

**2024**

**SPORTS PHYSIOLOGY**

**Paper : SE-CC-31 : P11**

**(Sports Biomechanics)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

1. (a) What do you mean by biomechanics of motion?  
(b) Describe the different types of motion with special reference to kinematics of motion. 4+6  

**Or,**

(a) Describe the kinetics of the different forces that lead to tissue deformation due to mechanical loading.  
(b) Discuss the effect of fatigue on knee kinetics and kinematics in stop-jump tasks. 6+4
2. (a) Classify sports injuries.  
(b) Describe the mechanism of chronic sports injuries with suitable examples. 2+8  

**Or,**

(a) What do you mean by traumatic injury? Give an example.  
(b) Mention some tips to prevent sports injuries in children. 2+8
3. (a) Define Posture.  
(b) Distinguish between Static and Dynamic posture.  
(c) How does posture affect health? 2+4+4  

**Or,**

(a) Give a detail account of good posture.  
(b) What is Anti-Gravity muscle? 8+2
4. (a) "Technology has become an inevitable part of sports." — Justify this statement with example.  
(b) Discuss the role of image analysis technique in judgement of cricket-performance. 5+5  

**Or,**

Explain how image analysis helps in performance evaluation of Tennis and Football players. 5+5

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*S(3rd Sm.)-Sports Physiology-SE-CC-31 : P11*

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5. (a) What is Torque? 3+7
- (b) Discuss how force enables us to perform work involved muscular movement.
- Or,**
- (a) Discuss different types of motion. 4+6
- (b) Explain how the knowledge of Biomechanics supports the sports performance.
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SH-IV/PHYH/CC-X/24

**B.Sc. 4th Semester (Honours) Examination, 2024 (CBCS)**

**Subject : Physiology**

**Course : CC-X**

**Time: 2 Hours**

**Full Marks: 40**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* of the following questions:

2×5=10

- (a) Name two muscles of expiration.
- (b) What is Cheyne-Stokes breathing?
- (c) What is Bohr effect?
- (d) How much oxygen is carried in 1 gm of haemoglobin? *1.34 ml*
- (e) Mention the chemical constituents of lung surfactant.
- (f) Write two symptoms of Caisson's disease. *decompression sickness*
- (g) What is Hering-Breuer inflation reflex?
- (h) Define respiratory acidosis.

2. Answer *any two* of the following questions:

5×2=10

- (a) State the non-respiratory functions of the lung. How is lung compliance affected in emphysema? *↑ alveoli wall elasticity lost*  
4+1
- (b) What is EPOC? Discuss it with a diagram. 2+3
- (c) What are the physiological factors affecting lung volumes.
- (d) Define 'anatomic dead space' and 'physiologic dead space'. How are these measured?  
1+1+1.5+1.5

3. Answer *any two* of the following questions:

10×2=20

- (a) State the process of carbon-dioxide transport in blood with a suitable diagram. What are meant by Hamburger phenomenon and Chloride Shift? 7+(1.5+1.5)
- (b) What do you mean by buffer nerves? Discuss neural control of respiration in brief. 2+8
- (c) Elaborate J-reflex in the light of J-receptor of juxta-pulmonary receptor. Mention the characteristic features and causes of "Cheyne-Stokes breathing". 7+3
- (d) What are clinical features of acute mountain sickness? State problems associated with ascent to high altitude. 3+7



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours/Programme 4th Semester Examination, 2024

**PHYHGEC04T/PHYGCOR04T-PHYSIOLOGY (GE4/DSC4)**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates should answer in their own words  
and adhere to the word limit as practicable.*

*প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।  
প্রার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে  
উত্তর করিবে।*

*All symbols are of usual significance.*

**Answer any five questions**

8×5 = 40

যে-কোনো পাঁচটি প্রশ্নের উত্তর দাও

1. (a) Describe how TRH and TSH regulate thyroid hormone secretion. 4+4  
TRH এবং TSH কিভাবে থাইরয়েড হরমোন নিঃসরণ নিয়ন্ত্রণ করে বর্ণনা করো।  
(b) Describe the histological structure of thyroid gland with a labelled diagram.  
চিহ্নিত চিত্রসহ থাইরয়েড গ্রন্থির কলাস্থানিক গঠন বর্ণনা করো।
2. (a) From where insulin and glucagon are secreted? (1+1)+  
4+(1+1)  
ইনসুলিন এবং গ্লুকাগন কোথা থেকে ক্ষরিত হয়?  
(b) Discuss the roles of Insulin and Glucagon in regulation of blood glucose.  
রক্তে গ্লুকোজের মাত্রা নিয়ন্ত্রণে ইনসুলিন ও গ্লুকাগনের ভূমিকা আলোচনা করো।  
(c) What do you mean by Type-I and Type II diabetes?  
Type I এবং Type II ডায়াবেটিস বলতে কি বোঝো?
3. (a) Name the three different layers of adrenal cortex and name the hormones secreted from each layer. 3+3+2  
অ্যাড্রেনাল কর্টেক্সের তিনটি স্তর ও সেখান থেকে নিঃসৃত হরমোনের নাম উল্লেখ করো।  
(b) State the functions of Glucocorticoids.  
গ্লুকোকর্টিকয়েডের কাজগুলি উল্লেখ করো।  
(c) What is cretinism?  
ক্রেটিনিজম কি?
4. (a) Discuss about the role of PTH (parathyroid) in regulation of calcium and phosphate metabolism in human body. 4+4  
মানব দেহে ক্যালসিয়াম ও ফসফেটের বিপাকে PTH (প্যারাথাইরয়েড)-এর ভূমিকা বর্ণনা করো।

- (b) Name the hormones secreted from posterior pituitary and mention their important functions.

পশ্চাৎ পিটুইটারি থেকে নিঃসৃত হরমোনগুলির নাম লেখো এবং তাদের গুরুত্বপূর্ণ কাজগুলি উল্লেখ করো।

5. (a) Write a short note on renin-angiotensin system.

রেনিন-অ্যাঞ্জিওটেনসিন সিস্টেম সম্পর্কে একটি সংক্ষিপ্ত টীকা লেখো।

- (b) Write the source of Melatonin and its important function.

মেলাটোনিনের উৎস এবং এর গুরুত্বপূর্ণ কাজ লেখো।

- (c) Describe the function of calcitonin.

ক্যালসিটোনিনের কাজ বর্ণনা করো।

6. (a) State the differences between Sertoli cells and Leydig's cells.

সার্টোলি কোষ ও লেডিগ কোষের মধ্যে পার্থক্য উল্লেখ করো।

- (b) What is spermiogenesis? Mention the name of its different phases.

স্পার্মিওজেনেসিস কি? ইহার বিভিন্ন পর্যায়ের নাম উল্লেখ করো।

- (c) Write the functions of testosterone in male body.

পুরুষ দেহে টেস্টোস্টেরন হরমোনের কাজগুলি লেখো।

7. (a) What is menstrual cycle?

রজঃচক্র কি?

- (b) What is placenta? Name the hormones secreted from placenta mentioning one function of each.

প্লাসেন্টা কি? প্লাসেন্টা থেকে নিঃসৃত হরমোনগুলির নাম লেখো এবং প্রতিটির একটি করে কাজ উল্লেখ করো।

- (c) Which hormone is responsible for ovulation?

ডিম্বাণু নিঃসরণের জন্য কোন হরমোন দায়ী?

8. Write short note: (any two)

টীকা লেখোঃ (যে-কোনো দুটি)

- (a) Hyperthyroidism

হাইপারথাইরয়েডিজম

- (b) Pregnancy test

গ্রেগন্যান্সি পরীক্ষা

- (c) Hypoglycemia

হাইপোগ্লাইসেমিয়া

- (d) Hypothalamo-pituitary-gonadal axis.

হাইপোথ্যালামো-পিটুইটারি-গোনাডাল অ্যাক্সিস।

70% alcohol potent & Sterilizer হিসেবে ব্যবহার করা হয়।

Rh antigen D: 3+(1+2)+2

Vertebrate to note - ABO blood group (৩০ অঙ্কিত করে দেবে)

70% alcohol potent & Sterilizer হিসেবে ব্যবহার করা হয়।

TC of RBC → Per mm<sup>3</sup> blood - ৪০০০০০ RBC and ৪০০০০০ TC of RBC.

Vertebrate to note - (৩০ অঙ্কিত করে দেবে)

RBC diluted 200 টার হা?

fluid - composition.

ELISA - full name. 2+(2+3)+1

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Placenta to note - Sufficient



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Major 1st Semester Examination, 2023-24

**PHYDSC101T-PHYSIOLOGY (MAJOR)**

**ANATOMY AND CELLULAR BASIS OF PHYSIOLOGY**

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

**GROUP-A**

1. Answer any **five** questions from the following:

2×5 = 10

- (a) Write down the different anatomical planes for studying human body.
- (b) What is lipid rafts?
- (c) Define crossing-over.
- (d) What is erythrocyte ghost?
- (e) Give an example of cell adhesion molecule. What is its function?
- (f) Give one example of symport and one example of antiport.
- (g) What is the significance of G<sub>0</sub> phase?
- (h) What is the function of mitotic spindle?

**GROUP-B**

Answer any **five** questions from the following

8×5 = 40

2. Write short notes (any **two**):

4×2 = 8

- (a) Body cavities
- (b) Epidermal structure
- (c) G-protein coupled receptors
- (d) Functions of peroxisomes.

3. (a) What is cyclin? Discuss its role in cell cycle.

1+3

(b) State the functions of smooth and rough endoplasmic reticulum.

2+2

4. (a) Write a short note on Fluid Mosaic Model of cell membrane.

4

(b) Describe the role of cAMP as second messenger.

4

5. (a) State the functions of different types of compound epithelium. 4  
~~(b)~~ Write the difference between compact bone and spongy bone. 2  
~~(c)~~ Write the functions of Areolar tissue. 2
  
6. (a) What are connexins? 2  
~~(b)~~ What is exocytosis? 2  
~~(c)~~ Describe the structure and function of  $\text{Na}^+/\text{K}^+$  ATPase. 4
  
7. ~~(a)~~ Explain the role of microtubules in the formation of mitotic spindle. 3  
~~(b)~~ State the importance of telomere in chromosome structure. 2  
~~(c)~~ Describe the Anaphase I stage of meiosis with a suitable diagram. 3
  
8. (a) Discuss briefly how the cycling of  $\text{Ca}^{2+}$  can act as the intracellular messenger. 5  
 (b) State the role of RAS and MAP Kinase in cellular actions. 3
  
9. (a) With a labelled diagram describe the electron microscopic structure of mitochondria. 5  
 (b) Describe how  $\text{H}^+$  ions are transported across the mitochondrial membrane to generate ATP. 3

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2024

**SPORTS PHYSIOLOGY**

**Paper : SE-DSEC-42-TH P-18**

**(Performance of Female Athlete)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

1. What do you mean by female athlete triad? With a suitable diagram, discuss the components of the triad. 3+7

**Or,**

State the EBW-McLaren and EBW-Moore Method of calculating the energy availability of track athletes. What are the limitations of both the methods? (3+3)+(2+2)

2. What is placenta previa? What are the maternal adaptations in late pregnancy at rest relative to early pregnancy? 2+8

**Or,**

Discuss the human placental adaptations to exercise during pregnancy. Compare the physiologic responses to graded exercise on a cycle ergometer testing in pregnant and non-pregnant women. 6+4

3. What is primary and secondary amenorrhea? Discuss the hormonal changes that occur in secondary amenorrhea. (2+2)+6

**Or,**

How does OCP therapy compromise bone health? Under what conditions does a female athlete require hormone replacement therapy? What type of pharmacologic therapy is recommended for an athlete suffering from amenorrhea? 4+3+3

4. Discuss the structural anatomy of the breast. What is Jogger's nipple? 7+3

**Or,**

Tabulate the types and symptoms of sports related breast injuries. Mention the perceived performance effects of breast injuries. (3+4)+3

5. (a) Explain the common types of soft tissue injuries that athletes might experience.

(b) Describe how many types of fractures are there.

(c) Describe the rehabilitation process for an athlete recovering from an anterior cruciate ligament (ACL) injury. 3+3+4

**Or,**

(a) Discuss the role of testosterone levels in gender verification policies in sports.

(b) Analyze the challenges and opportunities of integrating transgender athletes into competitive sports. 5+5



## WEST BENGAL STATE UNIVERSITY

B.Sc. 1st Semester Examination, 2023-24

## PHYMIN101T/PHYCOR101T-PHYSIOLOGY

Time Allotted: 2 Hours

Full Marks: 50

The figures in the margin indicate full marks.  
Candidates should answer in their own words  
and adhere to the word limit as practicable.

প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।  
পরীক্ষার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে  
উত্তর করিবে।

All symbols are of usual significance.

## GROUP-A / বিভাগ-ক

1. Answer any *five* questions from the following:

2×5 = 10

নিম্নলিখিত যে-কোনো পাঁচটি প্রশ্নের উত্তর দাও:

(a) Mention two structural differences between artery and vein.  
ধমনী ও শিরার দুটি গঠনগত পার্থক্য উল্লেখ করো।

(b) Name two derivatives of Haemoglobin.  
হিমোগ্লোবিনের দুটি লব্ধ যৌগের নাম লেখো।

(c) What do you mean by cardiac arrhythmia?  
কার্ডিয়াক আরিদ্মিয়া বলতে কি বোঝো?

(d) What do you mean by pro-coagulants? Give two examples.  
প্রো-কোয়াগুলেন্ট বলতে কি বোঝো? দুটি উদাহরণ দাও।

(e) What is haemophilia A?  
হিমোফিলিয়া এ কি?

(f) Mention the role of diaphragm in respiration.  
শ্বাসকার্যে মধ্যচ্ছদার ভূমিকা উল্লেখ করো।

(g) What is Haldane Effect?  
হ্যালডেন এফেক্ট কি?

(h) Mention two functions of platelets.  
অণুচক্রিকার দুটি কার্য উল্লেখ করো।

## GROUP-B / বিভাগ-খ

Answer any *five* questions from the following

8×5 = 40

নিম্নলিখিত যে-কোনো পাঁচটি প্রশ্নের উত্তর দাও

2. (a) Describe the Oxygen dissociation curve with a suitable diagram.  
চিত্রসহ অক্সিজেন বিয়োজন লেখচিত্র বর্ণনা করো।

4+4

(b) Name the factors affecting oxygen dissociation curve mentioning their effect on it.  
অক্সিজেন বিয়োজন লেখচিত্রের উপর প্রভাব বিস্তারকারী ফ্যাক্টরগুলির নাম ও তাদের প্রভাব উল্লেখ করো।

3. Mention the peculiarities of (a) coronary circulation and (b) placental circulation. 4+4  
(a) করোনারি সংবহন ও (b) অমরা সংবহনের বৈশিষ্ট্য উল্লেখ করো।
4. (a) Describe the different waves of E.C.G. 4+2+2  
E.C.G.-এর বিভিন্ন তরঙ্গগুলি বর্ণনা করো।  
(b) What is the significance of 'QRS' complex?  
'QRS' কমপ্লেক্সের তাৎপর্য কি?  
(c) Mention the placing of V<sub>1</sub> chest lead for recording of E.C.G.  
E.C.G. লিপিবদ্ধকরণে 'V<sub>1</sub>' চেস্ট লিডের অবস্থান উল্লেখ করো।
5. (a) What is the 'conducting zone' of the Respiratory tract? 2+6  
শ্বসন পথের "পরিবহন অঞ্চল" কি?  
(b) Describe the transport of carbon-di-oxide in blood.  
রক্তে কার্বন-ডাই-অক্সাইড পরিবহন বর্ণনা করো।
6. (a) Describe the events of the ventricle during cardiac cycle with a diagram. 6+2  
চিত্রসহ হৃদচক্রের নিলয়ের ঘটনাবলী বর্ণনা করো।  
(b) Mention the locations of bicuspid and tricuspid valves.  
দ্বিপত্র ও ত্রিপত্র কপাটিকার অবস্থান উল্লেখ করো।
7. (a) Describe the mechanism of intrinsic pathway of blood coagulation. 6+2  
রক্ত তঞ্চনের সার্বভৌম বিক্রিয়া পথটি বর্ণনা করো।  
(b) What is prothrombin time?  
প্রোথ্রম্বিন কাল কি?
8. (a) What are stroke volume and minute volume? (2+2)+(2+2)  
ঘাত পরিমাণ ও মিনিট পরিমাণ কি?  
(b) What are Bainbridge Reflex and Marey's Reflex?  
বেইনব্রিজ প্রতিবর্ত ও ম্যারির প্রতিবর্ত কি?
9. Write short notes on any *two*: 4×2 = 8  
সংক্ষিপ্ত টীকা লেখো: (যে-কোনো দুটি)  
(a) ABO Group System  
'ABO' গ্রুপ সিস্টেম  
(b) Lung Surfactants  
লাং সারফ্যাক্টেন্ট  
(c) E.S.R  
ই.এস.আর  
(d) Artificial Respiration.  
কৃত্রিম শ্বাসক্রিয়া।

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**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Minor/Cor 2nd Semester Examination, 2024

**PHYMIN202T/PHYCOR202T-PHYSIOLOGY**

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.  
Candidates should answer in their own words  
and adhere to the word limit as practicable.*

*প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।  
পরীক্ষার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে  
উত্তর করিবে।*

*All symbols are of usual significance.*

**GROUP-A / বিভাগ-ক**

1. Answer any **five** questions from the following:

2×5 = 10

নিম্নলিখিত যে-কোনো **পাঁচটি** প্রশ্নের উত্তর দাও:

(a) What are reducing sugars? Give examples.

বিজারিত শর্করা কাকে বলে? উদাহরণ দাও।

(b) Define isozyme. Give example.

উদাহরণসহ আইসোজাইমের সংজ্ঞা লেখো।

(c) What is meant by mutarotation?

পরিবর্তিত ঘূর্ণন বলতে কি বোঝো?

(d) What is Crypts of Liberkuhn?

ক্রিপটস্ অব লিবারকুন কি?

(e) Write two functions of bile.

পিত্তরসের দুটি কাজ লেখো।

(f) What is peristalsis?

পেরিস্টলিসিস কি?

(g) Write two functions of vitamin A.

ভিটামিন-A-র দুটি কাজ লেখো।

(h) What is pro-vitamin? Give example.

প্রোভিটামিন কি? উদাহরণ দাও।

**GROUP-B / বিভাগ-খ**

Answer any **five** questions from the following

8×5 = 40

নিম্নলিখিত যে-কোনো **পাঁচটি** প্রশ্নের উত্তর দাও

2. (a) Discuss the role of Juxtaglomerular Apparatus in urine formation.

4+4

মূত্র উৎপাদনে জাক্সটা-গ্লোমেয়ুলার এপারেটাসের ভূমিকা লেখো।

(b) What are the abnormal constituents of urine? Give four examples.

মূত্রের অস্বাভাবিক উপাদান কাকে বলে? চারটি উদাহরণ দাও।

3. (a) Discuss the mechanism of HCl secretion in stomach. 4+4  
পাকস্থলীতে HCl ক্ষরণের পদ্ধতি বর্ণনা করো।
- (b) Discuss the mechanism of formation of peptic ulcer. 4+4  
পাকস্থলীতে প্রদাহের (ulcer) কারণগত পদ্ধতি বর্ণনা করো।
4. (a) Describe the steps of urea cycle with enzymes. 4+4  
উৎসেচকসহ ইউরিয়া চক্রের ধাপগুলি বর্ণনা করো।
- (b) Mention the site and importance of urea cycle.  
ইউরিয়া চক্রের স্থান এবং গুরুত্ব উল্লেখ করো।
5. (a) Mentioning enzymes describe the process of glycolysis. 4+4  
উৎসেচকসহ গ্লাইকোলিসিসের পদ্ধতি বর্ণনা করো।
- (b) In anaerobic condition how much energy is produced (from one molecule of glucose) in glycolysis? Mention the enzymatic steps.  
এক অণু গ্লুকোজ থেকে অবাত স্বসনে জারণের ফলে কত শক্তি উৎপন্ন হয়? উৎসেচকসহ প্রতিটি ধাপ বর্ণনা করো।
6. (a) Write the effects of temperature and pH on the action of enzyme. 4+4  
উৎসেচকের ক্রিয়ার ওপর তাপমাত্রা ও pH-র প্রভাব লেখো।
- (b) What is co-enzyme? Discuss its role on enzyme action.  
সহ-উৎসেচক কাকে বলে? উৎসেচকের কাজে সহ-উৎসেচকের ভূমিকা বর্ণনা করো।
7. (a) What do you mean by biological value of protein? 3+3+2  
প্রোটিনের জৈব মূল্য বলতে কি বোঝো?
- (b) Write down the source and function of vitamin-C.  
ভিটামিন-সি-র উৎস ও কার্যগুলি লেখো।
- (c) What is hypervitaminosis?  
হাইপারভিটামিনোসিস কি?
8. Write short notes on the following (any two): 4+4  
সংক্ষিপ্ত টীকা লেখো: (যে-কোনো দুটি)
- (a) Fatty Liver disease  
ফ্যাটি লিভার রোগ
- (b) SDA  
এসডিএ
- (c) Optical Isomer  
অপটিক্যাল আইসোমার
- (d) RNA.  
আরএনএ।

—x—



## WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 6th Semester Examination, 2024

## PHYADSE04T-PHYSIOLOGY (DSE3/4)

## HUMAN NUTRITION AND DIETETICS

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Answer any five questions from the following**

8×5 = 40

- ~~X~~ (a) What is ACU? 1  
 (b) Define PER. 1  
 (c) Give the role of RQ calculation to understand absorption of different nutrients. 3  
 (d) Name some essential amino acids. 3
2. (a) Describe the bodily changes in Marasmus. 5  
 (b) How can such malnutrition be prevented? 3
- ~~X~~ (a) Outline the clinical features of Beriberi. 2  
 (b) Name two low cost supplementary foods. 2  
 (c) Calculate the energy value of 30 gm pulse, 70 gm rice, 10 gm oil. 4
4. (a) What is weaning? 1  
 (b) Which vitamin is associated with synthesis of coagulation factor prothrombin? 1  
 (c) Suggest dietary modifications for hypertensive patients. 6
- ~~5~~ (a) What is malnutrition? 2  
 (b) Describe the sign and symptoms of protein malnutrition. 3  
 (c) Explain why Recommended Dietary Allowance (RDA) is not same for all? 3
6. (a) Briefly describe the role of dietary fibers in human body. 5  
 (b) Write the importance of vitamin A. 3
- ~~X~~ Write notes on any *two* of the following: 4×2 = 8  
~~(a)~~ Physiological significance of Na<sup>+</sup>  
~~(b)~~ Dietary fibre  
~~(c)~~ Calorific value of food  
 (d) Supplementary value of protein.
- ~~X~~ (a) Mention the sources and daily requirements of vitamin A. 2+1  
 (b) Discuss the role of vitamin A in vision. 4  
 (c) What is xerophthalmia? 1

—X—



**WEST BENGAL STATE UNIVERSITY**  
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**PHYACOR14T-PHYSIOLOGY (CC14)**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

**Answer any five questions from the following**

8×5 = 40

1. (a) Discuss the role of Anti-Diuretic Hormone (ADH) in urine formation. 4  
(b) What are diuretics? 2  
(c) State the function of podocytes. 2
2. (a) Discuss the structure and function of Malpighian Corpuscle. 4  
(b) What do you mean by renal shut down? 2  
(c) Why glomerular filtration is called ultrafiltration? 2
3. (a) Describe the innervation of urinary bladder with a diagram. 4  
(b) Discuss the process of micturition. 4
4. (a) Discuss about different non-excretory functions of kidney. 6  
(b) What is hemodialysis? 2
5. (a) Discuss the mechanism of  $\text{Na}^+$  reabsorption in Proximal Convolute Tubule (PCT). 6  
(b) What is filtration fraction? 2
6. (a) Discuss the role of kidney in the regulation of acid-base balance in the body. 6  
(b) What is glucosuria? 2
7. (a) Describe the autoregulation of renal circulation. 6  
(b) What is the role of Lacis cell in JG apparatus? 2
8. (a) Write short note on counter-current exchanger system with diagram. 6  
(b) Why creatinine serves as a marker for kidney diseases? 2

—x—



**WEST BENGAL STATE UNIVERSITY**  
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**PHYADSE05T-PHYSIOLOGY (DSE3/4)**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**Answer any five questions from the following**

8×5 = 40

1. Write notes on any **two** of the following:

4×2 = 8

- (a) Sigma ( $\sigma$ ) factor
- (b) Point mutation
- (c) Pleiotropism
- (d) Multiple allelism
- (e) Topoisomerase.

2. (a) What is Wobble hypothesis?

2+3+3

(b) What do you mean by E, P and A site?

(c) Briefly describe the features of genetic code.

3. (a) What is backcross?

2+2+2+2

(b) What is Hfr?

(c) What is SOS protein?

(d) What is house keeping gene?

4. (a) Discuss the applications of recombinant DNA technology.

3+5

(b) Describe the process of bacterial transformation with a diagram.

5. (a) How transcription bubble is formed?

4+4

(b) Differentiate between rho-dependent and rho-independent mode of transcription termination.

6. What is epistasis? Briefly describe the different types of epistasis found in animal.

2+6

7. (a) What is concatemeric DNA? How is it generated?

1+2+2  $\frac{1}{2}$  + 2  $\frac{1}{2}$

(b) What do you mean by penetrance and expressivity? Cite suitable example to explain it.

8. (a) What is the function of fMet tRNA?

2+2+2+2

(b) State the importance of Shine-Dalgarno sequence in translation.

(c) What is chromosome banding?

(d) Distinguish between crossing over and linkage.

—x—



## WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 6th Semester Examination, 2024

## PHYACOR13T-PHYSIOLOGY (CC13)

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.**Candidates should answer in their own words and adhere to the word limit as practicable.**All symbols are of usual significance.***Answer any five questions from the following**

8×5 = 40

1. (a) Explain the process of spermatogenesis. 5
- (b) Describe the E. M. structure of mature sperm with a neat labelled diagram. 3
- ~~X~~ (a) Discuss briefly the process of intrauterine insemination (IUI). ~~X~~ 4
- (b) State the function of AMH. ~~X~~ 2
- (c) What is testicular torsion? ~~X~~ 2
3. (a) Discuss the different physiological changes which occur during pregnancy. 7
- (b) What is decidua? 1
- ~~X~~ (a) Discuss the development of graafian follicle with a diagram. 6
- (b) What is LH surge? ~~X~~ 2
- ~~X~~ (a) Write the role of oxytocin in parturition and milk ejection. ~~X~~ 6
- (b) What is menarche? ~~X~~ 2
- ~~X~~ (a) Enumerate the role of hormones as contraceptives. 4
- (b) What is amniocentesis? ~~X~~ 3
- (c) What is corpus hemorrhagicum? ~~X~~ 1
- ~~X~~ (a) Why sertoli cells are called sustentacular cells? ~~X~~ 4
- (b) What are the functions of ABP? ~~X~~ 2
- (c) What is turner syndrome? ~~X~~ 2
8. (a) Write a note on down syndrome. 5
- (b) What do you know about cryptorchidism? 3

—x—