



# **AIIMS-NORCET**

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## **Nursing Officer Recruitment Common Eligibility Test**

**ALL INDIA INSTITUTE OF MEDICAL SCIENCE**

**Volume – VI (Part – 1)**

**Medical Surgical Nursing  
(Human Body System & Disorders)**



# CONTENT

## NEUROENDOCRINOLOGY

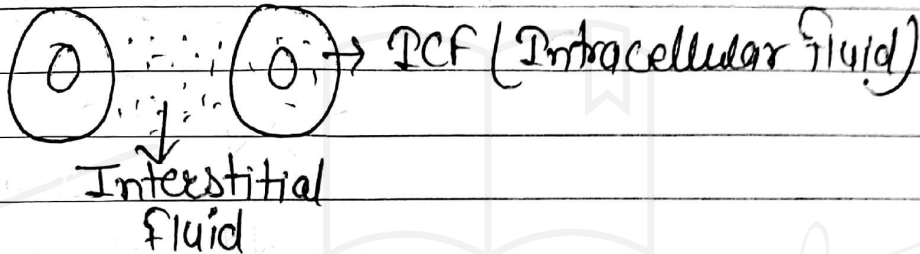
1. Homeostasis	1
2. Endocrine system	3-4
1. Hormones	10-18
2. Pituitary Gland	19-42
3. Pineal Gland	43-46
4. Thyroid Gland	46-56
❖ Disorder of thyroid Glad	56
a. Hypothyroidism	56-62
b. Hyperthyroidism	62-67
❖ Thyroid Strom	67
❖ Goitre	68-70
5. Para – Thyroid Gland	70-82
6. Adrenal Gland	83-88
❖ Disorder of adrenal Gland	88
a. Coon’s Syndrome	88-89
b. Barre Syndrome	89
c. Cushing Disease	89-90
❖ Hypersecretion of Adrenal Gland Medulla	92-93
7. Addisonian Crisis	95-96
8. Pancreas	97-102
9. Diabetes Mellitus	103-118
10. Thymus Gland	119-122
3. Nervous System	123
1. Introduction	123-125
2. Neurons	131
	132-138

<b>3. Neuro transmission</b>	139-151
<b>4. Neuroglia</b>	152-163
<b>5. Brain</b>	164-166
➤ <b>Cerebrum</b>	167-171
➤ <b>Diencephalon</b>	171-172
➤ <b>Brain system</b>	173-177
➤ <b>Cerebellum (Mini Brain)</b>	178-184
<b>6. Cranial Nerves</b>	184
<b>7. Erb's Palsy/Paralysis</b>	185
<b>8. Klumpke's palsy</b>	
<b>4. Autonomic Nerves System</b>	185-191
<b>5. Horner's Syndrome</b>	192
<b>6. Raynaud's Phenomenon</b>	193
<b>7. Neurological Examination</b>	194-201
➤ <b>Glasgo Coma Scale</b>	202-203
<b>8. Disorders</b>	
<b>1. Trigeminal Neuralgia</b>	204-207
<b>2. Bells/Facial palsy</b>	207-209
<b>3. Carpal tunnel Syndrome</b>	209-210
<b>4. Cubital tunnel Syndrome</b>	211
<b>5. Parkinson's Disease</b>	211-216
<b>6. Meningitis</b>	216-218
<b>7. Encephalitis</b>	218-220
<b>8. Myasthenia Gravis</b>	220-226
<b>9. Multiple Sclerosis</b>	226-230
<b>10. Guillain Barre Syndrome</b>	230-233
<b>11. West Nile Virus Infection         (fever)</b>	234-235

# NEURO-ENDOCRINOLOGY

Homeostasis  $\Rightarrow$  Homeo + stasis

$\Rightarrow$  It is the condition of balance or equilibrium of the cells internal environment.



ECF Control  $\rightarrow$  internal environment

$\Rightarrow$  Homeostasis is regulated by / maintain by interstitial fluid or extracellular fluid although (अर्थात्) it is located outside the cell

This function is given by Clude Bernard

Regarded  $\Rightarrow$  "father of physiology"  
as

\* Comparison of endocrine and nervous systems  $\Rightarrow$

## Endocrine System

## Nervous System

① Hormones are through  
Control

① Neuro-transmitters are  
through Control

② wider Coverage

② narrow Coverage

③ Target organ  $\Rightarrow$  far (दूर)

③ Target Organ  $\Rightarrow$  Near (करीब)

Glands

Neurons

Smooth &

Skeletal

Muscle

$\Downarrow$   
eg  $\rightarrow$  adrenal  
gland

(Medulla)

④ onset of action

④ Onset of action

$\Downarrow$   
slow

$\Downarrow$   
fast

⑤ Duration  $\Rightarrow$  Longer

⑤ Duration  $\Rightarrow$  shorter

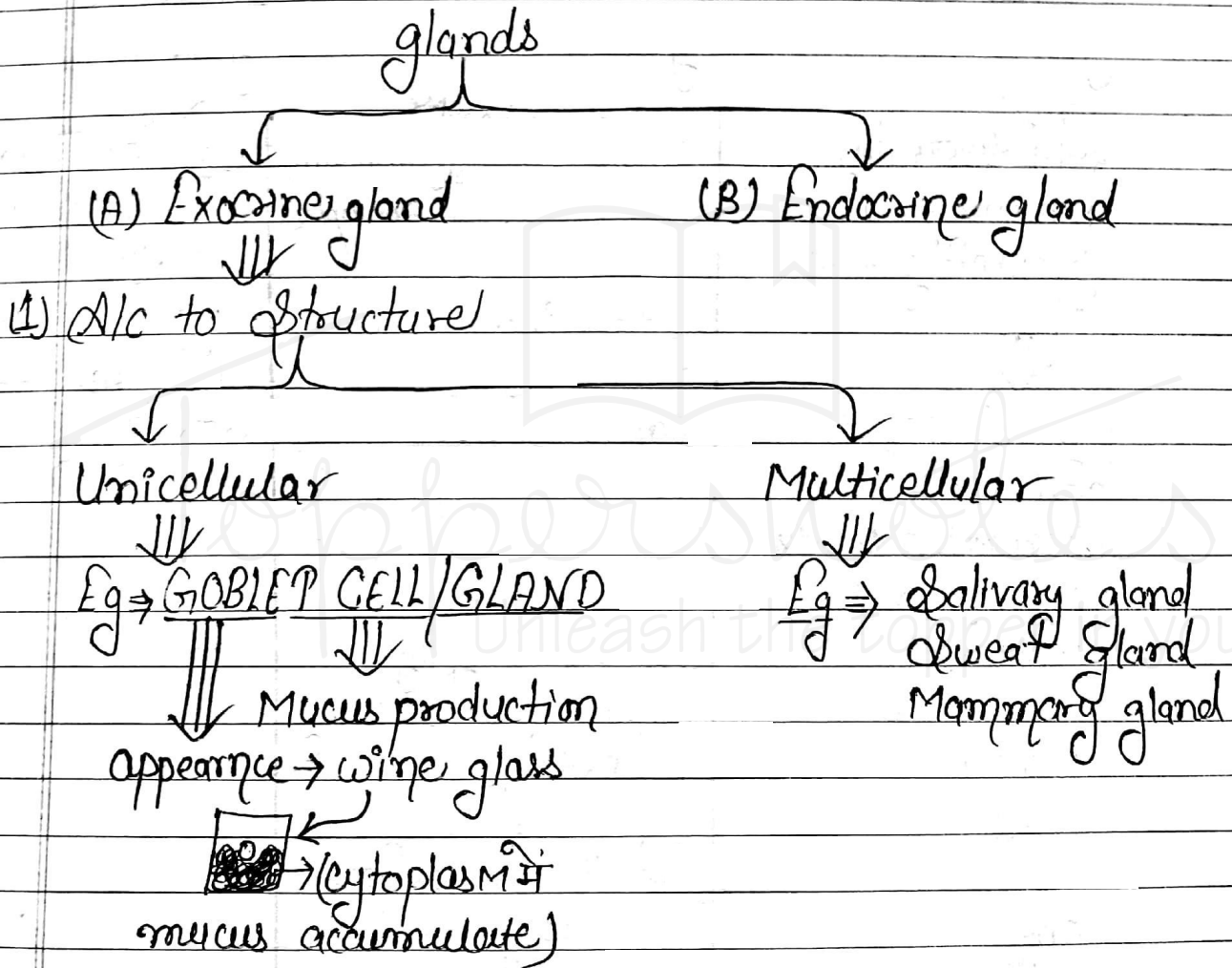
$\Downarrow$   
Because Hormone  
circulation में रहेगा  
और Target cell तक  
पहुंचना

$\Downarrow$   
Because neurotransmitter  
rapid function करे  
ए

# Endocrine System

## Gland

glands are specialized single or group of cell.  
produce hormone and juice



goblet cell  
Found in ⇒ (1) GIT → Stomach में Mucus layer etc etc  
(2) Respiration (prevent → HCl में)  
Mucus prevent → Moist  
stop dust particle  
(3) Reproductive/fallopian tube

(2) A/c to function Exocrine gland

(A) Holocrine Exocrine gland

इसमें secretory product whole/ completely रहा है।

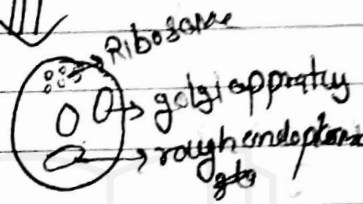
cytoplasm में cell death होने पर secretion product/ release कम हो जाता है।

Eg → sebaceous gland

sebum secretion करती है।

dies cells होने पर वह बाहर निकलती है।

(B) Merocrine Exocrine gland



Eg → salivary gland

saliva का production rough endoplasmic करती है।

saliva का golgi apparatus packing करती है।

छोटे-2 vesicles के रूप में आयेगा।

जो secretion exocytosis के द्वारा बाहर निकलेगी।

जो plasma membrane को Break करके बाहर निकलती है।

(C) Apocrine Exocrine gland

cell की apex secretes part है।

apex part separate करके बाहर निकलती है।

## Endocrine System

Endocrine system is consist of :-

- (1) Endocrine gland
- (2) Endocrine organs and tissue

(1) Endocrine gland →  
Pure endocrine | Hormonal function

- |                     |                  |                                      |                            |                             |
|---------------------|------------------|--------------------------------------|----------------------------|-----------------------------|
| (A) Pituitary gland | (B) Pineal gland | (C) Thyroid<br>Lower part<br>of neck | (d) Para<br>thyroid<br>(4) | (E) Adrenal<br>gland<br>(2) |
| 3rd/4th - Ectoderm  |                  |                                      |                            |                             |

(2) Endocrine Organs and tissue →

Endocrine function  $\bar{c}$  Non-e endocrine function (Both performed).

- |                  |                      |
|------------------|----------------------|
| (1) Hypothalamus | (10) Placenta        |
| (2) Thymus gland | (11) corpus Luteum   |
| (3) Heart        | (12) skin            |
| (4) stomach      | (13) Adipose tissues |
| (5) Pancreas     |                      |
| (6) Liver        |                      |
| (7) kidney       |                      |
| (8) ovaries      |                      |
| (9) Testes       |                      |



## (1) Hypothalamus

⇓⇓⇓  
(A) Anti-Diuretic Hormone [ADH] / vasopressin / Arginine vasopressin [AVP]

(B) Oxytocin Hormone

(C) Releasing Hormone (6)



(i) Growth Hormone Releasing Hormone [GHRH]

(ii) prolactin Releasing Hormone [PRH]

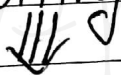
(iii) Corticotropin releasing Hormone [CRH]

(iv) Thyrotropin releasing Hormone [TRH]

(v) Gonadotropin releasing Hormone [GnRH]

(vi) Melanocyte Stimulating Releasing Hormone [MRH]

(D) Inhibiting Hormone



(i) Growth Hormone inhibiting Hormone [GHIH]

(ii) prolactin inhibiting Hormone [PIH]



Bromocriptine drug



Hypothalamus में absorb होकर



PIH Level ↑se



stop decretion milk

⇒ Hypothalamus is not endocrine gland but Hypothalamus is endocrine organ and tissues

(2) Thymus Gland ⇒ (i) Thyrosine Hormone  
 (ii) Thymic Humoral factor  
 (T-Lymphocyte formation)

(3) Heart ⇒ (i) Atrial Natriuretic peptide [ANP]  
 (Peptide Hormone) \* → Atrial myocyte (Myometrium cell) से Secrete करती है  
 (Circulatory & endocrine organ)

Function ANP ⇒ Natriuresis  
 Sodium (Na)      Urine

Condition develop ⇒ (i) Hypovolemia } Both condition  
 (ii) Hyponatremia } B.P. ↓ se.

ANP ⇒ B.P. को ↓ se करती है। जबकि Renine and angiotensine B.P. को ↑ se करती है।

(4) Stomach ⇒ (i) Gastric Hormone  
 (Formation by G-cell)

(5) Pancreas ⇒ (i) Insuline  
 (ii) Glucagone  
 (iii) Somatostatin  
 (iv) pancreatic polypeptide

- (6) Liver →  
(i) Thrombopoietin, Hormone (TPO) (Thrombocyte production)  
(ii) Insulin like, growth factor - I
- (7) Kidney - (i) Erythropoietin Hormone (EPO)  
formation of RBC ↑ Se
- (8) Ovaries → PER I Hormone  
P →  
E →  
R →  
I →
- (9) Testes - (i) Testosterone Hormone  
(ii) Inhibin Hormone
- (10) Placenta - Temporary Endocrine gland  
Hormone PERI  
HCG  
Human Placental Lactogen (HPL)
- (11) Corpus Luteum → Progesterone & Estrogen
- (12) Skin → (i) vitamin D Hormone  
due to sunlight apply → dermis  
Substance → Folic acid byrallye.

vitamine के precursors में changes

vitamine D - inactive form

Outside the cell

circulation से all organ से लेकर Heart में जाने के बाद वापस से बाहर निकल कर

Hydroxylation होता है

I<sup>st</sup> → Liver में

II<sup>nd</sup> → Kidney में

vitamine D - active form

⇒ If person suffer Hepatic or renal problem  
person in deficiency vitamin D

(13) Adipose tissue ⇒ Adipose tissue endocrine organ में आता है

Because it secrete leptin (Lipid) Hormone.

Inhibite appetite.

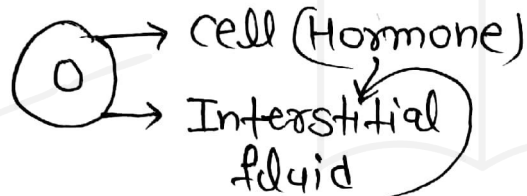
# Hormones

Hormones means → to Excite

→ It is a substance of intense biological activity

which secreted by endocrinal glandular tissue or organ into the interstitial fluid than into the venous Blood

→ Hormone diffuse in venous blood.

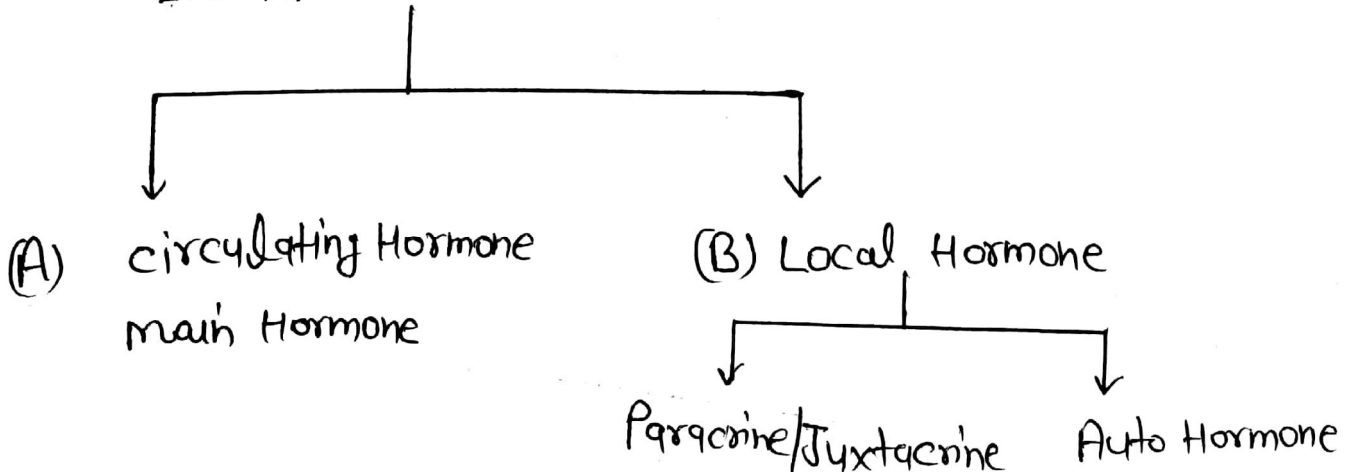


ECF ←  
Capillary

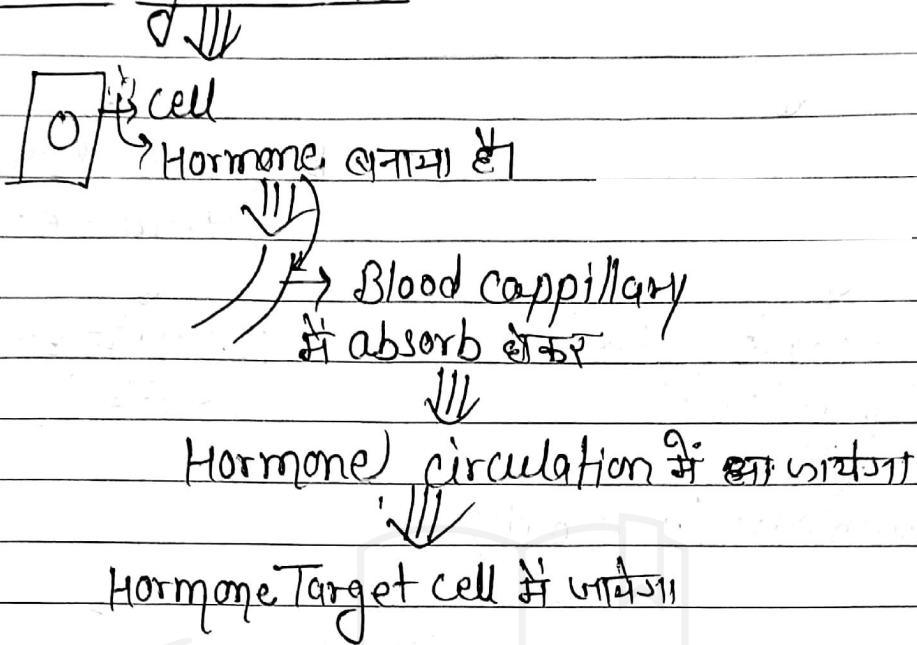
Hormone absorb  
↓  
venous end

## Classification of Hormone

IU A/c to circulation



## (A) Circulating Hormone



## (B) Local Hormone

(i) paracrine

or  
Juxtacrine

ये Hormone पास वाली cell पर action करती है।

(ii) Autocrine Hormone

जो cell ~~secrete~~ Hormone secrete करती है। उसी cell पर action करती है।

### Eg of Local Hormone

(1) Interleukin-II ⇒ which released by the Helper T-cell

(2) Prostaglandine

(3) Serotonine → secrete → platelet

(4) Histamine

## (2) A/c to chemical Classification of Hormone

(A) Lipid Soluble Hormone

(B) water Soluble Hormone

Plasma के water में insoluble है

Plasma के अन्दर पानी में Soluble है

Double in Lipoprotein

(i) Steroid Hormone  $\Rightarrow$  Sterone की ring होती है

(ii) Thyroid Hormone

$T_3$

$T_4$

(Thyroxine)

(1) Aldosterone

(2) Testosterone

(3) Estrogen

(4) progesterone

(5) Corticosterone

(6) Cortisole

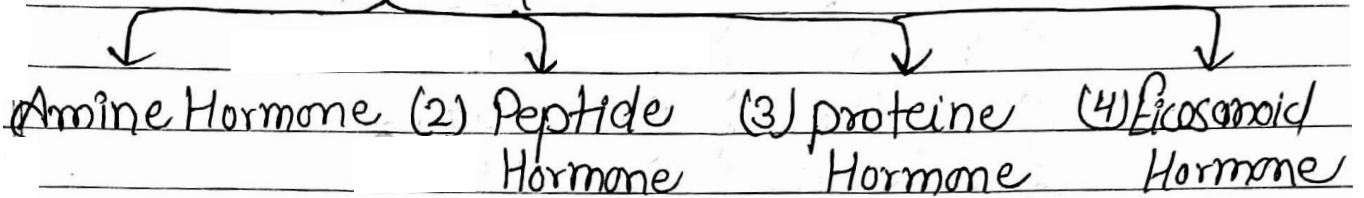
(7) vitamin D (Cholecalciferol)

(iii) Nitric-oxide gas (NO)  $\Rightarrow$  Secrete

function  $\rightarrow$  vasodilation

(1) Endothelial of Blood capillary vessels

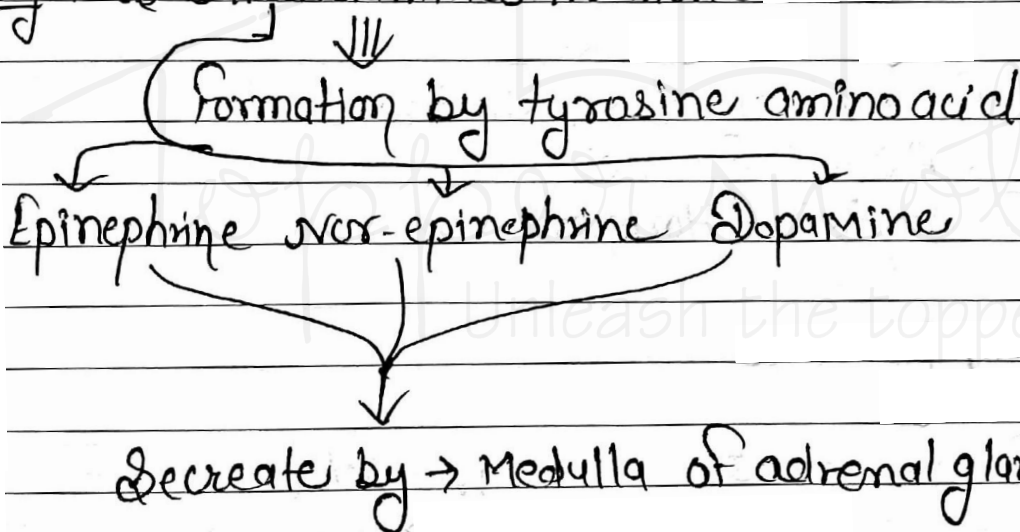
## Water-Soluble Hormone



### Amine Hormone ⇒

Due to  $\text{NH}_2$  (Amino group)

Eg → (a) Catecholamines Hormone



(b) Histamine ⇒

formed by Histidine amino acid

from by Basophil and mast cell

(c) Serotonine and melatonin

formed by ~~try~~ tryptophen amino acid



⇒ Serotonine secrete by



Help

- ① Brain ⇒ Neurotransmitter
- ② platelet ⇒ Blood clotting
- ③ Intestine ⇒ Motility ↑se.

⇒ Melatonin secrete by



pineal gland

② peptide Hormone



formed by 3-49 amino acid

Eg → ADH Hormone

Oxytocine Hormone

③ protein Hormone



formed by 50-200 amino acid

Eg = "Lip" → P → Pituitary Hormone

P → parathyroid Hormone (PTH)

P → pancreas

P → placenta (except → estrogen + progesterone)

(4) Eicosanoid Hormone

This is special class of the water soluble which are derived from arachidonic acid.

If insuline <sup>↓</sup> Tab. form में होता है। tab. stomach में  
जाते हैं ही & stomach में pepsinogen destroy करता है।

Note

ADH given usually  $\Rightarrow$  injectable

<sup>↓</sup>  
avoid orally

<sup>↓</sup>  
Sc Route  
nasal spray



Toppersnotes  
Unleash the topper in you