

Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College, Kolhapur (Autonomous)
Department of Zoology
Academic Year: 2018-2019

Unit Test- II for B.Sc. III

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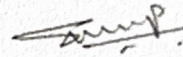


**Vivekanand College, Kolhapur (Autonomous)
Department of Zoology**

NOTICE

Date: 15/12/2018

All the students of B.Sc.III are hereby informed that, there will be Unit Test of Zoology subject on 28th December, 2018 at Zoology Department at 11 am. Attendance is compulsory for all the students.



Head Department of Zoology

**Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)**

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)
DEPARTMENT OF ZOOLOGY

Unit Test- II

B.Sc. Part III

Date 28/12/2018 Marks- 20

Q. Attempt any two of the following

1. Describe epidermal derivatives in vertebrates
2. What is gametogenesis? Describe the process of spermatogenesis.
3. What is excretion? Explain the process of urine formation.
4. Explain life cycle of freshwater prawn.

Unit test-II B.Sc. III Zoology

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Room No. 24

Date- 28/12/2018

Attendance.

S.N.	Name of student	Sign
1.	Patil Snehal Sarjerao	<u>Patil</u>
2.	Naik Manjula Bhimrao	<u>Naik</u>
3.	Gaikwad Nivedita Babasa	<u>Nigalkwad</u>
4.	Chougale Anna Dhondiba	<u>Chougale</u>
5.	Sutar + Akshata	<u>Sutar</u>
6.	Singh. Varsh Rajesh.	<u>Varsh Singh</u>
-	Pooja S Ekale	<u>Pooja</u>
8.	Patil Rubya Rajendra	<u>Patil Rubya</u>
9.	Nilesh Manoj Rajput.	<u>Nilesh Rajput</u>
10)	Shirani Kiran Manu	<u>Shirani</u>
11)	Abhishek C. Shirke	<u>Abhishek Shirke</u>
12)	Prakull M. Chokkar	<u>Prakull</u>
13)	Suraj. Kapase	<u>Suraj</u>
14.	Patil Tupti Tanaji	<u>Patil</u>
15.	Supriya Amte	<u>Amte</u>
16.	Desa Rafel Rajay	<u>Desa Rafel</u>
17.	Parej A. Golandaj	<u>Parej</u>
18.	Vinay Madhukar Attylkar.	<u>Vinay Attylkar</u>
19.	Nilam Kambhe	<u>Kambhe</u>
20.	Nisha Kambhe.	<u>Kambhe</u>
21	Monica Godad	<u>Godad</u>

B. Gaopale

Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)

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Vivekanand College, Kolhapur

Department of Zoology

B.Sc. III

Unit Test II Mark list

Total Marks-20

S.N.	Name of Students	Marks obtained
1	Atyalkar Vinay M.	10
2	Chokakkar Prafull Madan	15
3	Desa Rafel Rujay	17
4	Gaikwad Nivedita Babasaheb	17
5	Godad Monika Anton	20
6	Golandaj Paravej A.	13
7	Hange Omkar Atul	Ab
8	Kamble Nilam Chandrakant	12
9	Kamble Nisha Dinkar	11
10	Kapse Suraj V.	18
11	Mane Shivani Kiran	17
12	Naik Manjula Bhimrao	15
13	Patil Trupti Tanaji	14
14	Pawar Aniket Anil	Ab
15	Rajput Nilesh Mansing	15
16	Sayyad Yasmeen Ismail	Ab
17	Shirke Abhishek Chandrakant	18
18	Singh Varsha	19
19	Sutar Akshata Parsharam	18
20	Patil Rutuja Rajendra	19
21	Patil Pooja Ravindra	Ab
22	Ekal pooja Suresh	17
23	Chougule Aruna Dhondiba	19
24	Patil Snehal Sarjerao	18
25	Amate Supriya	13
26	Sanap Pooja	Ab

As Gaurik
Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)

॥ ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ॥

- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

48354

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Suppliment No. :

Roll No. : 8775

Class : B.Sc.III

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Signature
of
Supervisor

Subject :

Test / Tutorial No. :

Div. :

Q. What is gametogenesis? Describe the process of spermatogenesis.

Gametogenesis :-

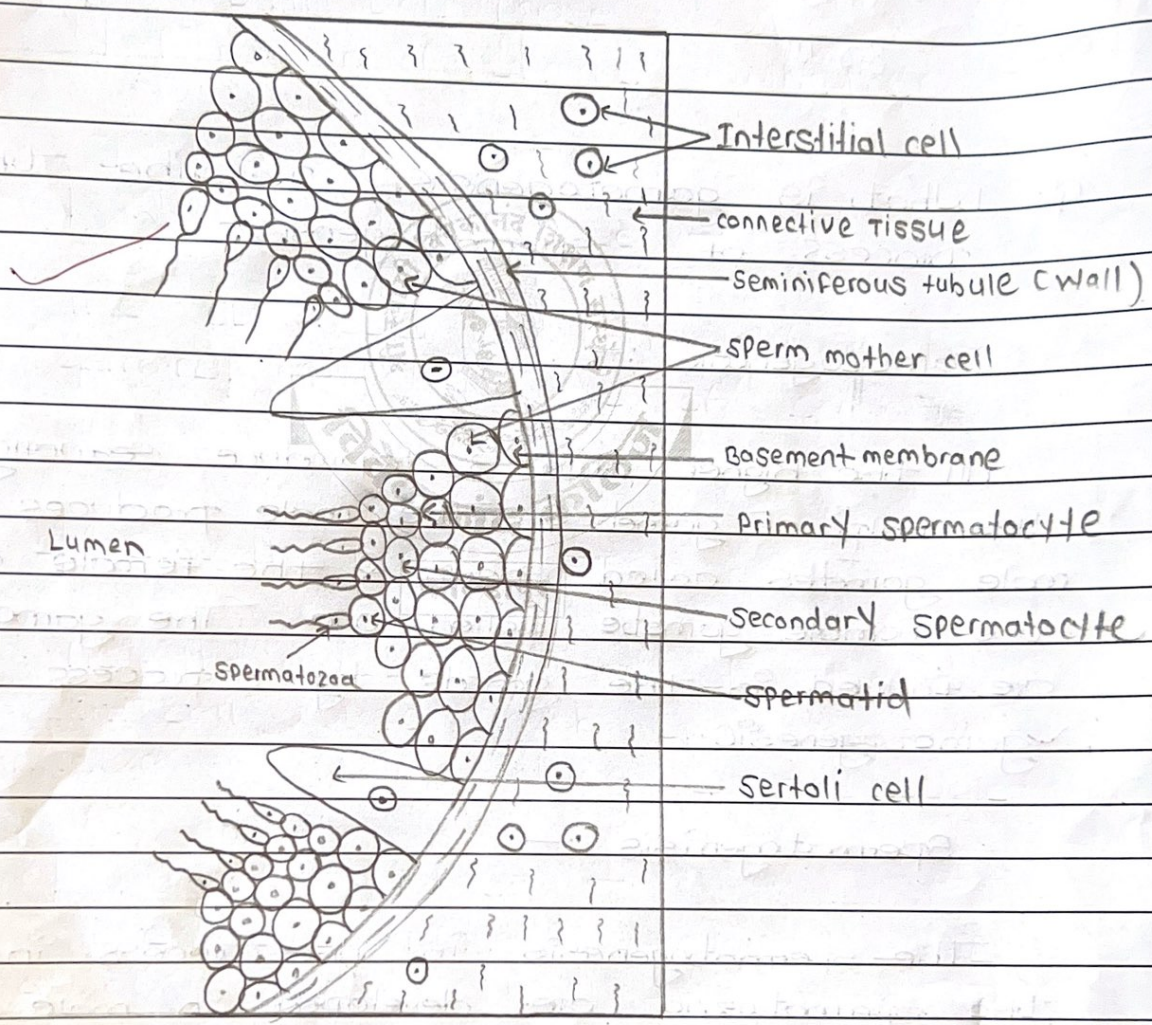
All the higher animals reproduce sexually with the help of gametes. The male produces the male gametes called sperms & the female produces the female gamete called ova. The gametes are formed in the gonads by a process called gametogenesis.

Spermatogenesis :-

The spermatogenesis is the process in which the spermatozoa are developed in male gonads, the testes. In each vertebrate animal a pair of testes are found. Each testis is attached to the dorsal body wall by a connective tissue membrane called 'Mesorchium'.

The spermatogenesis is a continuous process for the sake of convenience, it can be divided into 2 stages.

1. Formation of spermatids :-
2. Formation of sperms or spermiogenesis



T.S of Mammalian Testis

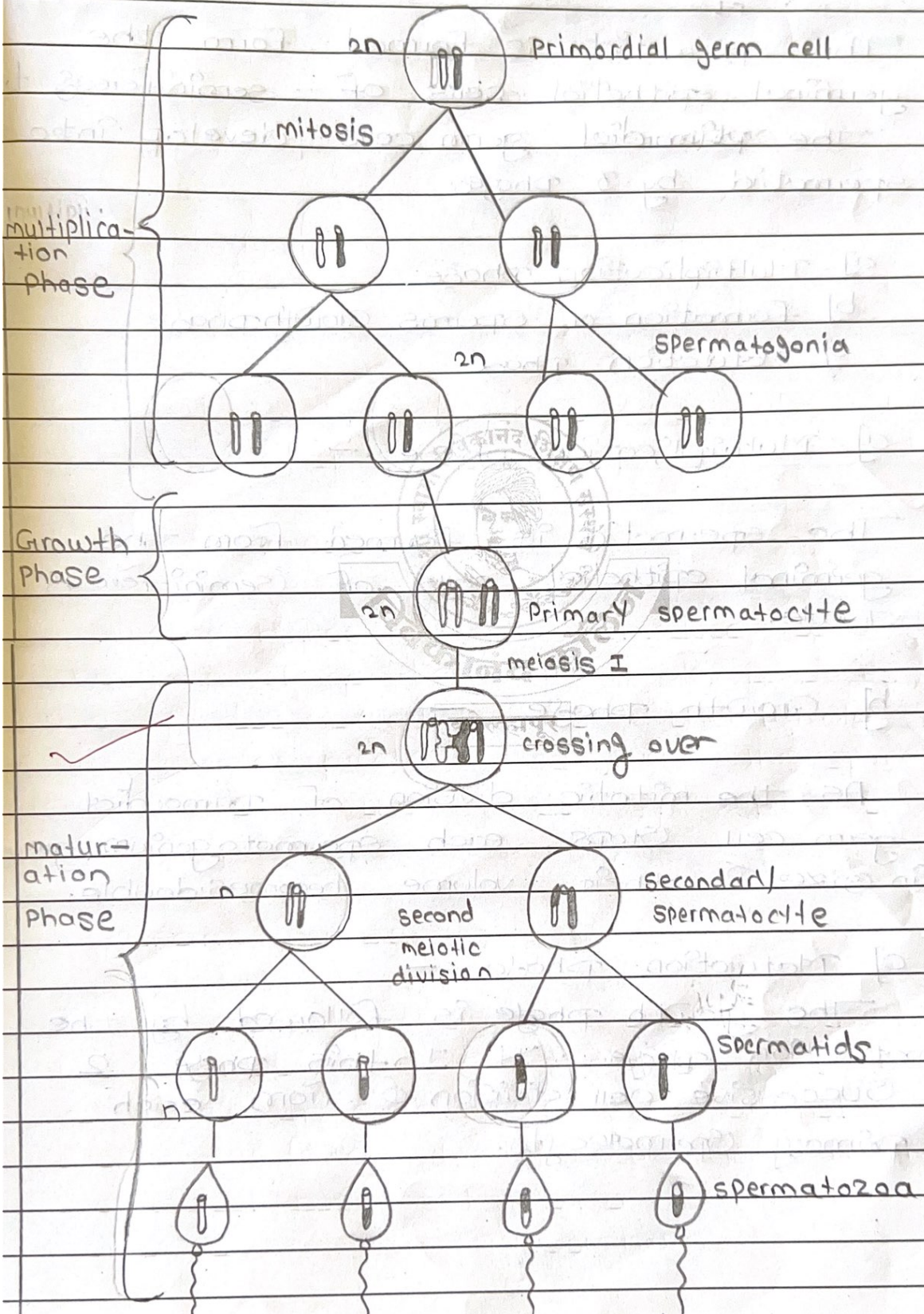


Fig: spermatogenesis.

1. Formation of Spermatozoa :-

The Spermatozoa is formed from the germinal epithelial cells of seminiferous tubules.

The primordial germ cells develop into Spermatozoa by 3 phases.

a) Multiplication phase

b) Formation of Sperm's Growth phase

c) Maturation phase

a) Multiplication phase :-

The Spermatozoa is formed from the germinal epithelial cells of seminiferous tubules.

b) Growth phase :-

As the mitotic division of primordial germ cell stops, each spermatogonium grows in size & their volume becomes double.

c) Maturation phase :-

The growth phase is followed by the maturation phase. In this phase, 2 successive cell divisions & from each primary Spermatocyte.

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Spermiogenesis :-

The formation of spermatozoon from the spermatid is called spermiogenesis. The spermatid is a haploid cell containing nucleus & cytoplasm.

a] change in the nucleus :-

The shrinking of nucleus takes place due to losing of water from the nuclear sap. The chromosome become concentrated & are closely packed into small volume.

b] change in golgi complex :-

The acrosome of sperm develops the golgi complex. The golgi complex in the cytoplasm of the spermatid.

c] change in the centrioles :-

The centromere or the centrosphere of the spermatid consists of two centrioles. These cylindrical bodies move toward the nucleus.

d] changes in the Arrangement of Mitochondria :-

The mitochondria of the spermatid aggregate to form a mitochondrial cloud in the region of centrioles.

e] change in cytoplasm :-

When the acrosome is formed, many changes have been reported in the cytoplasm. The cytoplasm moves away from the nucleus in opposite direction leaving a thin layer of plasma membrane.

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Q1] What is excretion? Explain the process of urine formation.

→ It is the process by which organisms expels metabolic waste products & other toxic substance from their body.

Mechanism of urine formation :-

Waste is excreted from the human body, mainly in the form of urine. Our kidney play a major role in the process of excretion. Constituents of normal human urine include 95% & 5% solid waste. It is produced in the nephron, which is the structural & functional unit of kidney. Urine formation in our body is mainly carried out in 3 phases namely.

1. Glomerular filtration.
2. Reabsorbtion
3. Secretion

Glomerular Filtration :-

The 1st step in urine formation is the filtration of blood, which is carried out by glomerulus & is called glomerular filtration. On an average, 1100-1200 ml of blood is filtered by kidney per minute which constitute roughly $\frac{1}{5}$ of the blood pumped out by each ventricle of the heart in a minute. The glomerular capillary blood pressure causes filtration of blood through 2 layers, i.e., the endothelium of glomerular blood vessel, the epithelium of Bowman's capsule called podocyte are arranged in an intricate manner so as to leave some minute spaces called filtration. Blood is filtered through the membrane that almost all the constituents of the plasma pass through the lumen of the Bowman's capsule except the proteins.

Therefore, it is considered as a process of ultrafiltration. The amount of filtrate formed by the kidney per minute is called glomerular filtration rate [GFR] in a healthy individual approximately 125 ml/minute, i.e., 180 litres/day. The kidney have built-in mechanism for the regulation of glomerular filtration. A comparison of the volume of the filtrate formed per day [180 l. per day] with that of the urine released [1.5 l.]

Reabsorption :-

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Around 99% of the filtrate obtained is reabsorbed by the renal tubules. This process is called Reabsorption. The tubular epithelial cell in diffⁿ segments of nephron perform this either by active or passive mechanism.

In proximal convoluted Tubule [PCT] :-

PCT is lined by simple cuboidal brush border epithelium which increases the surface area for reabsorption. Nearly all of the essential nutrients & 70-80% of electrolytes & water are reabsorbed by this segment. PCT also helps to maintain the pH & ionic balance of the body fluids by selective secretⁿ of hydrogen ions & ammonia into the filtrate & by absorption of HCO_3^- form it.

In Henle's loop :-

Reabsorptⁿ is minimum in its ascending limb. However, this region play a significant role in maintenance of high osmolarity of medullary interstitial impermeable to electrolytes. This concentrate the filtrate as it moves down. The ascending limb is impermeable to water but allows transport of electrolyte.

In Distal Convuluted Tubule [DCT] :-

conditional reabsorption of Na^+ & water takes place in this segment. DCT is also capable of reabsorption of HCO_3^- & selective secretⁿ of hydrogen & potassium ions & NH_3 to maintain the pH & sodium potassium balance food.

secretion :-

The next step in urine formatⁿ is tubular secretⁿ is the transfer of material from peritubular capillaries to the renal tubular lumen. It is the opposite process of re-absorption.

This secretion is caused mainly by active transport & passive diffusion. Usually only a few substance are secreted, & are typically waste products. Here, tubular cells secrete substance like hydrogen ions, potassium ions, etc into the filtrate. Through this process, the ionic, acid-base & the balance of other body fluids are maintained. The secreted ions combine with the filtrate & form urine. The urine passes out of nephron tubule into a collecting duct.

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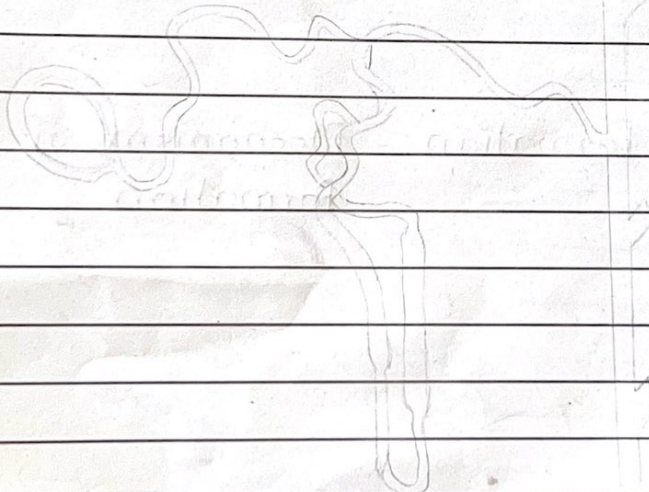
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Urine :-

The urine produced is 95% water & 5% nitrogenous waste. Wastes such as urea, ammonia & creatinine are excreted in urine. Apart from these, the potassium, sodium & calcium ions are also excreted.

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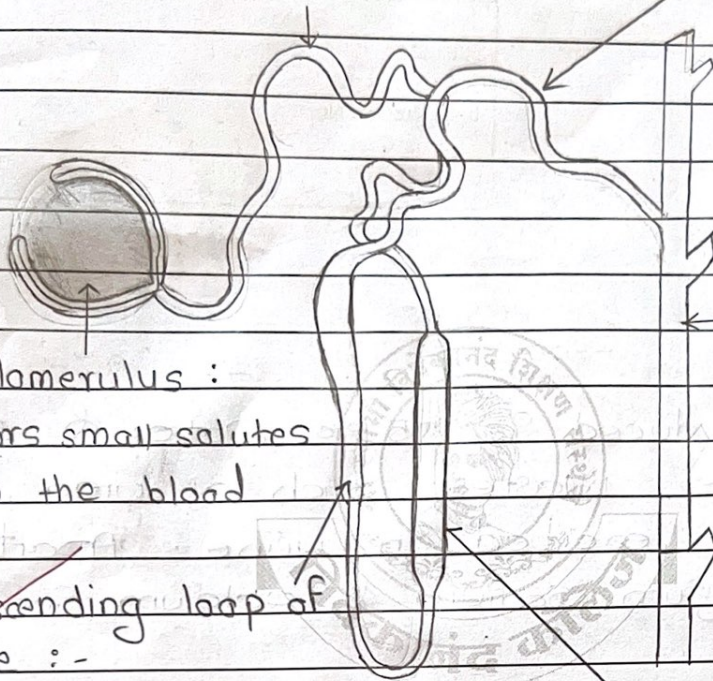


② Proximal convoluted tubule :

Reabsorbs ions, water & nutrients;
removes toxins & adjusts filtrate pH

③ Distal tubule :

selectively secretes and
absorbs different ions
to maintain blood pH
& electrolyte balance



① Glomerulus :

Filters small solutes
from the blood

④ collecting duct :

Reabsorbs solutes
and water from the
filtrate

④ Ascending loop of
Henle :-

Reabsorbs Na^+ & Cl^- from
the filtrate into the
interstitial fluid

⑤ Descending loop of Henle
Aquaporins allow water
to pass from the filtrate
into the interstitial fluid

Urine Formation - Mechanism of urine
formation