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BIO · BIOLOGY

14. Reproduction

Official PMDC Solved Past Paper Topical Booklet · High-Yield Examination Series

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👤 2010 to 2024 Archive

📋 Boards: BUMHS, DUHS, KMU, MDCAT, NUMS, PMDC

📄 Weightage: 34% of MDCAT (68 MCQs)

Curated by Ibrahim for fellow bees. Every question in this chapter has been verified against official UHS, NUMS, SZABMU, DUHS, and KMU answer keys. Propolis cognitive autopsies are provided at the end of this booklet to explain core concepts and break down common distractor traps.

OFFICIAL SOLVED EDITION**Q1.**

UHS 2024

Fluid secreted by sertoli cells provides liquid medium, protection and nourishment to: **[UHS-2024]**

- (A) Oocyte
- (B) Sperms
- (C) Polar body
- (D) Spermatogonia

Q2.

UHS 2024

Main function of the epididymis is to: **[UHS-2024]**

- (A) Transport sperms
- (B) Connect with urethra
- (C) Produce semen
- (D) Hold the process of spermatogenesis

Q3.

UHS 2024

Immediate next stage of spermatogonia differentiation is: **[UHS-2024]**

- (A) Secondary spermatocyte
- (B) Spermatids
- (C) Primary spermatocytes
- (D) Sperms

Q4.

KMU 2024

The ____ in semen facilitate the transport of sperms. **[KMU-2024]**

- (A) Androgen
- (B) Prostaglandins
- (C) Oxytocin
- (D) Testosterone

Q5.

KMU 2024

The acidity of urine is neutralized by: **[KMU-2024]**

- (A) Cowper's gland
- (B) Prostate gland
- (C) Seminal vesicle
- (D) Vas deferens

Q6.

SZABMU 2024

In humans' testis, the spermatozoa are present in: **[SZABMU-2024]**

- (A) Seminiferous tubules
- (B) Epididymis
- (C) Sertoli cells
- (D) Interstitial cells

Q7.

SZABMU 2024

Select the mismatched pair: **[SZABMU-2024-Reconduct]**

- (A) Seminal vesicle - Junction of sperm duct and ejaculatory duct
- (B) Prostate gland - Encircles urethra
- (C) Ejaculatory duct - Enters the testis
- (D) Bulbourethral gland - Junction of ejaculatory duct and urethra

Q8.

SZABMU 2024

Pick the correct event of luteal phase/secretory phase: **[SZABMU-2024-Reconduct]**

- (A) Increased secretion of progesterone
- (B) Increased secretion of FSH
- (C) Increased secretion of LH
- (D) Increased secretion of estrogen

Q9.

SZABMU 2024

Which of the following diseases is sexually transmitted? [SZABMU-2024-Reconduct]

- (A) Tuberculosis
- (B) AIDS
- (C) Dengue fever
- (D) Cholera

Q10.

SZABMU 2024

In human males, inhibin hormone is produced by: [SZABMU-2024-Reconduct]

- (A) Leydig cells
- (B) Hensen's node cells
- (C) Sertoli cells
- (D) Interstitial cells

Q11.

UHS 2024

Female reproductive system consists of all of the followings EXCEPT: [UHS-2024]

- (A) Ovaries
- (B) Oviduct
- (C) Cervix
- (D) Seminiferous tubules

Q12.

UHS 2024

Corpus luteum during female reproductive cycle produces: [UHS-2024]

- (A) Testosterone
- (B) Follicle stimulating hormone
- (C) Luteinizing hormone
- (D) Progesterone

Q13.

UHS 2024

Due to the process of follicle atresia: [UHS-2024]

- (A) Follicles reach maximum size
- (B) Follicle degenerates
- (C) Graafian follicle ovulates
- (D) Follicle starts to mature

Q14.

KMU 2024

The corpus luteum is essentially formed from: [KMU-2024]

- (A) Graafian follicle
- (B) Ovum
- (C) Oogonium
- (D) Oocyte

Q15.

KMU 2024

The outer layer of uterus is called as: [KMU-2024]

- (A) Endometrium
- (B) Myometrium
- (C) Mesometrium
- (D) Perimetrium

Q16.

SZABMU 2024

Which of the following gives rise to first polar body? [SZABMU-2024]

- (A) Oogonium
- (B) Oocyte
- (C) Primary oocyte
- (D) Secondary oocyte

Q17.

SZABMU 2024

The ovulation in human females takes place on: [SZABMU-2024]

- (A) 6th day after first day of menstruation
- (B) 10th day after first day of menstruation
- (C) 14th day after first day of menstruation
- (D) 27th day after first day of menstruation

Q18.

NUMS 2024

Choose the mismatched pair: [NUMS-2024]

- (A) Graafian follicle – Progesterone
- (B) ICSH – Interstitial cell
- (C) Estrogen – Inhibits FSH
- (D) LH – Ovulation

Q19.

NUMS 2024

If reproductive cycle of a female starts on 10th of July, the ovulation is most likely to occur on: [NUMS-2024]

- (A) 1st august
- (B) 28th of July
- (C) 24th of July
- (D) 5th August

Q20.

NUMS 2024

Which of the following would be produced as a result of reduction division during gametogenesis? [NUMS-2024]

- (A) Oogonium
- (B) Primary oocyte
- (C) Primary spermatocyte
- (D) Secondary oocyte

Q21.

KMU 2024

_____ is spread through sexual contact. [KMU–2024]

- (A) Gonorrhea
- (B) Influenza
- (C) Tuberculosis
- (D) Typhoid

Q22.

SZABMU 2024

Which of the following STD affect T_4 lymphocytes?
[SZABMU–2024]

- (A) AIDS
- (B) Syphilis
- (C) Genital Herpes
- (D) Gonorrhea

Q23.

UHS 2024

Which one of the following hormones is responsible for the labor pains in human female at the time of birth of baby? [UHS–2024]

- (A) Estrogen
- (B) Progesterone
- (C) Oxytocin
- (D) Corticosteroid

Q24.

UHS 2023

The function of hyaluronidase enzyme is: [UHS–2023]

- (A) Penetration of the sperm into the ovum
- (B) Entrance of sperm into the vagina
- (C) Entrance of the sperm into the fallopian tube
- (D) Inactivation of sperms after their failure to fertilize ovum

Q25.

SZABMU 2023

In human males, inhibin hormone is produced by:
[SZABMU–2023]

- (A) Leydig cells
- (B) Hensen's node cells
- (C) Sertoli cells
- (D) Interstitial cells

Q26.

KMU 2023

The testes are male gonads which are situated outside the abdomen within a skin pouch called:
[ETEA–2023]

- (A) Vas deferens
- (B) Epididymis
- (C) Scrotum
- (D) Vasa efferentia

Q27.

NUMS 2023

Leydig cells are responsible for: [NUMS–2023]

- (A) Testosterone production
- (B) FSH production
- (C) Sperm production
- (D) Testosterone inhibition

Q28.

KMU 2023

Which among the following is not the role of Sertoli cells? [ETEA–2023 Retake]

- (A) Protect sperms
- (B) Provide liquid medium to sperms
- (C) Provide nourishment to sperms
- (D) Secrete testosterone

Q29.

UHS 2023

The term menopause means: [UHS–2023]

- (A) Start of menstruation
- (B) Start of ovulation
- (C) Stop of ova production
- (D) Degeneration of ovaries

Q30.

UHS 2023

In human females, what is the small, pear-shaped, muscular, distensible, sac-like organ where gestation takes place? [UHS–2023]

- (A) Uterus
- (B) Kidney
- (C) Fallopian tube
- (D) Stomach

Q31.

UHS 2023

The labour pains to expel fetus are due to action of oxytocin on: [UHS–2023]

- (A) Endometrium
- (B) Perimetrium
- (C) Myometrium
- (D) Ovaries

Q32.

SZABMU 2023

Which function is not directly performed by ovaries?
[SZABMU–2023]

- (A) Progesterone production
- (B) Estrogen production
- (C) Ovulation
- (D) hCG production

Q33.

SZABMU 2023

During menstrual cycle, after the female gamete is released from the ovary at ovulation, the remains of the follicle (corpus luteum) secretes: [SZABMU-2023]

- (A) FSH
- (B) LH
- (C) Testosterone
- (D) Progesterone

Q34.

KMU 2023

Fallopian tube is also known as: [ETEA-2023]

- (A) Oviduct
- (B) Ovaries
- (C) Uterus
- (D) Cervix

Q35.

NUMS 2023

Which hormone induces labour pain? [NUMS-2023]

- (A) Estrogen
- (B) Oxytocin
- (C) Progesterone
- (D) LH

Q36.

NUMS 2023

The estrogen hormone secretion during the oogenesis is stimulated by: [NUMS-2023]

- (A) Luteinizing hormone
- (B) Inhibin hormone
- (C) Follicle stimulating hormone
- (D) Testosterone hormone

Q37.

NUMS 2023

Which of the following hormones of pituitary gland regulate the menstrual cycle? [NUMS-2023]

- (A) Follicle stimulating hormone and estrogen
- (B) Luteinizing hormone and estrogen
- (C) Follicle stimulating hormone and luteinizing hormone
- (D) Estrogen and progesterone

Q38.

KMU 2023

At the beginning of the menstrual phase, the ____ are at the lowest level. [ETEA-2023 Retake]

- (A) Follicle stimulating hormone
- (B) Gonadotropins
- (C) Ovarian hormones
- (D) None of these

Q39.

KMU 2023

The syphilis is a ____ disease. [ETEA-2023]

- (A) Bacterial
- (B) Fungal
- (C) Protozoic
- (D) Viral

Q40.

KMU 2023

The most common symptom of gonorrhea in males is: [ETEA-2023]

- (A) Skin rash on neck
- (B) Joint pain
- (C) Painful urination
- (D) Chancre

Q41.

KMU 2023

The incubation period of syphilis is: [ETEA-2023 Retake]

- (A) 1-2 weeks
- (B) 2-3 weeks
- (C) 3-4 weeks
- (D) 07 days

Q42.

UHS 2022

Each human testis is divided into: [UHS-2022]

- (A) 50-100 lobules
- (B) 150-200 lobules
- (C) 200-300 lobules
- (D) 250-300 lobules

Q43.

NUMS 2022

In male reproductive system, the hormone involved in regulation of rate of spermatogenesis is called: [NUMS-2022]

- (A) Luteinizing hormone
- (B) Follicle stimulating hormone
- (C) Testosterone
- (D) Inhibin

Q44.

KMU 2022

The process of spermatogenesis (formation of sperm) takes place in which part of male reproductive system? [ETEA-2022]

- (A) Urethra
- (B) Seminiferous tubules
- (C) Oviduct
- (D) Epididymis

Q45.

KMU 2022

Which one of the following cells have haploid number of chromosomes? [ETEA-2022]

- (A) Sperm cell
- (B) Mesophyll cell
- (C) Skin cell
- (D) Muscular cell

Q46.

KMU 2022

The terminal portion of the male reproductive duct system is: [ETEA-2022]

- (A) Vasa efferentia
- (B) Vasa deferens
- (C) Urethra
- (D) Epididymis

Q47.

BUMHS 2022

Average sperm count per ml is: [BUMHS-2022]

- (A) 2-10 million
- (B) 20-150 thousand
- (C) 20-150 million
- (D) 2-10 thousand

Q48.

DUHS 2022

Uterus opens to the vagina by a narrow opening bounded by muscular sphincter at its bottom known as: [DUHS-2022]

- (A) Urinary bladder
- (B) Cervix
- (C) Oviduct
- (D) Labia

Q49.

UHS 2022

Level of luteinizing hormone (LH) is maximum in blood during which stage of menstrual cycle? [UHS-2022]

- (A) Menstrual stage
- (B) Proliferative stage
- (C) Ovulation stage
- (D) Secretory stage

Q50.

NUMS 2022

During menstrual cycle, after the female gamete is release from the ovary (ovulation), the remains of the follicle secretes: [NUMS-2022]

- (A) Progesterone
- (B) FSH
- (C) LH
- (D) Testosterone

Q51.

NUMS 2022

Normal gestation period in human is about ____ days. [NUMS-2022]

- (A) 300-320
- (B) 320-350
- (C) 270-280
- (D) 240-250

Q52.

SZABMU 2022

After fertilization zygote takes ____ for its journey from fallopian tube to uterus. [SZABMU-2022]

- (A) 6-7 days
- (B) 3-6 days
- (C) 10-12 days
- (D) 12-15 days

Q53.

KMU 2022

The longest phase of the menstrual cycle is: [ETEA-2022]

- (A) Pre-ovulatory phase
- (B) Secretary phase
- (C) Ovulatory phase
- (D) Menstrual phase

Q54.

BUMHS 2022

Corpus luteum secretes the hormones: [BUMHS-2022]

- (A) Testosterone
- (B) Parathormone
- (C) Oxytocin
- (D) Progesterone

Q55.

DUHS 2022

The vacated vesicular follicle forms a fatty yellow structure on ovary called as: [DUHS-2022]

- (A) Graafian luteum
- (B) Corpus luteum
- (C) Ruptured ovum
- (D) Follicle

Q56.

BUMHS 2022

Treponema pallidum is the causative organism for which disease? [BUMHS-2022]

- (A) Gonorrhea
- (B) Syphilis
- (C) AIDS
- (D) Diabetes

Q57.

PMDC 2020

Which one of the following represents the changes that occur in the ovary and the uterus approximately every 28 days involving ovulation with the breakdown and loss of the lining of the uterus? [PMC-2020]

- (A) Ovulation
- (B) Uterine cycle
- (C) Menstrual cycle
- (D) Embryo formation

Q58.

PMDC 2020

Which of the following hormones of the pituitary gland regulate the menstrual cycle? [PMC-2020]

- (A) Follicle stimulating hormone and estrogen
- (B) Luteinizing hormone and estrogen
- (C) Follicle stimulating hormone and Luteinizing hormone
- (D) Estrogen and progesterone

Q59.

MDCAT 2019

During spermatogenesis, the ____ which are haploid cells eventually mature into spermatozoa/mature sperms? [MDCAT-2019]

- (A) Secondary spermatocytes
- (B) Spermatogonia
- (C) Primary spermatocytes
- (D) Spermatids

Q60.

MDCAT 2019

Which hormonal pair would maintain the endometrium and make it receptive for implantation of embryo? [MDCAT-2019]

- (A) Luteinizing Hormone and Progesterone
- (B) Estrogen and Follicle Stimulating Hormone
- (C) Luteinizing Hormone and Follicle Stimulating Hormone
- (D) Estrogen and Progesterone

Q61.

MDCAT 2019

Which of the following hormone stimulates the ovulation from the follicle into oviduct? [MDCAT-2019]

- (A) Luteinizing hormone
- (B) Estrogen
- (C) Follicle stimulating hormone
- (D) Progesterone

Q62.

SZABMU 2019

On the onset of puberty in the females, the pituitary gland releases the: [AJK-2019]

- (A) Progesterone
- (B) Luteinizing hormone
- (C) Oxytocin
- (D) Follicle stimulating hormone

Q63.

SZABMU 2019

Secretion of FSH is inhibited by: [AJK-2019]

- (A) Testosterone
- (B) Estrogen
- (C) Aldosterone
- (D) LH

Q64.

KMU 2019

Progesterone is secreted by: [ETEA-2019]

- (A) Ripening follicles
- (B) Corpus luteum
- (C) Uterine epithelium
- (D) Fertilized egg

Q65.

MDCAT 2018

Which hormone is released in female in response to FSH from pituitary gland? [MDCAT-2018]

- (A) Oxytocin
- (B) Estrogen
- (C) ADH
- (D) Progesterone

Q66.

MDCAT 2018

Which of the following hormone acts on the uterus wall for thickening? [MDCAT-2018]

- (A) Zona pellucida
- (B) Oxytocin
- (C) Progesterone
- (D) Follicle stimulating hormone

Q67.

MDCAT 2017

FSH stimulates the production of estrogen hormone which has two targets ____ and ____ [MDCAT-2017]

- (A) Uterus, posterior pituitary
- (B) Uterus, anterior pituitary
- (C) Ovaries, uterus
- (D) Ovaries, hypothalamus

Q68.

MDCAT 2017

Which of the following hormone suppresses ovulation? [MDCAT-2017]

- (A) Progesterone
- (B) FSH
- (C) Insulin
- (D) Prolactin

Q69.

MDCAT 2017

Which of the following hormone causes ovulation? [MDCAT-2017]

- (A) LH
- (B) Estrogen
- (C) Progesterone
- (D) FSH

Q70.

MDCAT 2016

Events of menstrual cycle are regulated by the: [MDCAT-2016]

- (A) Ethylene
- (B) Auxins
- (C) Gonadotrophins
- (D) Gibberellins

Q71.

MDCAT 2016

Decrease of FSH and increase of estrogen cause pituitary gland to secrete: [MDCAT-2016]

- (A) Somatotrophin
- (B) Testosterone
- (C) Luteinizing hormone
- (D) Spermatogonium

Q72.

MDCAT 2015

In females, FSH stimulates the ovary to produce: [MDCAT-2015]

- (A) Progesterone
- (B) Prolactin
- (C) Estrogen
- (D) Oxytocin

Q73.

MDCAT 2015

The oocyte released during ovulation is in: [MDCAT-2015]

- (A) Anaphase I
- (B) Metaphase I
- (C) Prophase I
- (D) Metaphase II

Q74.

MDCAT 2015

In which phase of human female menstrual cycle, endometrium prepares for the implantation of embryo? [MDCAT-2015]

- (A) Proliferative phase
- (B) Menstrual phase
- (C) Secretory phase
- (D) Ovulation phase

Q75.

MDCAT 2014

Yellowish glandular structure formed after the release of egg from follicle is called: [MDCAT-2014]

- (A) Corpus callosum
- (B) Corpus luteum
- (C) Graffian follicle
- (D) Follicle atresia

Q76.

MDCAT 2014

On puberty, the development of primary follicles is stimulated by: [MDCAT-2014]

- (A) ICSH
- (B) LH
- (C) FSH
- (D) Estrogen

Q77.

MDCAT 2013

What is the location of interstitial cells in testes? [MDCAT-2013]

- (A) Inside the seminiferous tubules
- (B) Among the germinal epithelial cells
- (C) Around the testes
- (D) Between the seminiferous tubule

Q78.

MDCAT 2013

Spermatogonia differentiate directly into: [MDCAT-2013]

- (A) Primary spermatocytes
- (B) Spermatozoa
- (C) Secondary spermatocytes
- (D) Spermatids

Q79.

MDCAT 2011

A type of cell in human testes which produces testosterone is called: [MDCAT-2011, 2013]

- (A) Sertoli cells
- (B) Germ cells
- (C) Spermatocytes
- (D) Interstitial cells

Q80.

MDCAT 2011

Which one of the following differentiates directly into mature sperm? [MDCAT–2011]

- (A) Primary spermatocyte
 - (B) Spermatid
 - (C) Spermatogonia
 - (D) Secondary spermatocyte
-

Q81.

MDCAT 2010

The first cells produced by the repeated cell division of germinal epithelium of testis are: [MDCAT–2010]

- (A) Interstitial cells
 - (B) Secondary spermatocytes
 - (C) Spermatogonia
 - (D) Spermatids
-

RAPID 5–COLUMN ANSWER KEY

Official PMDC verified answer keys for 14. Reproduction.

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Q#	KEY	BOARD	Q#	KEY	BOARD	Q#	KEY	BOARD	Q#	KEY	BOARD	Q#	KEY	BOARD
1	B	UHS 2024	18	A	NUMS 2024	35	B	NUMS 2023	52	B	SZABMU 2022	69	A	MDCAT 2017
2	A	UHS 2024	19	C	NUMS 2024	36	C	NUMS 2023	53	B	KMU 2022	70	C	MDCAT 2016
3	C	UHS 2024	20	D	NUMS 2024	37	C	NUMS 2023	54	D	BUMHS 2022	71	C	MDCAT 2016
4	B	KMU 2024	21	A	KMU 2024	38	C	KMU 2023	55	B	DUHS 2022	72	C	MDCAT 2015
5	A	KMU 2024	22	A	SZABMU 2024	39	A	KMU 2023	56	B	BUMHS 2022	73	D	MDCAT 2015
6	B	SZABMU 2024	23	C	UHS 2024	40	C	KMU 2023	57	C	PMDC 2020	74	C	MDCAT 2015
7	C	SZABMU 2024	24	A	UHS 2023	41	B	KMU 2023	58	C	PMDC 2020	75	B	MDCAT 2014
8	A	SZABMU 2024	25	C	SZABMU 2023	42	D	UHS 2022	59	D	MDCAT 2019	76	C	MDCAT 2014
9	B	SZABMU 2024	26	C	KMU 2023	43	D	NUMS 2022	60	D	MDCAT 2019	77	D	MDCAT 2013
10	C	SZABMU 2024	27	A	NUMS 2023	44	B	KMU 2022	61	A	MDCAT 2019	78	A	MDCAT 2013
11	D	UHS 2024	28	D	KMU 2023	45	A	KMU 2022	62	D	SZABMU 2019	79	D	MDCAT 2011
12	D	UHS 2024	29	C	UHS 2023	46	C	KMU 2022	63	B	SZABMU 2019	80	B	MDCAT 2011
13	B	UHS 2024	30	A	UHS 2023	47	C	BUMHS 2022	64	B	KMU 2019	81	C	MDCAT 2010
14	A	KMU 2024	31	C	UHS 2023	48	B	DUHS 2022	65	B	MDCAT 2018			
15	D	KMU 2024	32	D	SZABMU 2023	49	C	UHS 2022	66	C	MDCAT 2018			
16	C	SZABMU 2024	33	D	SZABMU 2023	50	A	NUMS 2022	67	C	MDCAT 2017			
17	C	SZABMU 2024	34	A	KMU 2023	51	C	NUMS 2022	68	A	MDCAT 2017			

TOTAL
MCQS
81

CORRECT

INCORRECT

BLANK

ACCURACY

%

Scan the booklet QR code to enter answers in
BeambePrep Grind Mode for automated error
autopsies.

PROPOLIS COGNITIVE ERROR AUTOPSIES

Step-by-step conceptual derivations, formula working, and distractor autopsies for every question.

Question #1 Key: (B)

UHS 2024

Fluid secreted by sertoli cells provides liquid medium, protection and nourishment to: [UHS-2024]

CORE CONCEPT AND DERIVATION

Sertoli cells act as "nurse cells" to shepherd the development of male gametes in the harsh internal environment of the testes.

Solution:

- Within the seminiferous tubules, spermatogonia undergo meiosis and differentiation to become mature gametes.
- The **Sertoli cells** surround these developing cells, providing a protective blood-testis barrier, secreting fructose-rich fluids for nourishment, and establishing a liquid medium.
- Ultimately, this entire supportive architecture is designed to nourish and protect the developing **sperms** (spermatozoa).

Why other options are incorrect:

Oocytes and polar bodies belong exclusively to female oogenesis. While spermatogonia are present, the functional target of this protection and eventual transport medium is the fully differentiated sperms.

Question #2 Key: (A)

UHS 2024

Main function of the epididymis is to: [UHS-2024]

CORE CONCEPT AND DERIVATION

Once sperm leave the seminiferous tubules, they are structurally complete but functionally immature.

Solution:

- The **epididymis** is a highly coiled tube situated on the posterior of the testis.
- Its primary functions are the storage, maturation (gaining motility), and **transport of sperms** from the testis to the vas deferens.
- During their transport through this long, coiled tube, sperm undergo biochemical changes allowing them to eventually swim and fertilize an egg.

Why other options are incorrect:

Semen is produced by accessory glands (seminal vesicles, prostate), not the epididymis. The vas deferens connects to the urethra via the ejaculatory duct. Spermatogenesis occurs strictly in the seminiferous tubules.

Question #3 Key: (C)

UHS 2024

Immediate next stage of spermatogonia differentiation is: [UHS-2024]

CORE CONCEPT AND DERIVATION

Spermatogenesis follows a strict sequence of mitotic and meiotic cell state changes.

Solution:

- Spermatogonia are diploid stem cells located at the basement membrane of the seminiferous tubule.
- When a Type B spermatogonium commits to differentiation, it undergoes a period of growth and enlarges.
- This direct morphological change, prior to any meiotic division, transforms it into a diploid **primary spermatocyte**.

Why other options are incorrect:

Secondary spermatocytes are formed *after* the primary spermatocyte completes Meiosis I. Spermatids and sperms appear even later in the pathway.

Question #4 Key: (B)

KMU 2024

The ____ in semen facilitate the transport of sperms. [KMU-2024]

CORE CONCEPT AND DERIVATION

Semen is not just a vehicle for sperm; it contains bioactive molecules that actively manipulate the female reproductive tract.

Solution:

- The seminal vesicles contribute about 60% of the seminal fluid volume.
- This fluid contains **prostaglandins**.
- Upon entering the female reproductive tract, prostaglandins stimulate reverse peristaltic contractions in the smooth muscles of the uterus and fallopian tubes. These contractions actively **facilitate the transport of sperms** upward toward the egg.

Why other options are incorrect:

Androgens and testosterone are primarily blood-borne systemic hormones. Oxytocin causes uterine contractions but is released by the female's posterior pituitary, it is not the active agent delivered within semen.

Question #5 Key: (A)

KMU 2024

The acidity of urine is neutralized by: [KMU-2024]

CORE CONCEPT AND DERIVATION

Sperm are highly sensitive to acidic environments, which can destroy their motility and viability.

Solution:

- Because the urethra is shared by both the excretory and reproductive systems in males, residual urine leaves the urethral tract dangerously acidic.
- Prior to ejaculation, the **Cowper's glands** (bulbourethral glands) secrete a clear, viscous, alkaline mucus.
- This fluid flushes the urethra, effectively **neutralizing the acidity** of any lingering urine and providing a safe, lubricated pathway for the sperm that follow.

Why other options are incorrect:

While prostatic fluid is slightly acidic to neutral and seminal vesicle fluid is alkaline, the Cowper's gland is historically and functionally the *first* responder specifically responsible for "pre-ejaculatory" urethral neutralization.

Question #6 Key: (B)

SZABMU 2024

In humans' testis, the spermatozoa are present in: [SZABMU-2024]

CORE CONCEPT AND DERIVATION

Although generated in the tubules, structurally mature sperm (spermatozoa) are primarily stored in a specialized duct system.

Solution:

- Spermatogenesis produces spermatids, which undergo spermiogenesis inside the seminiferous tubules.
- However, these cells are swept out of the testis almost immediately once fully formed.
- They arrive in the **epididymis** (a structure tightly coiled against the testis), where the vast majority of **mature spermatozoa** are actually stored, concentrated, and acquire motility until ejaculation.

Why other options are incorrect:

Seminiferous tubules primarily contain *developing* stages (spermatocytes, spermatids). Interstitial cells are outside the tubules. Sertoli cells nurse the sperm but don't store the final spermatozoa payload.

Question #7 **Key: (C)**

SZABMU 2024

Select the mismatched pair: [SZABMU-2024-Reconduct]

CORE CONCEPT AND DERIVATION

The male reproductive tract is a one-way path from the testes leading outwards.

Solution:

- Let's evaluate the anatomy of the ducts:
- The vas deferens leaves the testis. It merges with the duct of the seminal vesicle to form the **ejaculatory duct**.
- This ejaculatory duct then passes through the prostate and **enters the urethra**.
- Therefore, the statement that the ejaculatory duct "enters the testis" is completely backward anatomically, making it the **mismatched pair**.

Why other options are incorrect:

The seminal vesicle merges to form the ejaculatory duct. The prostate gland classically encircles the upper portion of the urethra. The bulbourethral (Cowper's) glands sit below the prostate near the urethral junction.

Question #8 **Key: (A)**

SZABMU 2024

Pick the correct event of luteal phase/secretory phase: [SZABMU-2024-Reconduct]

CORE CONCEPT AND DERIVATION

The defining characteristic of the second half of the menstrual cycle is uterine preparation for pregnancy.

Solution:

- The luteal phase corresponds directly to the secretory phase in the uterus.
- During this time, the corpus luteum dominates ovarian function.
- Its primary physiological action is the **increased secretion of progesterone**, which halts endometrial growth and stimulates the uterine glands to secrete glycogen-rich fluids.

Why other options are incorrect:

FSH and LH are suppressed by negative feedback during the luteal phase. While estrogen is secreted, its major peak occurs during the preceding follicular/proliferative phase, making progesterone the defining "increased" hormone of the luteal phase.

Question #9 **Key: (B)**

SZABMU 2024

Which of the following diseases is sexually transmitted? [SZABMU-2024-Reconduct]

CORE CONCEPT AND DERIVATION

Pathogens are classified by their primary vectors and modes of transmission (e.g., airborne, waterborne, bloodborne/sexual).

Solution:

- **AIDS (Acquired Immunodeficiency Syndrome)** is caused by the Human Immunodeficiency Virus (HIV).
- HIV is transmitted through the direct exchange of bodily fluids, most commonly via unprotected sexual contact, making it a classic **sexually transmitted disease (STD)**.

Why other options are incorrect:

Tuberculosis is transmitted via airborne respiratory droplets. Dengue fever is transmitted by mosquito vectors. Cholera is a waterborne intestinal infection.

Question #10 Key: (C)

SZABMU 2024

In human males, inhibin hormone is produced by: [SZABMU-2024-Reconduct]

CORE CONCEPT AND DERIVATION

The testis utilizes a specialized negative feedback mechanism to prevent the overproduction of sperm.

Solution:

- Inside the seminiferous tubules, **Sertoli cells** facilitate sperm maturation.
- When the rate of spermatogenesis is too high, these **Sertoli cells** release a peptide hormone called **inhibin**.
- Inhibin travels to the anterior pituitary and specifically suppresses the release of FSH, slowing down sperm production.

Why other options are incorrect:

Leydig cells (also called interstitial cells) produce testosterone, which feeds back to inhibit LH, not primarily FSH. Hensen's node is an embryonic organizer structure.

Question #11 Key: (D)

UHS 2024

Female reproductive system consists of all of the followings EXCEPT: [UHS-2024]

CORE CONCEPT AND DERIVATION

Male and female reproductive systems utilize completely distinct anatomical sites for gametogenesis.

Solution:

- The female reproductive system includes the ovaries (gamete production), oviducts (fertilization site), uterus, cervix, and vagina.
- **Seminiferous tubules** are the structural and functional units of the testes, exclusively responsible for spermatogenesis. They are unequivocally a part of the **male** reproductive system.

Why other options are incorrect:

Ovaries, oviduct, and cervix are all defining anatomical structures of the human female reproductive tract.

Question #12 Key: (D)

UHS 2024

Corpus luteum during female reproductive cycle produces: [UHS-2024]

CORE CONCEPT AND DERIVATION

The corpus luteum acts as a vital bridge, maintaining the uterine environment until a placenta can form.

Solution:

- After releasing the ovum, the empty follicle undergoes a structural change induced by LH to become the corpus luteum.
- The primary endocrine function of the corpus luteum is to mass-produce **progesterone**.
- This progesterone keeps the uterine lining intact and highly secretory, preventing menstruation while waiting for potential embryo implantation.

Why other options are incorrect:

FSH and LH are pituitary hormones. Testosterone is a male hormone. While the corpus luteum produces minor amounts of estrogen, **progesterone** is its dominant and most critical product.

Question #13 Key: (B)

UHS 2024

Due to the process of follicle atresia: [UHS-2024]

CORE CONCEPT AND DERIVATION

Ovarian resource management is ruthless; only one follicle is typically allowed to survive each cycle.

Solution:

- At the start of the cycle, FSH stimulates several primary follicles to begin growing simultaneously.
- However, as estrogen levels rise, FSH is suppressed. The largest, most advanced follicle survives this drop in FSH (becoming the dominant Graafian follicle).
- The remaining cohort of developing follicles, starved of FSH, undergo programmed cell death (apoptosis) and **degenerate**. This process of follicular death is termed **follicle atresia**.

Why other options are incorrect:

Atresia is literally the biological term for degeneration/death. Reaching maximum size, maturing, and ovulating are the exact opposites of atresia.

Question #14 Key: (A)

KMU 2024

The corpus luteum is essentially formed from: [KMU-2024]

CORE CONCEPT AND DERIVATION

The corpus luteum is a recycled structure created from the leftover casing of the egg.

Solution:

- The fully mature, fluid-filled follicle just prior to ovulation is known as the **Graafian follicle**.
- During ovulation, the Graafian follicle bursts and ejects the secondary oocyte.
- The remaining granulosa and theca cells of the ruptured **Graafian follicle** collapse and undergo luteinization under the influence of LH, officially transforming into the corpus luteum.

Why other options are incorrect:

The ovum/oocyte is the egg ejected from the follicle. The oogonium is the primordial stem cell. None of these cellular targets form the glandular corpus luteum.

Question #15 Key: (D)

KMU 2024

The outer layer of uterus is called as: [KMU-2024]

CORE CONCEPT AND DERIVATION

The uterine wall is composed of three distinct functional layers.

Solution:

- The prefix often indicates the position of the anatomical layer relative to the organ.
- Endometrium (Endo = inside): The inner mucosal layer shed during menstruation.
- Myometrium (Myo = muscle): The thick, middle smooth muscle layer responsible for contractions.
- **Perimetrium** (Peri = around/outer): The thin, outermost serous layer derived from the visceral peritoneum that wraps and protects the uterus.

Why other options are incorrect:

As explained above, endo- implies inner, and myo- implies middle muscular. Mesometrium is a broad ligament portion supporting the uterus, not a wall layer itself.

Question #16 Key: (C)

SZABMU 2024

Which of the following gives rise to first polar body? [SZABMU-2024]

CORE CONCEPT AND DERIVATION

Oogenesis utilizes highly unequal cytokinesis to preserve cytoplasm for the viable ovum.

Solution:

- A diploid **primary oocyte** undergoes Meiosis I.
- To ensure the resulting egg has enough nutrients and machinery to support an early embryo, the cell divides its cytoplasm highly unequally.
- It produces one large secondary oocyte and one tiny, non-functional cell consisting mostly of genetic waste, called the **first polar body**.

Why other options are incorrect:

The secondary oocyte undergoes Meiosis II to produce the second polar body. Oogonia only undergo mitosis to become primary oocytes.

Question #17 Key: (C)

SZABMU 2024

The ovulation in human females takes place on: [SZABMU-2024]

CORE CONCEPT AND DERIVATION

Clinical calculations for the menstrual cycle always begin with Day 1 as the first day of bleeding.

Solution:

- In a standardized, idealized 28-day menstrual cycle, the follicular phase lasts approximately two weeks.
- Driven by the mid-cycle LH surge, the Graafian follicle ruptures.
- This event, ovulation, reliably occurs right in the middle of the cycle, which is the **14th day after the first day of menstruation**.

Why other options are incorrect:

Days 6–10 are part of the follicular/proliferative phase where the follicle is still growing. Day 27 is the very end of the luteal phase, just prior to the onset of the next menses.

Question #18 Key: (A)

NUMS 2024

Choose the mismatched pair: [NUMS-2024]

CORE CONCEPT AND DERIVATION

Hormone production shifts entirely based on the pre- vs. post-ovulatory state of the follicle.

Solution:

- Let's analyze the pairs:
- **A. Graafian follicle – Progesterone:** This is **MISMATCHED**. The Graafian (pre-ovulatory) follicle primarily secretes estrogen. It only begins secreting progesterone *after* it ruptures and transforms into the corpus luteum.
- B. ICSH stimulates interstitial cells to produce testosterone. (Correct pair)
- C. Estrogen provides negative feedback to inhibit FSH. (Correct pair)
- D. LH surge triggers ovulation. (Correct pair)

Why other options are incorrect:

Because options B, C, and D represent factual, core biological relationships, option A is the only biologically incorrect association.

Question #19 Key: (C)

NUMS 2024

If reproductive cycle of a female starts on 10th of July, the ovulation is most likely to occur on: [NUMS-2024...]

CORE CONCEPT AND DERIVATION

Mathematical calculation of cycle events relies on adding the standard follicular phase duration to the onset date.

Solution:

- The reproductive cycle "starts" on Day 1, which corresponds to July 10th.
- In a normal 28-day cycle, ovulation occurs on exactly Day 14.
- To calculate the date: $10 + 14 = 24$.
- Therefore, ovulation is most likely to occur on the **24th of July**.

Why other options are incorrect:

July 28th would be Day 18. August dates would push deep into the luteal phase or the next menstrual cycle.

Question #20 Key: (D)

NUMS 2024

Which of the following would be produced as a result of reduction division during gametogenesis? [NUMS-2024]

CORE CONCEPT AND DERIVATION

Reduction division refers specifically to Meiosis I, where homologous chromosomes are separated to cut the ploidy level in half (diploid to haploid).

Solution:

- Oogonia and primary spermatocytes/oocytes are all diploid ($2n$) and are produced via mitosis or growth, not reduction.
- A primary oocyte undergoes Meiosis I (the **reduction division**).
- This division physically results in two haploid (n) cells: a tiny first polar body and a large **secondary oocyte**.

Why other options are incorrect:

Primary oocytes and spermatocytes are the *substrates* entering the reduction division, not the products. Oogonia are stem cells that have never entered meiosis.

Question #21 Key: (A)

KMU 2024

_____ is spread through sexual contact. [KMU-2024]

CORE CONCEPT AND DERIVATION

Infectious diseases are categorized strictly by their epidemiological transmission vectors.

Solution:

- **Gonorrhea** is caused by the bacterium *Neisseria gonorrhoeae*, which targets the mucous membranes of the reproductive tract.
- Because it survives poorly outside the body, it requires direct mucosa-to-mucosa transfer, making it a classic disease spread almost exclusively through **sexual contact**.

Why other options are incorrect:

Influenza (flu) is viral and spread via airborne respiratory droplets. Tuberculosis (TB) is bacterial and spread via airborne droplets. Typhoid is bacterial and spread via the fecal-oral route (contaminated food/water).

Question #22 Key: (A)

SZABMU 2024

Which of the following STD affect [Formula] lymphocytes? [SZABMU-2024]

CORE CONCEPT AND DERIVATION

Certain viruses are highly specific, possessing surface proteins that bind only to specific receptors on human immune cells.

Solution:

- **AIDS** (Acquired Immunodeficiency Syndrome) is the late-stage disease caused by HIV.
- HIV specifically uses the CD4 receptor to enter host cells.
- The primary cells expressing this receptor are helper T-cells, historically referred to as T_4 **lymphocytes** (or $CD4^+$ T-cells). The progressive destruction of these T_4 cells leads to systemic immune failure.

Why other options are incorrect:

Syphilis, Genital Herpes, and Gonorrhea primarily target epithelial cells and mucous membranes in the urogenital tract. They do not specifically infect or systematically destroy T_4 lymphocytes.

Question #23 Key: (C)

UHS 2024

Which one of the following hormones is responsible for the labor pains in human female at the time of birth of...

CORE CONCEPT AND DERIVATION

Labor requires the sudden, forceful activation of uterine musculature via neuroendocrine signals.

Solution:

- As a pregnancy reaches full term, the posterior pituitary releases massive amounts of the peptide hormone **oxytocin**.
- Oxytocin acts directly on the myometrium of the uterus, initiating intense, wave-like contractions to push the fetus toward the cervix.
- These violent muscular contractions are the direct physiological cause of **labor pains**.

Why other options are incorrect:

Estrogen upregulates oxytocin receptors but doesn't cause the contractions directly. Progesterone actively prevents contractions. Corticosteroids are involved in fetal lung maturation and maternal stress, not the immediate induction of mechanical labor.

Question #24 Key: (A)

UHS 2023

The function of hyaluronidase enzyme is: [UHS-2023]

CORE CONCEPT AND DERIVATION

Fertilization requires the sperm to chemically dissolve barriers surrounding the mammalian egg.

Solution:

- The head of a mature sperm contains an organelle called the acrosome, which is packed with digestive enzymes.
- Upon reaching the egg, the acrosome releases **hyaluronidase**.
- This enzyme digests the hyaluronic acid holding the cells of the corona radiata together, facilitating the **penetration of the sperm through the outer layers into the ovum**.

Why other options are incorrect:

Sperm rely on muscular contractions of the female tract and their own flagellar motility to move through the vagina and fallopian tubes, not enzymes. Enzymes are strictly for breaching the egg's direct protective layers.

Question #25 **Key: (C)**

SZABMU 2023

In human males, inhibin hormone is produced by: [SZABMU-2023]

CORE CONCEPT AND DERIVATION

Testicular function is regulated by distinct feedback mechanisms originating from its different cell types.

Solution:

- The seminiferous tubules contain "nurse" cells called **Sertoli cells** that support developing sperm.
- When the sperm count is high, these **Sertoli cells** secrete the protein hormone **inhibin**.
- Inhibin travels to the pituitary to suppress FSH secretion, acting as a negative feedback "brake" on spermatogenesis.

Why other options are incorrect:

Leydig cells (also known as interstitial cells) produce testosterone, not inhibin. Hensen's node is a structure found during early embryogenesis, unrelated to male endocrinology.

Question #26 **Key: (C)**

KMU 2023

The testes are male gonads which are situated outside the abdomen within a skin pouch called: [ETEA-2023]

CORE CONCEPT AND DERIVATION

Mammalian spermatogenesis is highly temperature-sensitive and requires an environment cooler than core body temperature.

Solution:

- To maintain optimal conditions for sperm development (around 2°C to 3°C lower than normal body temperature), the testes descend outside the abdominal cavity.
- They are housed in a specialized pendulous sac of skin and smooth muscle called the **scrotum**.

Why other options are incorrect:

Vas deferens, epididymis, and vasa efferentia are all internal tubular ducts responsible for the transport and storage of sperm, not the external protective skin pouch housing the testes.

Question #27 **Key: (A)**

NUMS 2023

Leydig cells are responsible for: [NUMS-2023]

CORE CONCEPT AND DERIVATION

Male characteristics and reproductive functions are driven by androgens synthesized in the testes.

Solution:

- **Leydig cells** (interstitial cells) are located in the spaces between the seminiferous tubules in the testes.
- When stimulated by Luteinizing Hormone (LH) from the pituitary, they synthesize and secrete androgens, primarily **testosterone**.
- Testosterone is vital for both spermatogenesis and the maintenance of secondary male sexual characteristics.

Why other options are incorrect:

FSH is produced by the anterior pituitary. Sperm production occurs within the seminiferous tubules by germ cells. Leydig cells produce testosterone, they do not inhibit it.

Question #28 **Key: (D)**

KMU 2023

Which among the following is not the role of Sertoli cells? [ETEA-2023 Retake]

CORE CONCEPT AND DERIVATION

The microenvironment inside the seminiferous tubules is managed entirely by Sertoli (nurse) cells.

Solution:

- Sertoli cells provide structural support, create the blood-testis barrier to **protect** developing sperm from the immune system, provide **nourishment**, and secrete a **liquid medium** to help transport sperm into the ducts.
- However, they **DO NOT** secrete testosterone.
- Testosterone is exclusively produced by Leydig (interstitial) cells located outside the tubules.

Why other options are incorrect:

Options A, B, and C are all scientifically accurate, primary functions of Sertoli cells. Option D is the definitive exception.

Question #29 Key: (C)

UHS 2023

The term menopause means: [UHS-2023]

CORE CONCEPT AND DERIVATION

The human female reproductive lifespan is finite, defined by the availability of a set number of ovarian follicles.

Solution:

- **Menopause** translates literally to the cessation ("pause") of the monthly cycles ("menses").
- It occurs generally between ages 45–55 when the ovaries run out of viable follicles responsive to gonadotropins.
- Consequently, ovulation ceases permanently, meaning the **stop of ova (egg) production** and the end of reproductive fertility.

Why other options are incorrect:

The start of menstruation is called menarche. The ovaries do not entirely "degenerate"; they just cease cyclic follicular maturation and dramatically reduce estrogen production.

Question #30 Key: (A)

UHS 2023

In human females, what is the small, pear-shaped, muscular, distensible, sac-like organ where gestation takes ...

CORE CONCEPT AND DERIVATION

Mammalian embryonic and fetal development requires a highly specialized, expandable organ capable of providing nourishment and eventual expulsion of the fetus.

Solution:

- The organ perfectly described by these physical characteristics is the **uterus** (womb).
- In its non-pregnant state, it is small, muscular, and pear-shaped.
- It is highly distensible (capable of expanding massively) to accommodate the growing fetus throughout the 9-month gestation period.

Why other options are incorrect:

The fallopian tube is where fertilization occurs, not full gestation (an ectopic pregnancy here is dangerous and non-viable). The kidney filters blood, and the stomach digests food.

Question #31 Key: (C)

UHS 2023

The labour pains to expel fetus are due to action of oxytocin on: [UHS-2023]

CORE CONCEPT AND DERIVATION

Childbirth (parturition) requires immense mechanical force generated by the smooth muscle layer of the uterus.

Solution:

- The wall of the uterus has three layers: perimetrium (outer), myometrium (middle, muscular), and endometrium (inner, vascular).
- During labor, the posterior pituitary releases **oxytocin**.
- Oxytocin directly binds to receptors on the smooth muscle cells of the **myometrium**, causing powerful, rhythmic contractions. These contractions manifest as labor pains and physically expel the fetus.

Why other options are incorrect:

The endometrium is the inner lining shed during menstruation. The perimetrium is just a thin serous covering. Ovaries do not possess the heavy musculature required for childbirth.

Question #32 Key: (D)

SZABMU 2023

Which function is not directly performed by ovaries? [SZABMU-2023]

CORE CONCEPT AND DERIVATION

Pregnancy relies on a baton-pass of hormonal control from maternal organs to embryonic organs.

Solution:

- The ovaries directly perform ovulation (release of the egg) and produce both estrogen (via follicles) and progesterone (via the corpus luteum).
- However, **Human Chorionic Gonadotropin (hCG)** is explicitly synthesized by the trophoblast cells of the developing embryo, and later by the fully formed **placenta**.
- hCG signals the ovary to keep the corpus luteum alive, but the ovary itself does **not** produce it.

Why other options are incorrect:

Options A, B, and C are the definitive, textbook primary functions of the human ovaries.

Question #33 Key: (D)

SZABMU 2023

During menstrual cycle, after the female gamete is released from the ovary at ovulation, the remains of the fo...

CORE CONCEPT AND DERIVATION

The post-ovulatory phase (luteal phase) is dedicated to preparing the uterus for pregnancy.

Solution:

- Once the mature follicle expels the ovum, it collapses and is modified by LH into a glandular structure called the corpus luteum.
- The primary role of this corpus luteum is to mass-produce **progesterone**.
- Progesterone maintains and vascularizes the endometrial lining, ensuring it is thick and secretory in case a fertilized embryo arrives to implant.

Why other options are incorrect:

FSH and LH are pituitary hormones. While the corpus luteum secretes some estrogen, progesterone is its primary and defining product. Testosterone is predominantly a male hormone.

Question #34 Key: (A)

KMU 2023

Fallopian tube is also known as: [ETEA-2023]

CORE CONCEPT AND DERIVATION

Anatomical structures in the reproductive system often have multiple functional or historical names.

Solution:

- The paired tubes that connect the ovaries to the uterus are responsible for catching the ovulated egg and providing a site for fertilization.
- Because they conduct the ovum (egg), they are anatomically referred to as **oviducts**.
- They are also commonly called **Fallopian tubes** or uterine tubes.

Why other options are incorrect:

Ovaries produce the eggs. The uterus is where the embryo implants and grows. The cervix is the lower, narrow opening of the uterus. None of these are alternate names for the Fallopian tube.

Question #35 Key: (B)

NUMS 2023

Which hormone induces labour pain? [NUMS-2023]

CORE CONCEPT AND DERIVATION

Parturition (childbirth) relies on a powerful positive feedback loop driven by smooth muscle contraction.

Solution:

- During labor, pressure on the cervix sends nerve impulses to the mother's brain.
- The posterior pituitary gland responds by releasing large bursts of **oxytocin**.
- Oxytocin stimulates the myometrium (uterine muscle) to contract powerfully. These intense muscular contractions are perceived as **labor pains**.

Why other options are incorrect:

Progesterone maintains pregnancy and actually *inhibits* uterine contractions. Estrogen prepares the uterus but does not cause acute labor pains. LH triggers ovulation.

Question #36 Key: (C)

NUMS 2023

The estrogen hormone secretion during the oogenesis is stimulated by: [NUMS-2023]

CORE CONCEPT AND DERIVATION

Ovarian steroid production is regulated directly by anterior pituitary gonadotropins.

Solution:

- At the start of the menstrual cycle, the anterior pituitary secretes **Follicle Stimulating Hormone (FSH)**.
- FSH targets the dormant primary follicles in the ovary, causing their granulosa cells to proliferate.
- As the follicle grows under FSH stimulation, these cells begin to actively secrete **estrogen**.

Why other options are incorrect:

LH primarily stimulates ovulation and the formation of the corpus luteum (which secretes progesterone). Inhibin suppresses FSH. Testosterone is a male androgen.

Question #37 Key: (C)

NUMS 2023

Which of the following hormones of pituitary gland regulate the menstrual cycle? [NUMS-2023]

CORE CONCEPT AND DERIVATION

The menstrual cycle is a downstream effect of brain-level endocrine control.

Solution:

- The question specifically restricts the answer to hormones originating from the **pituitary gland**.
- The anterior pituitary produces two gonadotropins: **Follicle Stimulating Hormone (FSH)** and **Luteinizing Hormone (LH)**.
- These two hormones travel to the ovaries to orchestrate the entire cycle.

Why other options are incorrect:

Estrogen and progesterone are indeed primary regulators, but they are secreted by the **ovaries**, not the pituitary gland. Any option containing them fails the anatomical condition of the question.

Question #38 Key: (C)

KMU 2023

At the beginning of the menstrual phase, the ____ are at the lowest level. [ETEA-2023 Retake]

CORE CONCEPT AND DERIVATION

Menstruation is triggered by the withdrawal of hormonal support for the endometrial lining.

Solution:

- If fertilization does not occur, the corpus luteum degenerates at the end of the secretory phase.
- This degeneration causes a dramatic crash in the levels of **ovarian hormones** (both estrogen and progesterone).
- It is precisely this bottoming out (lowest level) of ovarian hormones that triggers the shedding of the uterine lining, marking the **beginning of the menstrual phase** (Day 1).

Why other options are incorrect:

Because ovarian hormones drop, the negative feedback is lifted, meaning FSH (a gonadotropin) is actually beginning to slowly *rise* at the start of menstruation to prepare the next cohort of follicles.

Question #39 Key: (A)

KMU 2023

The syphilis is a ____ disease. [ETEA-2023]

CORE CONCEPT AND DERIVATION

Sexually transmitted infections (STIs) are classified by their pathogenic origin to determine proper treatment (e.g., antibiotics vs. antivirals).

Solution:

- Syphilis is an STI caused by the microorganism *Treponema pallidum*.
- *Treponema pallidum* is a spirochete, which is a type of spiral-shaped **bacterium**.
- Because it is a **bacterial** disease, syphilis can be effectively treated and cured with antibiotics like penicillin, especially in its early stages.

Why other options are incorrect:

It is not viral (like HIV or Herpes), fungal (like yeast infections), or protozoic (like Trichomoniasis).

Question #40 Key: (C)

KMU 2023

The most common symptom of gonorrhea in males is: [ETEA-2023]

CORE CONCEPT AND DERIVATION

Bacterial STIs heavily inflame the delicate mucous membranes of the urogenital tract.

Solution:

- Gonorrhea is caused by the bacterium *Neisseria gonorrhoeae*, which predominantly infects the urethra in males.
- This infection causes severe urethritis (inflammation of the urethra).
- Consequently, the classic and most common symptom in males is a burning sensation or intensely **painful urination**, often accompanied by a purulent (pus-like) discharge.

Why other options are incorrect:

A "chancere" (painless ulcer) is the classic first sign of Syphilis, not Gonorrhea. While disseminated gonorrhea can cause joint pain or rashes, these are advanced complications, not the *most common* initial symptom.

Question #41 Key: (B)

KMU 2023

The incubation period of syphilis is: [ETEA-2023 Retake]

CORE CONCEPT AND DERIVATION

The incubation period of a disease is the time elapsed between exposure to a pathogen and the first appearance of symptoms.

Solution:

- After an individual is infected with *Treponema pallidum* during sexual contact, the bacteria begin multiplying at the site of entry.
- It typically takes **2 to 3 weeks** (averaging around 21 days) for the primary lesion—a painless sore called a chancre—to appear.

Why other options are incorrect:

While individual times can vary slightly, standard medical textbooks universally cite the classic incubation period for primary syphilis as 2–3 weeks. 7 days is generally too fast, and a guaranteed 4 weeks is considered on the delayed end.

Question #42 Key: (D)

UHS 2022

Each human testis is divided into: [UHS-2022]

CORE CONCEPT AND DERIVATION

The internal anatomy of the testis is highly compartmentalized to maximize the surface area for sperm production.

Solution:

- The thick connective tissue capsule of the testis (tunica albuginea) sends septa inwards, dividing the testis into wedge-shaped compartments.
- Each human testis contains approximately **250 to 300 lobules**.
- Each lobule houses 1 to 4 highly coiled seminiferous tubules.

Why other options are incorrect:

Options A, B, and C represent underestimates of the anatomical lobule count in a healthy adult human testis.

Question #43 Key: (D)

NUMS 2022

In male reproductive system, the hormone involved in regulation of rate of spermatogenesis is called: [NUMS-20...]

CORE CONCEPT AND DERIVATION

Negative feedback loops are essential for maintaining a constant rate of sperm production.

Solution:

- When the rate of spermatogenesis is high, Sertoli cells within the seminiferous tubules secrete a peptide hormone called **inhibin**.
- Inhibin travels to the anterior pituitary and directly inhibits the release of Follicle Stimulating Hormone (FSH).
- By suppressing FSH, it slows down spermatogenesis to a normal, regulated rate.

Why other options are incorrect:

FSH and Testosterone *stimulate* spermatogenesis. LH stimulates testosterone production. While all are involved in the process, **inhibin** is the specific negative-feedback regulator that fine-tunes the rate.

Question #44 Key: (B)

KMU 2022

The process of spermatogenesis (formation of sperm) takes place in which part of male reproductive system? [ET...]

CORE CONCEPT AND DERIVATION

Sperm cells require a highly specialized microenvironment to undergo meiosis and differentiate safely.

Solution:

- Spermatogenesis takes place entirely within the walls of the **seminiferous tubules** located inside the testes.
- These tubules are lined with germinal epithelium and supportive Sertoli cells that facilitate the entire developmental process from stem cell to mature sperm.

Why other options are incorrect:

The epididymis is for sperm storage and maturation (gaining motility), not formation. The urethra is the common passage for urine and semen. The oviduct is a part of the female reproductive system.

Question #45 Key: (A)

KMU 2022

Which one of the following cells have haploid number of chromosomes? [ETEA-2022]

CORE CONCEPT AND DERIVATION

Gametes are reproductive cells produced by meiosis, containing half the genetic material of somatic cells.

Solution:

- A human **sperm cell** is a male gamete.
- Because it is produced via reductional division (meiosis), it contains a single set of chromosomes, making it **haploid** (n).
- Upon fertilization with a haploid egg, the normal diploid ($2n$) number is restored in the zygote.

Why other options are incorrect:

Skin cells, muscular cells, and mesophyll cells (in plants) are all somatic (body) cells that undergo mitosis and remain diploid ($2n$).

Question #46 Key: (C)

KMU 2022

The terminal portion of the male reproductive duct system is: [ETEA-2022]

CORE CONCEPT AND DERIVATION

The male reproductive tract consists of a series of ducts that transport sperm from the testes to the exterior of the body.

Solution:

- The pathway of sperm is: Seminiferous tubules → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → **Urethra**.
- The **urethra** acts as the final, terminal portion of the duct system, serving as a common passageway for both the excretory (urine) and reproductive (semen) systems in human males.

Why other options are incorrect:

Vasa efferentia, epididymis, and vasa deferens are all intermediate transport and storage ducts prior to reaching the urethra.

Question #47 Key: (C)

BUMHS 2022

Average sperm count per ml is: [BUMHS-2022]

CORE CONCEPT AND DERIVATION

A high volume of sperm is required in an ejaculate to ensure that at least a few survive the hostile environment of the female reproductive tract to reach the ovum.

Solution:

- During ejaculation, about 2 to 5 ml of semen is expelled.
- The average normal sperm concentration ranges from 20 to 150 million **sperms per milliliter (ml)**.
- A count below 20 million/ml is generally considered oligospermia and can lead to fertility issues.

Why other options are incorrect:

Counts in the thousands or below 10 million are clinically abnormally low and do not represent the healthy physiological average.

Question #48 Key: (B)

DUHS 2022

Uterus opens to the vagina by a narrow opening bounded by muscular sphincter at its bottom known as: [DUHS-202...]

CORE CONCEPT AND DERIVATION

The female reproductive system relies on muscular sphincters to isolate and protect the sterile environment of the uterus from the external environment.

Solution:

- The **cervix** is the lower, narrow portion of the uterus.
- It contains a strong muscular sphincter that forms a canal connecting the uterine cavity to the vagina.
- Normally, this opening is blocked by a mucous plug to prevent infection, but it dilates during childbirth.

Why other options are incorrect:

The oviducts connect the ovaries to the top of the uterus. The urinary bladder is part of the excretory system. The labia are external genital structures.

Question #49 Key: (C)

UHS 2022

Level of luteinizing hormone (LH) is maximum in blood during which stage of menstrual cycle? [UHS-2022]

CORE CONCEPT AND DERIVATION

The physiological trigger for the release of the egg requires a massive, temporary spike in hormone levels.

Solution:

- Right at the end of the follicular/proliferative phase, estrogen levels peak, causing a positive feedback loop.
- This triggers the anterior pituitary to release a massive "surge" of LH.
- This LH surge directly causes the follicle to rupture. Therefore, LH levels are at their absolute maximum exactly during the **ovulation stage** (around day 14 of a 28-day cycle).

Why other options are incorrect:

During the menstrual, proliferative, and secretory stages, LH levels are relatively low and stable, held in check by negative feedback from estrogen and progesterone.

Question #50 Key: (A)

NUMS 2022

During menstrual cycle, after the female gamete is released from the ovary (ovulation), the remains of the foll...

CORE CONCEPT AND DERIVATION

The tissue left behind after ovulation undergoes luteinization to alter its primary secretory product.

Solution:

- After releasing the egg, the ruptured follicle collapses and is transformed by LH into the corpus luteum.
- The primary function of the corpus luteum is to secrete large amounts of **progesterone** (along with some estrogen).
- This progesterone is vital for preparing the uterus for pregnancy.

Why other options are incorrect:

FSH and LH are secreted by the anterior pituitary, not the follicle. Testosterone is a male sex hormone (though trace amounts exist in females, it is not the primary secretion of the corpus luteum).

Question #51 Key: (C)

NUMS 2022

Normal gestation period in human is about ____ days. [NUMS-2022]

CORE CONCEPT AND DERIVATION

Gestation is the period of intrauterine fetal development from conception to birth.

Solution:

- In humans, the standard gestation period is universally recognized to be roughly 9 months.
- Calculated from the first day of the last menstrual period (LMP), this is approximately 40 weeks, or 280 days.
- Calculated directly from fertilization, it is about 38 weeks, or 266 days. The range 270 – 280 days accurately represents this timeline.

Why other options are incorrect:

240–250 days is significantly premature. Over 300 days is extremely post-term and medically abnormal.

Question #52 Key: (B)

SZABMU 2022

After fertilization zygote takes ____ for its journey from fallopian tube to uterus. [SZABMU-2022]

CORE CONCEPT AND DERIVATION

Early embryonic development involves cleavage cell divisions as the embryo physically travels toward the site of implantation.

Solution:

- Fertilization occurs in the ampulla (upper third) of the fallopian tube.
- Driven by the beating of cilia and peristaltic muscular contractions of the tube, the zygote begins its journey.
- During this time, it divides into a morula and then a blastocyst, arriving in the uterine cavity after approximately **3 to 6 days**.

Why other options are incorrect:

Implantation begins around day 6–7, but the journey to merely reach the uterus is shorter. Waiting 10–15 days would result in the blastocyst outgrowing its zona pellucida before reaching the necessary uterine environment.

Question #53 Key: (B)

KMU 2022

The longest phase of the menstrual cycle is: [ETEA-2022]

CORE CONCEPT AND DERIVATION

The menstrual cycle is divided into phases of varying lengths, but one phase has a remarkably consistent physiological duration.

Solution:

- The menstrual phase lasts ~3–7 days.
- The pre-ovulatory (proliferative) phase is variable, often lasting 7–10 days depending on the individual.
- The **secretory (luteal) phase** is structurally the longest and most consistent phase, lasting exactly **14 days** in almost all women, driven by the lifespan of the corpus luteum.

Why other options are incorrect:

The ovulatory phase is extremely brief (1–2 days). The menstrual and pre-ovulatory phases are generally shorter than 14 days.

Question #54 Key: (D)

BUMHS 2022

Corpus luteum secretes the hormones: [BUMHS-2022]

CORE CONCEPT AND DERIVATION

The corpus luteum acts as a temporary endocrine gland vital for early pregnancy maintenance.

Solution:

- Following ovulation, the remnants of the follicle cells absorb lipids and become the corpus luteum.
- Its primary function is the prolific secretion of **progesterone**.
- This hormone halts further endometrial proliferation and initiates secretory changes, making the uterus a plush environment for implantation.

Why other options are incorrect:

Testosterone is a male hormone. Parathormone regulates blood calcium. Oxytocin drives uterine contractions. None of these are produced by the corpus luteum.

Question #55 Key: (B)

DUHS 2022

The vacated vesicular follicle forms a fatty yellow structure on ovary called as: [DUHS-2022]

CORE CONCEPT AND DERIVATION

Follicle morphology changes dramatically once the oocyte is expelled.

Solution:

- Once the mature (vesicular or Graafian) follicle ruptures and releases the egg, the remaining granulosa and theca cells collapse inward.
- Under the influence of Luteinizing Hormone (LH), these cells accumulate a yellow pigment called lutein.
- This newly formed, fatty, yellow glandular mass is anatomically termed the **corpus luteum**.

Why other options are incorrect:

"Graafian luteum" is a mixed, fabricated term. A ruptured ovum refers to the egg itself, not the follicle. It is no longer just a standard "follicle" once luteinized.

Question #56 Key: (B)

BUMHS 2022

Treponema pallidum is the causative organism for which disease? [BUMHS-2022]

CORE CONCEPT AND DERIVATION

Sexually Transmitted Infections (STIs) are caused by specific bacterial or viral pathogens.

Solution:

- ***Treponema pallidum*** is a spiral-shaped bacterium (spirochete).
- It is the exclusive causative agent of the sexually transmitted disease **Syphilis**.
- Syphilis progresses in stages, starting with a painless sore (chancre) and potentially leading to severe neurological and cardiovascular issues if untreated.

Why other options are incorrect:

Gonorrhea is caused by the bacterium *Neisseria gonorrhoeae*. AIDS is caused by the Human Immunodeficiency Virus (HIV). Diabetes is a metabolic disorder, not an infectious disease.

Question #57 Key: (C)

PMDC 2020

Which one of the following represents the changes that occur in the ovary and the uterus approximately every 2...

CORE CONCEPT AND DERIVATION

Human female reproduction involves coordinated, cyclic changes in multiple organ systems simultaneously.

Solution:

- The term that encompasses both the cyclical changes in the ovary (ovarian cycle: follicle maturation, ovulation) and the cyclical changes in the uterus (uterine cycle: thickening, breakdown, and bleeding) is the **menstrual cycle**.
- This cycle averages 28 days in length.

Why other options are incorrect:

The uterine cycle *only* refers to endometrial changes. Ovulation is a single event, not the entire cycle. The menstrual cycle broadly defines the entire interconnected 28-day physiological process.

Question #58 Key: (C)

PMDC 2020

Which of the following hormones of the pituitary gland regulate the menstrual cycle? [PMC-2020]

CORE CONCEPT AND DERIVATION

The menstrual cycle is driven from the "top down" by hormones originating in the brain.

Solution:

- The question specifically asks for hormones of the **pituitary gland**.
- The anterior pituitary gland secretes two key gonadotropins: **Follicle Stimulating Hormone (FSH)** and **Luteinizing Hormone (LH)**.
- FSH drives the follicular phase, and LH drives ovulation and the luteal phase.

Why other options are incorrect:

Estrogen and Progesterone are indeed primary regulators of the menstrual cycle, but they are secreted by the **ovaries**, not the pituitary gland.

Question #59 Key: (D)

MDCAT 2019

During spermatogenesis, the ____ which are haploid cells eventually mature into spermatozoa/mature sperms? [MD...]

CORE CONCEPT AND DERIVATION

Maturation of sperm involves extensive morphological remodeling of already haploid cells.

Solution:

- At the end of Meiosis II, haploid cells called **spermatids** are formed.
- These spermatids are round and non-motile. They undergo a morphological transformation known as spermiogenesis (shedding excess cytoplasm, forming a tail) to eventually mature into **spermatozoa**.

Why other options are incorrect:

Spermatogonia and primary spermatocytes are diploid. Secondary spermatocytes are haploid but must first undergo Meiosis II to become spermatids before structural maturation can occur.

Question #60 Key: (D)

MDCAT 2019

Which hormonal pair would maintain the endometrium and make it receptive for implantation of embryo? [MDCAT-20...]

CORE CONCEPT AND DERIVATION

Successful embryo implantation requires the combined, sequential actions of the primary ovarian steroid hormones.

Solution:

- Estrogen** is responsible for the initial proliferation and rebuilding of the endometrial lining (thickening).
- Progesterone** follows up by vascularizing the lining, making it secretory, spongy, and highly receptive.
- Together, this pair of hormones synergistically maintains a stable, nutrient-rich uterine environment essential for embryo implantation.

Why other options are incorrect:

FSH and LH are pituitary hormones that act on the **ovaries** to cause the release of estrogen and progesterone, rather than acting directly on the uterine endometrium themselves.

Question #61 Key: (A)

MDCAT 2019

Which of the following hormone stimulates the ovulation from the follicle into oviduct? [MDCAT-2019]

CORE CONCEPT AND DERIVATION

The physical release of the egg requires an acute biochemical trigger mid-cycle.

Solution:

- The surge of **Luteinizing Hormone (LH)** from the anterior pituitary directly targets the mature Graafian follicle in the ovary.
- It induces proteolytic enzymes that digest the follicle wall, resulting in the rupture and release of the secondary oocyte into the fallopian tube (oviduct). This process is ovulation.

Why other options are incorrect:

FSH develops the follicle. Estrogen thickens the uterus. Progesterone maintains the uterus post-ovulation. Only LH is the acute trigger for the actual ovulatory event.

Question #62 Key: (D)

SZABMU 2019

On the onset of puberty in the females, the pituitary gland releases the: [AJK-2019]

CORE CONCEPT AND DERIVATION

Puberty in females is marked by the initiation of the first menstrual cycles (menarche), which requires the waking up of the dormant ovaries.

Solution:

- At the onset of puberty, the hypothalamus begins secreting GnRH, which signals the anterior pituitary gland.
- The pituitary responds by primarily releasing **Follicle Stimulating Hormone (FSH)** into the bloodstream.
- FSH arrives at the ovaries and stimulates dormant primary follicles to begin growing, thus starting the very first ovarian cycles.

Why other options are incorrect:

While LH is also released, FSH is universally recognized as the primary hormone responsible for *initiating* the development of follicles at puberty. Progesterone is from the ovaries. Oxytocin is for labor/lactation.

Question #63 Key: (B)

SZABMU 2019

Secretion of FSH is inhibited by: [AJK-2019]

CORE CONCEPT AND DERIVATION

The female reproductive cycle heavily relies on negative feedback mechanisms to prevent the simultaneous maturation of too many follicles.

Solution:

- As a follicle grows under the influence of FSH, it secretes increasing amounts of **estrogen**.
- Moderate levels of estrogen circulating in the blood exert a negative feedback effect on the anterior pituitary gland.
- This explicitly **inhibits the further secretion of FSH**, ensuring that only the most dominant follicle survives and no new follicles begin maturing mid-cycle.

Why other options are incorrect:

Aldosterone regulates sodium/water balance. Testosterone is the primary male hormone (though inhibin and testosterone inhibit FSH in males, estrogen is the primary inhibitor during the female follicular phase). LH does not inhibit FSH.

Question #64 Key: (B)

KMU 2019

Progesterone is secreted by: [ETEA-2019]

CORE CONCEPT AND DERIVATION

Post-ovulation, the empty follicle undergoes a physical and biochemical transformation to support a potential pregnancy.

Solution:

- After the egg is released, LH acts on the remaining follicular cells, transforming them into a temporary yellow endocrine gland called the **corpus luteum**.
- The primary function of this **corpus luteum** is the massive secretion of the hormone **progesterone**, which maintains the uterine lining.

Why other options are incorrect:

Ripening follicles secrete primarily estrogen. The uterine epithelium *responds* to progesterone but doesn't secrete it. The fertilized egg (embryo) later secretes hCG, not progesterone directly.

Question #65 Key: (B)

MDCAT 2018

Which hormone is released in female in response to FSH from pituitary gland? [MDCAT-2018]

CORE CONCEPT AND DERIVATION

The hypothalamic-pituitary-gonadal axis relies on a chain of signaling hormones.

Solution:

- Follicle Stimulating Hormone (FSH) from the anterior pituitary targets the ovaries.
- Specifically, FSH stimulates the granulosa cells surrounding the growing primary and secondary follicles.
- In response to this stimulation, these follicular cells synthesize and secrete **estrogen** into the bloodstream.

Why other options are incorrect:

Progesterone is released primarily in response to LH forming the corpus luteum. Oxytocin and ADH are released from the posterior pituitary and are not regulated by FSH.

Question #66 Key: (C)

MDCAT 2018

Which of the following hormone acts on the uterus wall for thickening? [MDCAT-2018]

CORE CONCEPT AND DERIVATION

The endometrium must be physically thickened and enriched to support a developing embryo.

Solution:

- During the secretory phase of the menstrual cycle, the corpus luteum secretes large volumes of **progesterone**.
- Progesterone acts directly on the endometrial wall of the uterus, causing the glands to grow, blood vessels to proliferate, and the tissue to become highly thick, spongy, and nutrient-rich.

Why other options are incorrect:

FSH acts on the ovaries, not the uterus. Oxytocin causes uterine contractions during labor, not thickening. The zona pellucida is a glycoprotein layer surrounding the ovum, not a hormone.

Question #67 Key: (C)

MDCAT 2017

FSH stimulates the production of estrogen hormone which has two targets ____ and ____ [MDCAT-2017]

CORE CONCEPT AND DERIVATION

Estrogen produced by the developing follicle exerts effects locally on the reproductive organs and systemically.

Solution:

- Estrogen has dual primary targets directly tied to facilitating the current cycle.
- **Target 1 (Ovaries):** Estrogen acts locally to assist in the continued maturation of the dominant ovarian follicle.
- **Target 2 (Uterus):** Estrogen travels via the bloodstream to the uterus, where it powerfully stimulates the rebuilding and vascularization of the endometrium (proliferative phase).

Why other options are incorrect:

While estrogen does exert feedback on the anterior pituitary and hypothalamus, in the context of the standard biological reproductive physiology curriculum referenced by the key, its primary structural/functional reproductive targets are defined as the ovaries (follicle maturation) and the uterus (endometrial proliferation).

Question #68 Key: (A)

MDCAT 2017

Which of the following hormone suppresses ovulation? [MDCAT-2017]

CORE CONCEPT AND DERIVATION

During the luteal phase and pregnancy, it is necessary to prevent the release of additional eggs.

Solution:

- **Progesterone** is secreted by the corpus luteum (and later the placenta).
- High circulating levels of progesterone exert a strong negative feedback on the hypothalamus and anterior pituitary.
- This suppression prevents the release of FSH and the LH surge. Without an LH surge, subsequent follicle maturation and **ovulation are entirely suppressed**.

Why other options are incorrect:

FSH promotes follicle development. Insulin regulates blood glucose. Prolactin promotes milk production (though very high prolactin can indirectly suppress ovulation, progesterone is the primary physiological cycle regulator).

Question #69 Key: (A)

MDCAT 2017

Which of the following hormone causes ovulation? [MDCAT-2017]

CORE CONCEPT AND DERIVATION

Ovulation is a sudden, mechanically violent event requiring a specific hormonal spike.

Solution:

- Around day 14 of a standard 28-day cycle, the anterior pituitary releases a massive spike of **Luteinizing Hormone (LH)**.
- This LH surge triggers a cascade of enzymatic reactions that weaken the wall of the mature Graafian follicle.
- The follicle ruptures, expelling the secondary oocyte into the fallopian tube. Thus, **LH causes ovulation**.

Why other options are incorrect:

FSH stimulates initial follicle growth. Estrogen prepares the uterus and triggers the LH surge, but doesn't directly rupture the follicle. Progesterone maintains the uterine lining post-ovulation.

Question #70 Key: (C)

MDCAT 2016

Events of menstrual cycle are regulated by the: [MDCAT-2016]

CORE CONCEPT AND DERIVATION

The human reproductive cycle is orchestrated by complex hormonal interplay originating from the brain.

Solution:

- The menstrual cycle is fundamentally regulated by hormones released from the anterior pituitary gland, specifically FSH (Follicle Stimulating Hormone) and LH (Luteinizing Hormone).
- Because these hormones target the gonads (ovaries), they are collectively known as **gonadotrophins** (or gonadotropins).

Why other options are incorrect:

Ethylene, auxins, and gibberellins are all highly specific **plant hormones** involved in plant growth, ripening, and tropisms, and play no role in human reproduction.

Question #71 Key: (C)

MDCAT 2016

Decrease of FSH and increase of estrogen cause pituitary gland to secrete: [MDCAT-2016]

CORE CONCEPT AND DERIVATION

The mid-cycle hormonal shift relies on a switch from negative to positive feedback by estrogen.

Solution:

- During the late follicular phase, the dominant follicle secretes exceptionally high levels of estrogen.
- While moderate estrogen inhibits FSH, **peak estrogen levels** exert a positive feedback effect on the anterior pituitary.
- This sudden positive feedback triggers a massive surge in the secretion of **Luteinizing Hormone (LH)**, which is the direct trigger for ovulation.

Why other options are incorrect:

Somatotrophin is growth hormone. Testosterone is primarily a male hormone. Spermatogonium is a male germ cell, not a hormone.

Question #72 Key: (C)

MDCAT 2015

In females, FSH stimulates the ovary to produce: [MDCAT-2015]

CORE CONCEPT AND DERIVATION

The development of ovarian follicles induces the production of female sex hormones to prepare the body for potential reproduction.

Solution:

- Follicle Stimulating Hormone (FSH) promotes the growth of the Granulosa cells surrounding the developing oocyte within the follicle.
- As the follicle grows under FSH influence, these follicular cells secrete increasing amounts of **estrogen** into the bloodstream.
- Estrogen then drives the proliferative phase of the uterine endometrium.

Why other options are incorrect:

Progesterone is primarily produced by the corpus luteum later under the influence of LH. Prolactin and Oxytocin are involved in lactation and childbirth and are released from the pituitary gland.

Question #73 Key: (D)

MDCAT 2015

The oocyte released during ovulation is in: [MDCAT-2015]

CORE CONCEPT AND DERIVATION

Oogenesis in human females features strict cell cycle arrests at specific meiotic stages.

Solution:

- A primary oocyte completes Meiosis I just before ovulation to become a secondary oocyte.
- The secondary oocyte immediately begins Meiosis II but is arrested at **Metaphase II**.
- It is precisely in this arrested **Metaphase II** stage that the ovum is released from the ovary during ovulation.
- Meiosis II will only resume and complete if fertilization by a sperm occurs.

Why other options are incorrect:

Primary oocytes are arrested in Prophase I from birth until puberty. Anaphase I and Metaphase I are brief transitional phases occurring just prior to ovulation.

Question #74 Key: (C)

MDCAT 2015

In which phase of human female menstrual cycle, endometrium prepares for the implantation of embryo? [MDCAT-2015]

CORE CONCEPT AND DERIVATION

The endometrium undergoes cyclic changes to create a highly hospitable environment for a potential embryo.

Solution:

- After ovulation, the menstrual cycle enters the **secretory phase** (also known as the luteal phase).
- During this time, the corpus luteum secretes large amounts of progesterone.
- Progesterone causes the endometrium to become highly vascularized, thick, and spongy. Endometrial glands secrete glycogen-rich fluids to nourish and prepare for the implantation of a blastocyst.

Why other options are incorrect:

The proliferative phase only rebuilds the lining after menstruation. The menstrual phase involves shedding the lining. Ovulation is simply the release of the egg.

Question #75 Key: (B)

MDCAT 2014

Yellowish glandular structure formed after the release of egg from follicle is called: [MDCAT-2014]

CORE CONCEPT AND DERIVATION

Following ovulation, the remnants of the ovarian follicle transform into a temporary endocrine gland.

Solution:

- Under the influence of Luteinizing Hormone (LH), the ruptured Graafian follicle collapses and its cells enlarge, accumulating a yellow lipid pigment.
- This modified structure is called the **corpus luteum** (Latin for "yellow body").
- It begins secreting large amounts of progesterone to maintain the uterine lining for potential pregnancy.

Why other options are incorrect:

The Graafian follicle is the pre-ovulatory structure. Follicle atresia is the degeneration of unselected follicles. The corpus callosum is a brain structure connecting the two cerebral hemispheres.

Question #76 Key: (C)

MDCAT 2014

On puberty, the development of primary follicles is stimulated by:
[MDCAT-2014]

CORE CONCEPT AND DERIVATION

The onset of the ovarian cycle at puberty is triggered by gonadotropins released from the anterior pituitary.

Solution:

- At puberty, the anterior pituitary begins to secrete **Follicle Stimulating Hormone (FSH)**.
- As the name implies, FSH acts directly on the ovaries to stimulate the growth and development of several primary follicles each month.
- Usually, only one of these follicles will reach full maturity.

Why other options are incorrect:

LH (and its male equivalent ICSH) is primarily responsible for triggering ovulation and forming the corpus luteum later in the cycle. Estrogen is produced by the developing follicles in response to FSH.

Question #77 Key: (D)

MDCAT 2013

What is the location of interstitial cells in testes? [MDCAT-2013]

CORE CONCEPT AND DERIVATION

The structural anatomy of the testes separates the site of sperm development from the site of hormone production.

Solution:

- The testes are packed with highly coiled seminiferous tubules where sperm develop.
- The spaces **between the seminiferous tubules** contain connective tissue, blood vessels, and specialized endocrine cells called **interstitial cells** (Leydig cells).
- This strategic location allows the testosterone produced by these cells to easily enter the bloodstream and also directly influence adjacent seminiferous tubules.

Why other options are incorrect:

Sertoli and germ cells are located *inside* the seminiferous tubules. Leydig cells are explicitly defined by their "interstitial" (in-between) positioning.

Question #78 Key: (A)

MDCAT 2013

Spermatogonia differentiate directly into: [MDCAT-2013]

CORE CONCEPT AND DERIVATION

The progression of spermatogenesis moves from diploid stem cells to haploid gametes through specific developmental stages.

Solution:

- Type B **spermatogonia** (diploid cells) undergo a period of growth and differentiation.
- They enlarge and prepare for the first meiotic division, directly becoming diploid **primary spermatocytes**.

Why other options are incorrect:

Primary spermatocytes must undergo Meiosis I to become secondary spermatocytes. Secondary spermatocytes undergo Meiosis II to become spermatids, which then differentiate into spermatozoa. Spermatogonia do not jump straight to these later stages.

Question #79 Key: (D)

MDCAT 2011

A type of cell in human testes which produces testosterone is called: [MDCAT-2011, 2013]

CORE CONCEPT AND DERIVATION

The testes serve a dual function: spermatogenesis (sperm production) and steroidogenesis (hormone production).

Solution:

- **Interstitial cells** (also known as Leydig cells) are located in the connective tissue spaces between the seminiferous tubules.
- Under the stimulation of Luteinizing Hormone (LH / ICSH), these cells synthesize and secrete the primary male sex hormone, **testosterone**.

Why other options are incorrect:

Sertoli cells provide nourishment and support for developing sperm but do not produce testosterone. Germ cells and spermatocytes are stages in the sperm development pathway.

Question #80 **Key: (B)**

MDCAT 2011

Which one of the following differentiates directly into mature sperm? [MDCAT-2011]

CORE CONCEPT AND DERIVATION

Spermiogenesis is the final stage of spermatogenesis, where major structural changes occur without cell division.

Solution:

- After meiosis II, the resulting haploid cells are called **spermatids**.
- A spermatid is initially a spherical, non-motile cell.
- Through a morphological differentiation process called spermiogenesis, it develops an acrosome, condenses its nucleus, and forms a flagellum (tail) to become a highly motile, mature **spermatozoon** (sperm).

Why other options are incorrect:

Spermatogonia and primary/secondary spermatocytes must first complete meiosis before they can reach the spermatid stage to begin physical differentiation.

Question #81 **Key: (C)**

MDCAT 2010

The first cells produced by the repeated cell division of germinal epithelium of testis are: [MDCAT-2010]

CORE CONCEPT AND DERIVATION

Spermatogenesis begins in the outermost layer of the seminiferous tubules with undifferentiated germ cells.

Solution:

- The germinal epithelium of the testis is lined with diploid stem cells.
- These stem cells undergo repeated mitotic divisions to produce **spermatogonia** (singular: spermatogonium) at an early stage.
- These spermatogonia will eventually grow into primary spermatocytes.

Why other options are incorrect:

Secondary spermatocytes and spermatids are formed much later via meiosis. Interstitial cells (Leydig cells) are located outside the seminiferous tubules and do not develop from the germinal epithelium; they are responsible for producing testosterone.