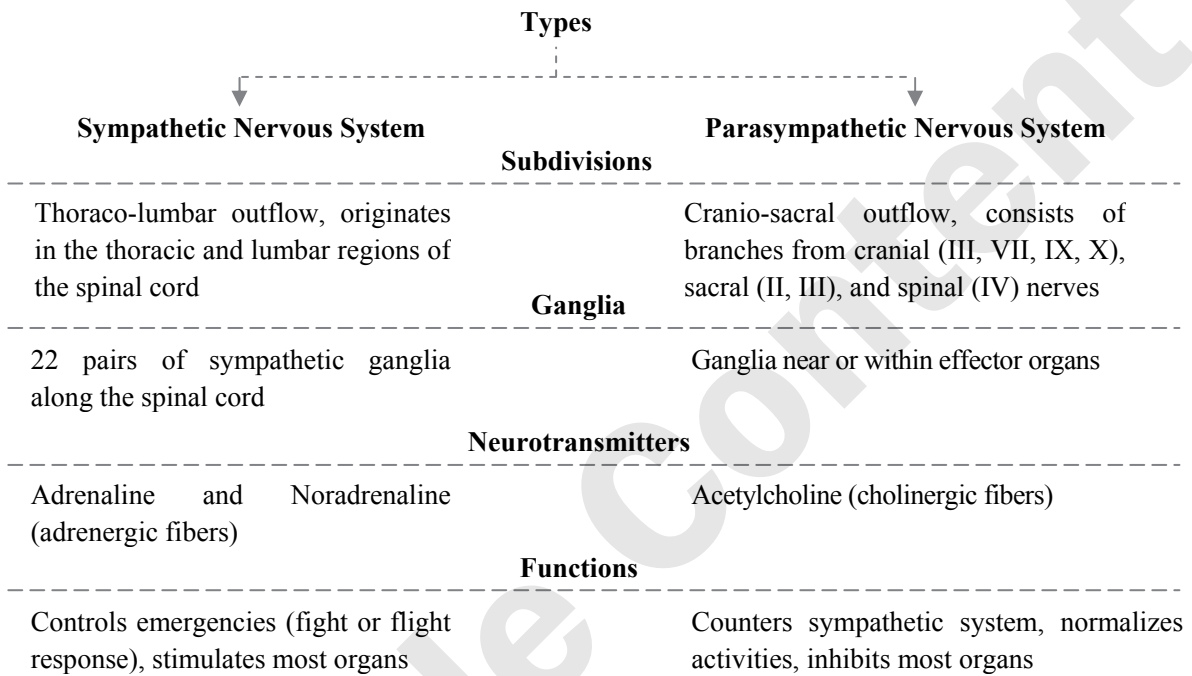
Controls non-vital reflex activities like coughing, sneezing, swallowing, vomiting, yawning etc.

Contains inner grey matter and outer white matter

Cavity called IV ventricle or metacoel

Roof has the posterior choroid plexes for secretion of CSF

➤ **Types of Autonomic Nervous System:**



➤ **Eyeball:**

<b>Layers</b>	<b>Sclera</b>	Outermost layer of dense fibroelastic tissue, includes the transparent cornea
	<b>Choroid/Uvea</b>	Middle vascular and pigmented layer with the choroid proper, ciliary body and iris
	<b>Retina</b>	The innermost layer of the eye, comprising a pigmented non-sensory part (lining the iris and ciliary body) and a sensory part (lining the choroid), is non-vascular and light-sensitive. Outer photosensitive layer (rod and cone cells), middle layer (bipolar nerve cells), and inner layer (ganglion cells)
<b>Choroid/Uvea</b>	<b>Choroid proper</b>	Lines the sclera, supplies nutrition and oxygen to the retina
	<b>Ciliary body</b>	Thick muscular structure at the choroid-iris junction, secretes aqueous humor, adjusts lens size
	<b>Iris</b>	Coloured partition with a pupil, regulates the pupil size based on light intensity
<b>Lens</b>	Transparent, elastic, biconvex structure suspended by ligaments, separates the anterior aqueous chamber and posterior vitreous chamber	
<b>Blind spot</b>	Area opposite the lens where optic nerve and blood vessels exit the eyeball	
<b>Yellow area or macula lutea</b>	Lateral to and above the blind spot, with fovea centralis (point with sharpest vision).	

➤ **Photo Receptor Cells:**

<b>Types</b>	<b>Rod cells</b>	Function in dim light (scotopic) vision; contain rhodopsin.
	<b>Cone cells</b>	Responsible for daylight (photopic) vision and colour vision; have photopigments for red, green, and blue lights

➤ **Structure of Human Ear:**

<b>External Ear</b>	
<b>Ear Pinna</b>	Immovable part, collects sound waves
<b>Auditory Canal</b>	Receives sound waves and leads to the ear drum
<b>Tympanic Membrane</b>	Delicate structure, transmits sound waves to the middle ear
<b>Middle Ear</b>	
<b>Ear Ossicles</b>	Malleus (hammer), Incus (anvil), and Stapes (stirrup) amplify and transmit vibrations to the cochlea
<b>Eustachian Tube</b>	Connects the middle ear to the pharynx, equalizes air pressure
<b>Inner Ear</b>	
<b>Labyrinth</b>	Bony and membranous labyrinth filled with perilymph and endolymph respectively
<b>Membranous Labyrinth</b>	Consists of vestibule, semicircular ducts and cochlea
<b>Cochlea</b>	Coiled duct with fluid-filled chambers (scala vestibuli, scala media, scala tympani)
<b>Organ of Corti</b>	Located on the basilar membrane, contains sensory hair cells
<b>Hair Cells</b>	Have stereocilia, convert sound vibrations into nerve impulses

➤ **Major Endocrine Glands:**

<b>Endocrine gland</b>	<b>Hormones</b>	<b>Functions</b>
<b>Hypothalamus</b>	Oxytocin	<ul style="list-style-type: none"> <li>- Stimulates uterine contractions during parturition (childbirth)</li> <li>- Initiates ejection or release of milk by stimulating mammary gland contraction</li> </ul>
	ADH	<ul style="list-style-type: none"> <li>- Promotes the reabsorption of water in the distal convoluted tubule and collecting ducts of the kidney nephrons, reducing urine quantity</li> <li>- Increases blood pressure by causing vasoconstriction.</li> <li>- Deficiency of ADH leads to increased urine output and is called diabetes insipidus</li> <li>- Excessive thirst accompanies excessive urination, a condition known as polydipsia</li> </ul>
<b>Pituitary gland (Adenohypophysis)</b>	Somatotropin / Somatotrophic Hormone / STH / Growth Hormone / GH	<ul style="list-style-type: none"> <li>- Stimulates growth and development of all tissues by accelerating protein synthesis and cell division</li> <li>- Highest secretion occurs until puberty, after which it decreases, but continues throughout life for tissue repair and replacement</li> </ul>
	Thyrotropin / Thyroid Stimulating Hormone / TSH	<ul style="list-style-type: none"> <li>- Stimulates the thyroid gland to secrete thyroxine (thyroid hormone)</li> </ul>
	Adreno corticotrophic Hormone / ACTH / Adrenocorticotropin	<ul style="list-style-type: none"> <li>- Stimulates the adrenal cortex to produce and secrete its hormones</li> <li>- Maintains the functioning of the adrenal cortex</li> </ul>



	Prolactin / Luteotropin / Mamotropin	<ul style="list-style-type: none"> <li>- Activates breast growth during pregnancy (mamotropin)</li> <li>- Stimulates milk production and secretion by the mammary gland after childbirth</li> </ul>
	Follicle Stimulating Hormone / FSH	<ul style="list-style-type: none"> <li>- Stimulates the growth of ovarian follicles in females</li> <li>- In males, it is involved in the development of seminiferous tubules.</li> </ul>
	Luteinizing Hormone / LH	<ul style="list-style-type: none"> <li>- In females, LH helps in the growth, ripening, and discharge of the ovum from the Graafian follicle.</li> <li>- FSH and LH stimulate ovaries to produce estrogen.</li> <li>- LH induces the ruptured follicle to develop into the corpus luteum, which produces progesterone.</li> </ul>
	Interstitial Cell Stimulating Hormone / ICSH	<ul style="list-style-type: none"> <li>- In males, ICSH stimulates the testes to produce the androgen testosterone.</li> <li>- Testosterone is responsible for the development of secondary sexual characteristics in males.</li> </ul>
<b>Pituitary gland (Neurohypophysis)</b>	Does not secrete any hormone but stores and releases oxytocin and ADH	
<b>Pituitary gland (Pars intermedia)</b>	Melanocyte Stimulating Hormone (MSH)	<ul style="list-style-type: none"> <li>- stimulates the dispersion of melanin granules in melanocytes</li> <li>- skin pigmentation</li> </ul>
<b>Pineal gland</b>	Melatonin	<ul style="list-style-type: none"> <li>- Regulates the body's biological clock (24-hour diurnal rhythm)</li> <li>- Maintains the normal sleep-wake cycle</li> <li>- Influences body temperature regulation</li> <li>- Affects metabolism and reproductive cycles</li> </ul>
<b>Thyroid gland</b>	Tetraiodothyronine or thyroxine ( $T_4$ )	<ul style="list-style-type: none"> <li>- Regulates basal metabolic rate (BMR)</li> <li>- Stimulates protein synthesis and promotes growth of body tissues</li> <li>- Increases heat production and supports the activity of neurotransmitters adrenaline and nor-adrenaline</li> <li>- Supports red blood cell (RBC) production and maintains water and electrolyte balance</li> </ul>
	Triiodothyronine ( $T_3$ )	<ul style="list-style-type: none"> <li>- Physiologically more active than <math>T_4</math></li> </ul>
	Calcitonin	<ul style="list-style-type: none"> <li>- Regulates calcium and phosphorus concentration in the blood</li> <li>- Lowers plasma calcium and phosphorus levels by reducing their release from bones and increasing uptake by bones</li> </ul>
<b>Parathyroid gland</b>	Parathormone (PTH)	<ul style="list-style-type: none"> <li>- Regulates calcium and phosphate balance between blood and tissues</li> <li>- Increases blood calcium levels by: <ul style="list-style-type: none"> <li>Taking calcium from bones</li> <li>Increasing calcium absorption in the digestive tract</li> <li>Reducing loss of calcium in urine</li> </ul> </li> </ul>
<b>Thymus gland</b>	Thymosin	<ul style="list-style-type: none"> <li>- Facilitates the maturation of T-lymphocytes (T-cells)</li> <li>- Promotes the production of antibodies</li> </ul>
<b>Adrenal gland (Adrenal cortex)</b>	Mineralocorticoids (e.g., Aldosterone)	<ul style="list-style-type: none"> <li>- Regulate sodium and potassium ion concentrations</li> <li>- Control salt-water balance, blood volume and blood pressure</li> </ul>
	Glucocorticoids (e.g., Cortisol)	<ul style="list-style-type: none"> <li>- Regulate metabolism of carbohydrates, proteins and lipids</li> <li>- Increase blood glucose levels</li> </ul>



		<ul style="list-style-type: none"> <li>- Exhibit immunosuppressive effects</li> <li>- Prepare the body to cope with stress and emergencies</li> </ul>
	Sex Corticoids (Gonadocorticoids)	<ul style="list-style-type: none"> <li>- Influences the development and maintenance of external sex characteristics in males</li> <li>- Excess in females can lead to adrenal virilism and hirsutism (excess facial hair)</li> <li>- In males, excess may cause gynecomastia (enlarged breasts).</li> <li>- Production of androgens and estradiols</li> </ul>
<b>Adrenal gland (Adrenal medulla)</b>	Adrenaline (Epinephrine)	<ul style="list-style-type: none"> <li>- Known as the "emergency hormone"</li> <li>- Associated with the "3F response" (fight, flight, and fright)</li> </ul>
	Noradrenaline (Norepinephrine)	<ul style="list-style-type: none"> <li>- Regulates blood pressure under normal conditions</li> <li>- Acts as a vasoconstrictor, narrowing blood vessels</li> </ul>
<b>Pancreas</b>	Glucagon (Alpha cells)	<ul style="list-style-type: none"> <li>- Stimulates the liver to perform glycogenolysis, increasing blood glucose levels</li> </ul>
	Insulin (Beta cells)	<ul style="list-style-type: none"> <li>- Promotes glycogenesis in the liver and muscles, leading to a decrease in blood glucose levels</li> </ul>
	Somatostatin (Delta cells)	<ul style="list-style-type: none"> <li>- Inhibits the secretion of both glucagon and insulin</li> <li>- Decreases gastric secretions, motility and absorption in the digestive tract</li> </ul>
	Pancreatic Polypeptide (PP cells or F cells)	<ul style="list-style-type: none"> <li>- Inhibits the release of pancreatic juice</li> </ul>
<b>Testes</b>	Testosterone	<ul style="list-style-type: none"> <li>- Responsible for the development of secondary sexual characteristics in males</li> <li>- It helps in the maintenance of the testes</li> <li>- Inhibits the secretion of luteinizing hormone (LH) when its blood level rises above normal</li> </ul>
<b>Ovary</b>	Estrogen (e.g., Estradiol)	<ul style="list-style-type: none"> <li>- Responsible for the development of secondary sexual characteristics in females</li> </ul>
	Progesterone	<ul style="list-style-type: none"> <li>- Secreted by the corpus luteum after ovulation.</li> <li>- Essential for thickening the uterine endometrium, preparing it for the implantation of a fertilized ovum</li> <li>- Responsible for the development of mammary glands during pregnancy</li> <li>- Inhibits uterine contractions during pregnancy</li> </ul>
	Inhibin	<ul style="list-style-type: none"> <li>- Secreted by the corpus luteum</li> <li>- Inhibits the production of Follicle-Stimulating Hormone (FSH) and Gonadotropin-Releasing Hormone (GnRH)</li> </ul>
	Relaxin	<ul style="list-style-type: none"> <li>- Secreted by the corpus luteum at the end of the gestation period</li> <li>- Relaxes the cervix of the pregnant female and ligaments of the pelvic girdle, facilitating an easier birth</li> </ul>
<b>Placenta</b>	Estrogen	Maintains pregnancy by preventing uterine muscle contractions and thickening the uterine endometrium
	Progesterone	Supports pregnancy and prevents uterine contractions
	hCG (Human Chorionic Gonadotropin)	Helps maintain pregnancy and is used as a marker in pregnancy tests
	Human Placental Progesterone	Supports pregnancy
<b>Heart</b>	Atrial Natriuretic Hormone (ANH)	Increases sodium excretion by the kidneys, reducing blood pressure



<b>Kidney</b>	Renin	It stimulates erythropoiesis
	Erythropoietin	Stimulates the production of red blood cells in the bone marrow
	Calcitriol (active form of vitamin D <sub>3</sub> )	Regulates calcium and phosphate absorption in the intestines
<b>Gastrointestinal tract</b>	Gastrin	Stimulates gastric glands to produce gastric juice
	Secretin	Induces the secretion of pancreatic juice and bile
	Cholecystokinin (CCK) and Pancreozymin	Stimulates the pancreas to release enzymes and the gall bladder to release bile
	Entero-gastrone / Gastric Inhibitory Peptide (GIP)	Slows gastric contractions and inhibits the secretion of gastric juice

➤ **Hormonal Disorders:**

Gland	Hormone	Condition	Symptoms
<b>Pituitary</b>	GH	Hypersecretion in children	<b>Gigantism</b> (Abnormal body growth)
		Hypersecretion in adults	<b>Acromegaly</b> can cause disfigurement (especially of the face) which may lead to serious complications
		Hyposecretion	<b>Pituitary dwarfism</b> - Stunted growth
	ADH	Impairment affecting the synthesis or release of hormone	<b>Diabetes insipidus</b> - reduces water re-absorption and increases urine output, polydipsia
<b>Thyroid</b>	Thyroxine	Hyperthyroidism	<b>Grave's Disease</b> - Protruding eyeballs, increased heart rate, high BP, nervousness, weight loss
		Hypothyroidism	<b>Myxoedema (in adults)</b> - Thickening and puffiness of skin, slow heart rate, low BP, low body temperature, mental retardation <b>Cretinism (in infants)</b> - Reduced BMR, short stature, mental retardation, dry skin, thick tongue, neonatal jaundice <b>Goitre:</b> Enlargement of thyroid gland
<b>Parathyroid</b>	Parathormone	Hyposecretion	<b>Parathyroid tetany</b> - muscle twitch and spasm
		Hypersecretion	<b>Osteoporosis</b> - softening and bending and fracture of bones
<b>Adrenal cortex</b>	Mineralocorticoids and glucocorticoids	Hyposecretion	<b>Addison's disease</b> - Low blood sugar, low Na <sup>+</sup> , high K <sup>+</sup> in plasma, weight loss, weakness, nausea, vomiting
		Hypersecretion	<b>Cushing's disease</b> - High blood sugar, glucose in urine, high Na <sup>+</sup> , high blood pressure, obesity, muscle wasting
<b>Pancreas</b>	Insulin	Hyposecretion	<b>Diabetes Mellitus (Type I)</b> - Increased blood glucose due to reduced insulin secretion due to under activity of Beta cells
		-	<b>Diabetes Mellitus (Type II)</b> - Insulin resistance, failure of insulin to facilitate glucose movement into cells



**Multiple Choice Questions****9.0 Introduction**

1. Proper nervous system is lacking in \_\_\_\_\_. [2022]  
(A) Planarian (B) Cockroach  
(C) Sponges (D) *Hydra*
2. Following are various types of movements seen in plants EXCEPT \_\_\_\_\_. [2022]  
(A) thigmotactic (B) chemotactic  
(C) phototropic (D) metastatic

**9.1 Nervous System in *Hydra***

1. Which one of the following does not show diffused type of nervous system? [2022]  
(A) Gut wall of man (B) Ctenophora  
(C) *Hydra* (D) Sponges
2. Given below are two statements.  
**Statement-I:** There are two nerve nets in mesoglea of *Hydra*.  
**Statement-II:** Never impulse shows no polarity in *Hydra*.  
In light of above statements, select the correct answer from the option given below. [2022]  
(A) Statement-I is incorrect and statement-II is correct.  
(B) Both statement-I and statement-II are incorrect.  
(C) Both statement-I and statement-II are correct.  
(D) Statement-I is correct and statement-II is incorrect.
3. Given below are two statements regarding nervous system in *Hydra*. Select the correct option.  
**Statement-I:** Stimulation of sensory cells in the body wall of *Hydra* generates impulse that flows in opposite direction to other parts of the body.  
**Statement-II:** Mesoglea in *Hydra* carries two nerve nets for purpose of co-ordination. [2023]  
(A) Both statement-I and statement-II are correct.  
(B) Both statement-I and statement-II are incorrect.  
(C) Statement-I is correct but statement-II is incorrect.  
(D) Statement-I is incorrect but statement-II is correct.

4. In which of the following animals, there are two nerve nets, forming the nervous system? [2023]  
(A) Planaria (B) *Hydra*  
(C) Cockroach (D) Sponge
5. A diffused nervous system is observed in \_\_\_\_\_. [2023]  
(A) sponge (B) cnidarian  
(C) flatworm (D) earthworm
6. A diffused type of nervous system is present in \_\_\_\_\_ of man. [2023]  
(A) skin  
(B) gut wall  
(C) cardiac muscles  
(D) walls of blood vessels

**9.2 Nervous System in *Planaria* (flatworm)**

1. Arrange the following in the correct sequence in evolution of nervous system. [2022]  
(a) Formation of centralised nervous system.  
(b) Diffused nervous system in *Hydra*.  
(c) Formation of ganglion.  
(d) Nervous system is lacking in sponges.  
(A) (d), (b), (c) and (a)  
(B) (a), (d), (b), and (a)  
(C) (b), (a), (d) and (c)  
(D) (c), (d), (a), and (b)
2. Given below are two statements.  
**Statement-I:** Cephalic ganglion appears like U shaped structure in *Hydra*.  
**Statement-II:** Ventral nerve cords are connected to each other by commissure in a ladder like manner in Planarian.  
In the light of above statements, choose the most appropriate answer form the options given below: [2022]  
(A) Both Statement-I and Statement-II are incorrect.  
(B) Both Statement-I and Statement-II are correct.  
(C) Statement-I is incorrect but Statement-II is correct.  
(D) Statement-I is correct but Statement-II is incorrect.
3. Which of the following animals shows central nervous system on ventral side? [2022]  
(A) *Planaria* (B) Sponges  
(C) *Hydra* (D) Ctenophore



**9.3 Neural Tissue**

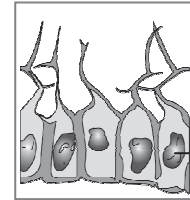
- The central canal of spinal cord is lined by \_\_\_\_\_ cells. [2003]  
 (A) ependymal (B) epiblema  
 (C) neuroglia (D) all of these
- Nissl's granules of neuron contain \_\_\_\_\_. [2020]  
 (A) DNA (B) RNA  
 (C) Polysaccharides (D) Glycoprotein
- Each nerve cell is surrounded by a sheath of connective tissue called \_\_\_\_\_. [2020]  
 (A) Endoneurium (B) Perineurium  
 (C) Endometrium (D) Epineurium
- The connective tissue covering around the nerve fasciculi is I while covering of bundle of nerves is II respectively. [2021]  
 (A) I – epineurium II – perineurium  
 (B) I – endoneurium II – epineurium  
 (C) I – perineurium II – epineurium  
 (D) I – endoneurium II – perineurium
- The neuroglial cells derived from monocytes are \_\_\_\_\_. [2021]  
 (A) Astrocytes (B) Microglia  
 (C) Ependymal cells (D) Schwann cells
- Which one of the following is NOT a part of multipolar neuron? [2022]  
 (A) Dendron (B) Cyton  
 (C) Axon (D) Synapse
- Match column – I showing neuroglial cells with their functions in column – II.

Column – I		Column – II	
i.	Astrocytes	a.	production of CSF
ii.	Oligodendrocytes	b.	maintenance of blood brain barrier
iii.	Ependymal cells	c.	formation of white matter of CNS
iv.	Schwann cells	d.	production of myelin sheath around medullated nerves of PNS

[2023]

- i - a, ii - d, iii - b, iv - c
- i - c, ii - b, iii - a, iv - d
- i - b, ii - c, iii - a, iv - d
- i - d, ii - a, iii - c, iv - b

- Match the type of glial cell shown in the figure with its function. Select the correct option.



[2023]

	Glial cell	Function
(A)	Microglia	Phagocytosis
(B)	Astrocyte	Production of myelin sheath
(C)	Ependymal cell	Production of CSF
(D)	Satellite cell	Mechanical support to the neuron

- Select a correct pair of glial cells present in the PNS of man. [2023]  
 (A) Astrocyte and Schwann cell  
 (B) Ependymal cell and astrocyte  
 (C) Oligodendrocyte and satellite cell  
 (D) Schwann cell and satellite cell
- Which of the following cells form myelin sheath around the nerve fibres in CNS? [2023]  
 (A) Oligodendrocytes (B) Mast cells  
 (C) Schwann cells (D) Oxyntic cells
- Which cells of the CNS are derived from monocytes and function as macrophages? [2023]  
 (A) Astrocytes (B) Ependymal cells  
 (C) Microglia (D) Satellite cells

**9.4 Synapse**

- Neurotransmitter, at a synapse, is stored temporarily in \_\_\_\_\_. [2020]  
 (A) Synaptic vesicles  
 (B) Synaptic cleft  
 (C) Postsynaptic membrane  
 (D) Presynaptic membrane
- In neural system, chemical synapse shows synaptic gap of about \_\_\_\_\_. [2021]  
 (A) 400 nm to 60 nm  
 (B) 80 nm to 100 nm  
 (C) 20 nm to 40 nm  
 (D) 60 nm to 80 nm



3. Electrical synapse shows following features EXCEPT \_\_\_\_\_ [2022]  
 (A) It is mechanical in nature.  
 (B) Transmission across the gap is very fast.  
 (C) Gap between adjacent neurons is 20-30 nm.  
 (D) Usually found in defense reflexes.
4. The property of nerve fiber - 'Summation effect' is \_\_\_\_\_. [2022]  
 (A) Total value of potential difference in resting nerve and depolarized nerve fiber  
 (B) Addition of subliminal and supraliminal stimuli  
 (C) When many weak stimuli are given in quick succession they may produce an impulse due to addition or summation of stimuli  
 (D) Addition of rate of transmission in thick and thin nerves
5. Which of the following is NOT required for transmission of nerve impulse across a chemical synapse? [2022]  
 (A) Neurotransmitter (B) Cholinesterase  
 (C) Neurohormone (D)  $\text{Ca}^{++}$
6. Arrange the following events in proper sequence during impulse transmission across chemical synapse.  
 (a) Fusion of synaptic vesicles with cell membrane of presynaptic neuron.  
 (b)  $\text{Ca}^{++}$  channels open and  $\text{Ca}^{++}$  diffuses into synaptic knob from extracellular fluid.  
 (c) Neurotransmitter binds with receptors of post synaptic cell.  
 (d) Release of neurotransmitter by exocytosis. [2022]  
 (A)  $d \rightarrow c \rightarrow a \rightarrow b$  (B)  $a \rightarrow c \rightarrow b \rightarrow d$   
 (C)  $b \rightarrow a \rightarrow d \rightarrow c$  (D)  $c \rightarrow a \rightarrow d \rightarrow b$
7. The synaptic fatigue that develops when nerve impulse temporarily halts, results from [2023]  
 (A) under-secretion of neurotransmitter.  
 (B) exhaustion of neurotransmitter.  
 (C) excitation of presynaptic membrane.  
 (D) excitation of postsynaptic membrane.
8. Select the INCORRECT statement about chemical synapse. [2023]  
 (A) Chemical signals are sent to neurons, glands and muscles  
 (B) A synaptic gap is about 20-40 nm.  
 (C) Neurotransmitter receptors are located on presynaptic neuron.  
 (D) Neuromuscular junction is a type of chemical synapse

9. Voltage gated channels in the presynaptic knob of axon open on excitation and allows inflow of \_\_\_\_\_ ions from extracellular fluid. [2023]  
 (A)  $\text{Ca}^{++}$  (B)  $\text{Mg}^{++}$  (C)  $\text{K}^+$  (D)  $\text{Mn}^{++}$
10. Match column – I with column – II regarding properties of nerve fibres.

Column – I		Column – II	
i.	Irritability	a.	Time interval during which a nerve fails to respond to second stimulus
ii.	Refractory period	b.	Ability to perceive stimulus
iii.	Conductivity	c.	Many subliminal stimuli are given in quick succession
iv.	Summation effect	d.	Ability to transmit the excitation

[2023]

- (A) i - b, ii - a, iii - d, iv - c  
 (B) i - c, ii - b, iii - a, iv - d  
 (C) i - a, ii - d, iii - c, iv - b  
 (D) i - d, ii - c, iii - b, iv - a

### 9.5 Transmission of Nerve Impulse

1. The depolarization of nerve membrane takes place through influx of \_\_\_\_\_ ions. [2014]  
 (A) Calcium (B) Potassium  
 (C) Sodium (D) Magnesium
2. When stimulus is applied to a membrane of neuron, it causes rapid influx of \_\_\_\_\_. [2020]  
 (A)  $\text{K}^+$  (B)  $\text{Ca}^{++}$  (C)  $\text{Mg}^{++}$  (D)  $\text{Na}^+$
3. The step in generation of nerve impulse, where  $\text{Na}^+$  gates are closed and  $\text{Na}^+ - \text{K}^+$  pump become operational is [2021]  
 (A) Repolarized phase  
 (B) Depolarized phase  
 (C) Polarized phase  
 (D) Resting potential
4. Saltatory conduction is \_\_\_\_\_. [2021]  
 (A) Seen at neuromuscular junction  
 (B) Seen only in the areas where myelin sheath is present  
 (C) Action potential travelling from one node to another node  
 (D) Continuous process of depolarization
5. During the phase of depolarisation of nerve impulse, \_\_\_\_\_. [2023]  
 (A)  $\text{Na}^+$  gates open and  $\text{K}^+$  gates close  
 (B)  $\text{K}^+$  gates open and  $\text{Na}^+$  gates close  
 (C)  $\text{Na}^+$  and  $\text{K}^+$  gates are closed  
 (D)  $\text{Na}^+$  and  $\text{K}^+$  gates are open



6. Select the correct statements with respect to nerve membrane during depolarisation.
- Rapid influx of  $\text{Na}^+$  in axoplasm.
  - Membrane potential changes from  $-70\text{mv}$  to  $+30\text{mv}$ .
  - Leakage channels and gated channels are closed.
  - Predominance of  $\text{K}^+$  in intracellular fluid.
- [2023]
- (A) i and ii only (B) ii and iii only  
(C) iii and iv only (D) i and iv only
7. Saltatory conduction of nerve impulse is at the rate of \_\_\_\_\_. [2023, 2021]
- (A) 10 m/sec. (B) 20 m/sec.  
(C) 50 m/sec. (D) 120 m/sec.
8. Depolarization involves following events EXCEPT [2023]
- (A) generation of action potential  
(B) opening of voltage dependent  $\text{Na}^+$  gates  
(C) closure of voltage dependent  $\text{K}^+$  gates  
(D) opening of voltage dependent  $\text{K}^+$  gates
9. Which of the following statement/s is/are correct with respect to generation and conduction of nerve impulse?
- The resting potential difference is  $-70\text{mvs}$ .
  - The voltage gated  $\text{Na}^+$  and  $\text{K}^+$  channels operate together and are self-closing.
  - At the peak of action potential, the potential difference rises to  $+30$  to  $+60\text{mvs}$ .
  - In medullated nerve fibre, the action potential is conducted as wave of membrane depolarization.
  - The resting potential is maintained by especially closure of gated channels of  $\text{Na}^+$  and  $\text{K}^+$ . [2023]
- (A) i only (B) iii and iv only  
(C) ii, iv and v only (D) i, iii and v only

### 9.6 Human Nervous System

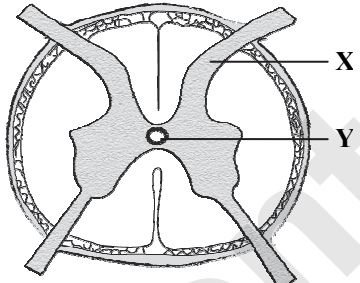
1. Sympathetic nerves in mammals arise from [1999]
- (A) sacral region  
(B) cervical region  
(C) thoraco-lumbar region  
(D) 3<sup>rd</sup>, 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> cranial nerves
2. 7<sup>th</sup> cranial nerve is [2001]
- (A) Optic. (B) Olfactory.  
(C) Facial. (D) Auditory.
3. Vomiting & respiratory centre is in the [2002]
- (A) medulla. (B) cerebrum.  
(C) cerebellum. (D) diencephalon.
4. Which structure has grey matter in center and white matter in periphery? [2002]

- (A) spinal cord (B) meninges  
(C) cerebrum (D) cerebellum
5. As per serial order the nerve just before pathetic nerve is [2003]
- (A) optic (B) oculomotor  
(C) auditory (D) trigeminal
6. Corpora quadrigemina are found in [2003]
- (A) mesencephalon. (B) telencephalon.  
(C) rhombencephalon. (D) prosencephalon.
7. Which one of the following is a motor nerve? [2004]
- (A) Spinal accessory (B) Trigeminal  
(C) Facial (D) Vagus
8. From the cranial nerves, find the odd man out. [2004]
- (A) Optic (B) Olfactory  
(C) Oculomotor (D) Auditory
9. Mixed nerves are [2005]
- (A) V, VII, IX, X (B) II, III, IV  
(C) IX, X, XI, XII (D) I, II, VIII, IX
10. Occipital lobe contains centre for [2007]
- (A) Vision (B) Smell  
(C) Taste (D) Hearing
11. \_\_\_\_\_ is present in the ventricles of the brain. [2009]
- (A) Blood (B) CSF  
(C) Lymph (D) Saliva
12. Which group of cranial nerves control eye ball movements? [2015]
- (A) Optic, Abducens, Pathetic  
(B) Optic, Oculomotor, Trochlear  
(C) Oculomotor, Abducens, Auditor  
(D) Oculomotor, Abducens, Trochlear
13. How many pairs of sympathetic ganglia are present in ANS? [2015]
- (A) 10 (B) 12 (C) 22 (D) 31
14. The parietal and temporal lobes are separated by [2016]
- (A) Central sulcus  
(B) Longitudinal fissure  
(C) Lateral sulcus  
(D) Parieto-occipital sulcus
15. The corpus callosum interconnects [2016]
- (A) Cerebral hemispheres  
(B) Cerebellar hemispheres  
(C) Corpora quadrigemina  
(D) Crura cerebri



16. If cranial nerves: 12 pairs, then spinal nerves: [2017]  
(A) 30 pairs (B) 31 pairs  
(C) 32 pairs (D) 33 pairs
17. Branching tree like processes of white matter extending into grey cortex of cerebellum is called \_\_\_\_\_. [2018]  
(A) Arbor vitae (B) Gyri  
(C) Crura cerebri (D) Thalami
18. Inferior colliculi of human brain respond to the stimuli. [2019]  
(A) Postural (B) Osmotic  
(C) Visual (D) Auditory
19. The cranial nerves which innervate eye muscles are \_\_\_\_\_. [2019]  
(A) Oculomotor, Trigeminal, Abducens  
(B) Pathetic, Oculomotor, Trigeminal  
(C) Pathetic, Facial, Abducens  
(D) Oculomotor, Pathetic, Abducens
20. The reflex arc which is made up of one sensory and one motor neuron is \_\_\_\_\_. [2019]  
(A) Polysynaptic (B) Monosynaptic  
(C) Asynaptic (D) Bisynaptic
21. Coughing and sneezing are controlled by \_\_\_\_\_. [2019]  
(A) Cerebrum  
(B) Cerebellum  
(C) Medulla oblongata  
(D) Pons varolii
22. Which of the following is an example of unconditional reflex? [2020]  
(A) Talking with someone while tying shoe laces  
(B) Reciting nursery rhymes  
(C) Driving a vehicle  
(D) Withdrawing of hand when pricked
23. Foramen of Monro provides a passage for connecting \_\_\_\_\_. [2020]  
(A) Third ventricle with fourth ventricle  
(B) Lateral ventricle with third ventricle  
(C) Brain with spinal cord  
(D) Middle ear with pharynx
24. A person has lost his sense of orientation, balance of body, and has unsteady gait. Which part of his brain probably is damaged? [2020]  
(A) Pineal gland  
(B) Cerebellum  
(C) Olfactory lobes  
(D) Medulla oblongata
25. Match the number and name of following cranial nerves and select the correct option. [2020]
- |      | Number |    | Name             |
|------|--------|----|------------------|
| i.   | VIII   | a. | Pathetic         |
| ii.  | XI     | b. | Auditory         |
| iii. | IV     | c. | Vagus            |
| iv.  | X      | d. | Spinal accessory |
- (A) i – b, ii – d, iii – a, iv – c  
(B) i – c, ii – d, iii – b, iv – a  
(C) i – d, ii – c, iii – a, iv – b  
(D) i – d, ii – c, iii – b, iv – a
26. Spinal cord is enclosed in \_\_\_\_\_ of vertebral column. [2020]  
(A) Neural canal  
(B) Volkmann's canal  
(C) Inguinal canal  
(D) Central canal
27. Damage to VI cranial nerve in human, may affect the movements of \_\_\_\_\_. [2020]  
(A) Neck (B) Eye  
(C) Jaw (D) Tongue
28. Which of the following is affected by injury to Broca's area of cerebrum? [2020]  
(A) Vision (B) Smell  
(C) Speech (D) Hearing
29. An individual is suffering from dry mouth, has difficulty in swallowing and has lost sense of taste. Which cranial nerve is probably damaged in him? [2020]  
(A) Pathetic  
(B) Glossopharyngeal  
(C) Olfactory  
(D) Abducens
30. Cerebrospinal fluid performs following functions EXCEPT [2020]  
(A) Absorption of mechanical jerks and shocks  
(B) Nourishment to the brain  
(C) Regulation of temperature  
(D) Synthesis of antibodies
31. Lateral rectus muscle is supplied by \_\_\_\_\_ nerve. [2020]  
(A) Optic (B) Pathetic  
(C) Trigeminal (D) Abducens
32. Ophthalmic, maxillary and mandibular nerves are branches of \_\_\_\_\_ cranial nerve. [2020]  
(A) Facial  
(B) Vestibulocochlear  
(C) Trigeminal  
(D) Glossopharyngeal



33. Loss of sense of smell in a person may indicate damage to \_\_\_\_\_ part of his brain. [2020]  
 (A) Thalamencephalon  
 (B) Rhombencephalon  
 (C) Mesencephalon  
 (D) Rhinencephalon
34. Impairment of Glossopharyngeal nerve will most probably NOT affect \_\_\_\_\_. [2020]  
 (A) Saliva secretion  
 (B) Swallowing  
 (C) Rotation of eyeball  
 (D) Sense of taste
35. Injury to medulla oblongata causes sudden death mainly as \_\_\_\_\_. [2020]  
 (A) Secretion of cerebrospinal fluid completely stops  
 (B) Both anterior and posterior choroid plexuses are damaged  
 (C) Reflex activities like swallowing, vomiting etc. stop  
 (D) Vital activities such as heart beat and respirations stop
36. In somatic reflexes, the effectors are located in \_\_\_\_\_. [2020]  
 (A) Glands (B) Skeletal muscles  
 (C) Smooth muscles (D) Skin
37. Which statement is correct regarding spinal nerves in man? [2020]  
 (A) They come out of vertebral column through foramen magnum.  
 (B) Each spinal nerve is formed within neural canal of vertebral column.  
 (C) There are 21 pairs of spinal nerves.  
 (D) They are sensory, motor and mixed types.
38. In a person, temporal lobe of brain is injured. He may experience impairment in sense of \_\_\_\_\_. [2020]  
 (A) Hearing and vision  
 (B) Hearing, smell, speech  
 (C) Hearing, smell and taste  
 (D) Only hearing
39. The \_\_\_\_\_ spinal nerves originate from the abdominal region of vertebral column. [2020]  
 (A) Cervical (B) Thoracic  
 (C) Lumbar (D) Sacral
40. Control and co-ordination of head movements in response to visual and auditory stimuli is carried out by \_\_\_\_\_. [2020]  
 (A) corpora striata  
 (B) corpora cavernosa  
 (C) crura cerebri  
 (D) corpora quadrigemina
41. Largest basal nucleus at the floor of cerebrum is \_\_\_\_\_. [2021]  
 (A) Corpus albicans (B) Corpus striatum  
 (C) Corpus callosum (D) Corpus luteum
42. Given below is the diagram of T.S. of spinal cord. Identify 'X' and 'Y' [2021]
- 
- (A) X – Ventral horn, Y – neural canal  
 (B) X – Dorsal horn, Y – central canal  
 (C) X – lateral horn, Y – white fibres  
 (D) X – Ventral horn, Y – grey matter
43. Length of spinal cord is \_\_\_\_\_ cm in human being. [2021]  
 (A) 42 to 45 (B) 30 to 35  
 (C) 12 to 15 (D) 22 to 25
44. Given below are two statements with respect to autonomic nervous system. [2021]  
**Statement-I:** Sympathetic nervous system has stimulating effect on heartbeat and inhibitory effect is seen in digestion.  
**Statement-II:** Sympathetic nervous system decreases arterial blood pressure on excitation, whereas parasympathetic nervous system relaxes urinary bladder.  
 Choose the most appropriate answer from the options given below.  
 (A) Both Statement-I and Statement-II are correct  
 (B) Statement-I is correct and Statement-II is incorrect  
 (C) Both Statement-I and Statement-II are incorrect  
 (D) Statement-I is incorrect but Statement-II is correct
45. Cerebrospinal fluid is secreted by the following EXCEPT \_\_\_\_\_. [2021]  
 (A) Ependymal cells  
 (B) Choroid plexus  
 (C) Pia mater  
 (D) Neurosecretory cells
46. Facial nerve bears \_\_\_\_\_. [2021]  
 (A) posterior root ganglion  
 (B) geniculate ganglion  
 (C) basal ganglion  
 (D) sympathetic ganglion



47. III ventricle of human brain is connected posteriorly to IV ventricle through \_\_\_\_\_. [2021]  
(A) foramen of Magendie  
(B) duct of Bellini  
(C) foramen of Monro  
(D) duct of Sylvius
48. Following are the functions of cerebrospinal fluid EXCEPT \_\_\_\_\_. [2021]  
(A) Acts as shock absorber  
(B) Maintenance of constant pressure  
(C) Helps in binding the neurotransmitter to receptor  
(D) Exchange of nutrients and waste
49. Which one of the following cranial nerves does NOT innervate eye muscles? [2021]  
(A) Pathetic (B) Abducens  
(C) Hypoglossal (D) Oculomotor
50. Given below are two statements with respect to limbic system.  
**Statement-I:** Limbic system is responsible for emotional reactions and memory.  
**Statement-II:** It is formed mainly of cerebrum, pons varolii and cerebellum.  
Choose the most appropriate answer from the options given below. [2021]  
(A) Both Statement-I and Statement-II are correct  
(B) Both Statement-I and Statement-II are incorrect  
(C) Statement-I is correct but Statement-II is incorrect  
(D) Statement-I is incorrect but Statement-II is correct
51. Epithalamus is fused with pia mater in diencephalon and forms \_\_\_\_\_. [2022]  
(A) Posterior choroid plexus  
(B) Pineal body  
(C) Mammillary body  
(D) Anterior choroid plexus
52. Foramen of Monro communicates with [2022]  
(A) Lateral ventricle and diocoel.  
(B) Metacoel and central canal.  
(C) Two lateral ventricles.  
(D) Diocoel and metacoel.
53. Thin, non-nervous roof of diencephalon is \_\_\_\_\_. [2022]  
(A) Epithalamus (B) Epineurium  
(C) Epiblema (D) Epithelium
54. Following are the effects of parasympathetic nervous system EXCEPT [2022]  
(A) Constricts bronchi.  
(B) Inhibits secretion of tears.  
(C) Stimulates flow of saliva.  
(D) Relaxes urinary bladder.
55. Cranio-sacral outflow consists of branches from \_\_\_\_\_ cranial nerves. [2022]  
(A) IX, X, XI and XII  
(B) III, VII, IX and X  
(C) II, III, IV and V  
(D) VI, X, XI and XII
56. Which one of the following is found in cerebellum? [2022]  
(A) Crura cerebri  
(B) Red nucleus  
(C) Arbor vitae  
(D) Corpora quadrigemina
57. Number of pairs of spinal nerves originating from neck region are [2022]  
(A) 01 (B) 05 (C) 08 (D) 12
58. Following are the effects of sympathetic nervous system EXCEPT [2022]  
(A) Dilates pupil.  
(B) Gastrointestinal movements are inhibited.  
(C) It shows fight and flight response.  
(D) It stimulates peristalsis and secretion of bile.
59. Bunch of nerves along with filum terminale of spinal cord is called \_\_\_\_\_. [2022]  
(A) Cauda equina  
(B) Corona radiata  
(C) Conus medullaris  
(D) Cauda epididymis
60. Select the INCORRECT statement from the following [2022]  
(A) Cerebral cortex is made up to grey matter.  
(B) In brain, grey matter shows presence of cell bodies, dendrites and synapses.  
(C) Corpus striatum is present in cerebellum.  
(D) White matter appears white due to myelin sheath.
61. Protective membrane, Pia mater is \_\_\_\_\_ of CNS. [2022]  
(A) Middle, thin and web like layer  
(B) Innermost, delicate and vascular membrane  
(C) Outermost, vascular, web like membrane  
(D) Outermost, non-vascular, thick membrane
62. Volume of CSF present in and around CNS is [2022]  
(A) 60–80 ml (B) 40–60 ml  
(C) 100–120 ml (D) 80–100 ml

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To see complete chapter buy **Target Notes**





3. Select the INCORRECT statement. [2020]  
 (A) Cells use glucose as source of energy.  
 (B) Insulin binds to receptors on the cell membrane.  
 (C) Inadequate quantity of insulin leads to diabetes insipidus.  
 (D) Deficiency of insulin leads to hyperglycaemia.
4. Flight and fight response is due to \_\_\_\_\_ and \_\_\_\_\_ respectively. [2021]  
 (A) Cranial nerves, Adrenocorticotropin  
 (B) Sympathetic nervous system, Adrenaline  
 (C) Parasympathetic nervous system, Aldosterone  
 (D) Somatic nervous system, Antidiuretic hormone
5. The process of glycolysis is also controlled by following hormones EXCEPT. [2022]  
 (A) Epinephrine (B) Insulin  
 (C) Oxytocin (D) Glucagon
6. Read the following statements about hypothalamus and choose the correct option.  
**Statement-I:** All hormones secreted by hypothalamus are glycoproteins.  
**Statement-II:** The hypothalamus forms the floor of the diencephalon and controls the secretory activity of pituitary gland. [2023]  
 (A) Both Statement-I and Statement-II are correct.  
 (B) Both Statement-I and Statement-II are incorrect.  
 (C) Statement-I is correct but Statement-II is incorrect.  
 (D) Statement-I is incorrect but Statement-II is correct.
7. Mechanism of parturition involves hormones secreted by fully developed foetus as well as mother. With respect to this statement, select the INCORRECT pair of hormone and its source organ. [2023]

(A)	ACTH	Pituitary gland of foetus
(B)	Oxytocin	Pituitary gland of mother
(C)	Corticosteroids	Pituitary gland of foetus
(D)	Prolactin	Pituitary gland of mother

8. Match column – I with column – II and select the correct option.

	Column – I		Column – II
i.	Hypothalamus	a.	Muscle tone
ii.	Pineal gland	b.	Relay centre for auditory reflexes
iii.	Inferior colliculi	c.	Homeostasis
iv.	Red nucleus	d.	Sleep inducer

[2023]

- (A) i - b, ii - d, iii - a, iv - c  
 (B) i - c, ii - d, iii - b, iv - a  
 (C) i - b, ii - c, iii - a, iv - d  
 (D) i - d, ii - b, iii - a, iv - c

9. Select the correct statement regarding neuron.

[2023]

- (A) Grey masses present inside the white matter of brain are called basal nuclei.  
 (B) Dendron is a single large unbranched process arising from the cyton.  
 (C) Small group of cytons are covered by neurilemma.  
 (D) Axon hillock lacks neurofibrils.

10. Select the correct statement with reference to the hypothalamus and its secretion. [2023]

- (A) Adrenaline and melatonin are neuro-hormones secreted by various nuclei in the hypothalamus.  
 (B) Hypothalamus forms floor of diencephalon and connects with pars nervosa through infundibulum.  
 (C) Infundibulum consists of dendrons which terminate in hypothalamus.  
 (D) Hypothalamic nuclei secrete oxytocin and melatonin.

### Answers and Solutions to MCQs

#### 9.0 Introduction

1. (C)  
 2. (D)

Type of Plant Movement	Explanation
Thigmotactic	In response to touch or physical contact

Chemotactic	Responding to chemical gradients or cues
Phototropic	Growth in response to light

#### 9.1 Nervous System in *Hydra*

1. (D)      2. (C)



3. (D)  
In *Hydra*, sensory cells are scattered throughout the body and tentacles, but there are no distinct sense organs or sensory/motor nerves. Consequently, nerve impulses lack polarity and directionality. Activation of sensory cells can occur anywhere, and impulses can propagate in any direction within the body, facilitating movements such as prey capture during feeding.

4. (B)  
*Hydra* possesses a diffuse nervous system with two nerve nets which are located in the mesoglea, with one connected to the epidermis and the other to the gastrodermis.

Smart Tip - Q.4	
<i>Planaria</i>	Have a centralized nervous system with a brain and longitudinal nerve cords
<i>Hydra</i>	Possess two nerve nets, one under the ectoderm and another in the gastrodermis, forming their simple nervous system
Cockroach	Have a centralized nervous system consisting of a series of fused, segmentally arranged ganglia
Sponge	Lack a true nervous system

5. (B)  
The diffuse nervous system is a type of nervous system where nerve cells are equally distributed throughout the body, usually beneath the outer epidermal layer.
6. (B)  
The gut wall in humans has a diffused type of nervous system known as the enteric nervous system (ENS). It is embedded in the lining of the gastrointestinal tract and can operate independently of the brain and spinal cord.

## 9.2 Nervous System in *Planaria* (flatworm)

1. (A)  
2. (C)  
I: Cephalic ganglion appears U shaped in Planarian.

3. (A)

## 9.3 Neural Tissue

1. (A)      2. (B)      3. (A)  
4. (B)      5. (B)      6. (D)  
7. (C)      8. (C)  
9. (D)

Astrocytes, ependymal cells and oligodendrocytes are neuroglial cells present in CNS.

10. (A)      11. (C)

## 9.4 Synapse

1. (A)      2. (C)

3. (C)  
Gap between adjacent neurons is 3.8 nm.  
4. (C)      5. (C)      6. (C)  
7. (B)  
8. (C)

In a chemical synapse, neurotransmitter receptors are located on the postsynaptic neuron or the target cell. This is where the neurotransmitters bind and initiate a response in the target cell.

9. (A)  
10. (A)

## Thinking Hatke - Q.10

It can be easily identified that the conductivity is the ability to transmit excitation, thus (iii-d) is a correct match. Since this appears only in option (A), the possibility of other option being correct can be eliminated and option (A) is the correct answer.

## 9.5 Transmission of Nerve Impulse

1. (C)      2. (D)      3. (A)  
4. (B)      5. (A)  
6. (A)

## Caution - Q.6

When a neuron is not conducting any impulse, rapid influx of  $K^+$  ions takes place whereas when a neuron is conducting an impulse, rapid influx of  $Na^+$  ions takes place.

7. (D)  
8. (D)  
During depolarization the  $Na^+$  gates open but not the  $K^+$  gates. This causes  $Na^+$  to rush into the axon and bring about a depolarization.  
9. (D)  
ii. The voltage gated  $Na^+$  and  $K^+$  channels operate separately and are self-closing.  
iv. In medullated nerve fibre, the action potential cannot travel as a wave of membrane depolarization it has to jump from node to node.

## 9.6 Human Nervous System

1. (C)  
2. (C)

No.	Name of cranial nerve
II.	Optic nerve
I.	Olfactory nerve
VIII.	Auditory nerve

3. (A)      4. (A)



5. (B)

No.	Name of cranial nerve
II.	Optic nerve
III.	Oculomotor nerve
IV.	Pathetic nerve
V.	Trigeminal nerve
VIII.	Auditory nerve

6. (A)

7. (A)

Trigeminal (Dentist's nerve)	Mixed
Facial (bearing geniculate ganglion)	Mixed
Vagus (Pneumogastric)	Mixed

8. (C)

Oculomotor - It is the only cranial nerve responsible for motor control of the eye muscles, while the others are sensory nerves involved in vision (optic), smell (olfactory), and hearing (auditory).

9. (A)

No.	Name of cranial nerve
V.	Trigeminal
VII.	Facial
IX.	Glossopharyngeal
X.	Vagus

10. (A)      11. (B)

12. (D)

Pathetic nerve the fourth cranial nerve also known as trochlear nerve.

13. (C)

14. (C)

The lateral or sylvian sulcus demarcates the temporal lobe from the frontal and parietal lobes.

15. (A)      16. (B)      17. (A)

18. (D)      19. (D)      20. (B)

21. (C)

22. (D)

Unconditioned reflex is automatic and does not require prior learning or conditioning.

23. (B)      24. (B)      25. (A)

26. (A)      27. (B)      28. (C)

29. (B)

The glossopharyngeal nerve (cranial nerve IX) is responsible for controlling various functions in the throat and mouth, including swallowing and taste sensation from the back of the tongue. Damage to this nerve can result in dry mouth, difficulty swallowing, and loss of taste sensation.

30. (D)      31. (D)      32. (C)

33. (D)      34. (C)      35. (D)

36. (B)

37. (B)

(A) They come out from both sides of spinal cord through the intervertebral foramen.

(C) There are 31 pairs of spinal nerves.

(D) All spinal nerves are of the mixed type.

38. (B)

39. (C)

**Smart Tip - Q.39**

Spinal nerve	Region of origin from vertebral column
Cervical	Neck
Thoracic	Thorax
Lumbar	Abdomen
Sacral	Pelvis

40. (D)      41. (B)      42. (B)

43. (A)

44. (B)

II: Sympathetic nervous system constricts blood vessels and increases blood pressure, whereas parasympathetic nervous system contracts urinary bladder wall.

45. (D)      46. (B)      47. (D)

48. (C)      49. (C)

50. (C)

The limbic system is primarily formed by structures within the cerebrum, such as the amygdala, hippocampus, and parts of the hypothalamus and thalamus.

51. (D)      52. (C)      53. (A)

54. (D)

Parasympathetic nervous system promotes bladder contraction and stimulates urination.

55. (B)      56. (C)      57. (C)

58. (D)

Sympathetic nervous system inhibits peristalsis and secretion of bile.

59. (A)

60. (C)

Corpus striatum at the floor of cerebrum is the largest basal nucleus.

61. (B)      62. (C)      63. (B)

64. (C)      65. (B)

66. (B)

II: Different parts of the brain are interconnected by the RAS (Reticular Activating System) through the thalami. It is called relay centre as it transmits all sensory impulses except those of olfactory (smell) to the cerebrum.

Page no. **304** to **307** are purposely left blank. To  
see complete chapter buy **Target Notes**



85. (D)  
 i. Grave's disease is caused due to excessive thyroid hormone.  
 ii. Cushing's disease is caused due to hypersecretion of glucocorticoids.  
 iii. Acromegaly is caused due to excess growth hormone.
86. (B)  
 Estradiol - Gonadocorticoid
87. (B)
88. (C)  
 PP cells secrete pancreatic polypeptide (PP). It inhibits the release of pancreatic juice.
89. (C)  
 i. Neurohypophysis is connected directly to the hypothalamus by axon fibres.  
 ii. Pars intermedia, pars distalis and pars tuberalis are parts of Adenohypophysis.  
 iii. Pars nervosa is a part of Neurohypophysis.
90. (A)      91. (B)
92. (C)  
 Polydipsia: Excessive thirst, it is a characteristic of diabetes mellitus.
93. (B)  
 Prolactin activates growth of breasts during pregnancy and stimulates the milk production and secretion of milk by mammary gland after child birth.
94. (C)  
 i. ADH – Distal convoluted tubule and collecting ducts  
 ii. Oxytocin- Uterus and mammary glands  
 iii. Secretin- Pancreas and liver
95. (C)

**Thinking Hatke - Q.95**

It can be easily identified that the corpus luteum secretes hormone inhibin, thus (iii-b) is a correct match. Since this appears only in option (C), the possibility of other option being correct can be eliminated and option (C) is the correct answer.

96. (D)  
 Wasting of limb muscles is a characteristic feature of Cushing's disease.
97. (C)

**Concept Fusion**

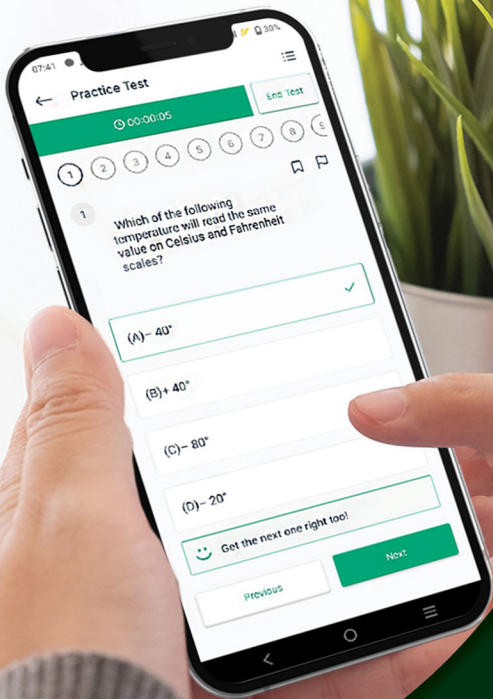
1. (D)  
 2. (B)  
 X is adrenal medulla.

3. (C)  
 Inadequate quantity of insulin actually leads to diabetes mellitus. Diabetes mellitus is a condition characterized by elevated blood sugar levels due to insufficient insulin production or ineffective use of insulin, whereas diabetes insipidus is a disorder related to the antidiuretic hormone (ADH) and involves excessive thirst and excretion of large volumes of diluted urine due to problems with ADH secretion or action.
4. (B)      5. (C)
6. (D)  
 All hormones of hypothalamus are peptide hormones.
7. (C)  
 Corticosteroids are secreted by the adrenal glands of the foetus.
8. (B)
9. (A)  
 B. Dendrons are many small conical processes arising from the cyton. These are highly branched into fine dendrites.  
 C. A bundle of axons called nerve may be covered by neurilemma.  
 D. Axon hillock consists of a bundle of neurofibrils.
10. (B)  
 A. Adrenaline is secreted by adrenal medulla. Melatonin is secreted by the pineal gland.  
 C. The infundibulum consists of axons. It connects the hypothalamus to the posterior pituitary gland.  
 D. Hypothalamic nuclei secrete oxytocin, but melatonin is secreted by the pineal gland.

**Caution - Q.10**

**Infundibulum as a part of human brain:** - It is a stalk-like part of hypothalamus; it connects pituitary gland to the hypothalamus.

**Infundibulum as a part of female reproductive system:** It is a funnel shaped portion of fallopian tube.



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