



WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2023

PHYACOR04T-PHYSIOLOGY (CC4)

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.**All symbols are of usual significance.***Answer any five questions from the following****8×5 = 40**

1. (a) Draw the structure of an amino acid which contains sulphydryl group. 2
 (b) Name two basic amino acids and two acidic amino acids each. 2
 (c) Write the reaction sequence in the production of "Ruhemann's purple". 4
2. (a) "Glucose and galactose are epimers to each other" — Explain. 3
 (b) Write the differences between Gluconic and Glucuronic acids. 2
 (c) What is anomeric carbon? Write the structure of a monosaccharide having anomeric carbon. 2+1
3. (a) Distinguish between saturated and unsaturated fatty acids. 2
 (b) What is saponification number? 2
 (c) What are sphingolipids? Give an example. 2+1
 (d) Distinguish between fat and wax. 1
4. (a) What is mutarotation? Explain with example. 4
 (b) Why is cellulose not digested by the human body? 2
 (c) Explain why sucrose is not a reducing sugar while its components are. 2
5. (a) Why are amino acids called ampholytes? 2
 (b) Define oligomeric proteins. Give example. 1+1
 (c) "Peptide bond is rigid and planar" — Explain. 3
 (d) What are imino acids? 1
6. (a) What do you mean by cis-trans isomerism? Mention the importance of cis-fatty acids. 2+2
 (b) What is RM number? 2
 (c) What are eicosanoids? 2
7. (a) Distinguish between denaturation and renaturation. 3
 (b) Explain — "Strands of DNA are complementary, not identical". 3
 (c) What do you mean by pallindrome sequence of DNA? 2
8. (a) Describe the clover-leaf structure of 't' RNA. 5
 (b) Write the functions of different types of RNA. 3

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WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 3rd Semester Examination, 2022-23

PHYACOR05T-PHYSIOLOGY (CC5)

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.

All symbols are of usual significance.

Answer any five questions from the following

8×5 = 40

1. (a) Describe the different stages of erythropoiesis. 4
(b) Describe four major factors regulating erythropoiesis. 4
2. (a) What is diapedesis? 1
(b) Explain the functions of NK cells. 2
(c) What is leukopenia? 1
(d) Differentiate between cell mediated immunity and humoral immunity. 4
3. (a) Mention the characteristic features of normal RBC. 3
(b) State the name and cause of five important RBC disorder. 5
4. (a) Briefly explain the basis of ABO and Rh blood grouping. 4
(b) What is Bombay blood group phenotype? Which ABO blood group could be used to transfuse this patient? Justify your answer. 2+1+1
5. (a) Discuss the functions of plasma proteins. 4
(b) What is plasmapheresis? 2
(c) Mention two conditions that may lead to decrease in the levels of plasma proteins. 1+1
State the pathophysiological implication of plasma protein depletion.
6. (a) Explain the waterfall theory of blood coagulation. 5
(b) Why is blood clotting abnormal in patient with vitamin K deficiency? 2
(c) What is von Willebrand disease? 1
7. (a) Mention the difference between foetal hemoglobin and adult hemoglobin. 2
(b) Explain the structure of heme with the help of a diagram. 4
(c) State the clinical importance of glycated hemoglobin. 2
8. Write short notes on any *two* of the following: 4+4
 - (a) Fibrinolysis
 - (b) Secondary lymphoid organs
 - (c) Sickle cell anaemia
 - (d) Haemophilia.

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WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2022-23

PHYADSE02T-PHYSIOLOGY (DSE1/2)

MICROBIOLOGY AND IMMUNOLOGY

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.

All symbols are of usual significance.

Answer any five questions

8×5 = 40

1. (a) Based on nucleic acid, classify viruses with proper examples. 4+4
(b) Describe briefly the process of replication of retroviruses within the host body.
2. (a) Write down the composition of liquid broth for bacterial culture. 3+3+2
(b) What are the physical factors affecting growth of bacteria? Mention significance of each factor.
3. (a) Describe the structure of bacterial cell wall with proper diagram. 3+2+3
(b) State the importance of peptidyl transferase in the bacterial cell wall formation.
4. (a) Briefly describe gram staining procedure of bacteria. 4+4
(b) What are the bacteriostatic and bacteriocidal? Write down their action.
5. (a) With proper diagram describe the structure of IgG antibody. 4+4
(b) What are the structural and functional characteristics of IgA and IgM?
6. (a) What is cytokine? 2+6
(b) Discuss the role of cytokines in the hypersensitivity reaction. Briefly illustrate the process mentioning the role of some specific cytokines.
7. (a) Which cells act as antigen presenting cells (APCs) in the immune system? 3+5
(b) How do APCs induce humoral immunity?
8. (a) Briefly describe the process of ELISA test. 4+4
(b) With suitable diagram describe the structure of MHC class I and MHC class II antigens.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 4th Semester Examination, 2023

PHYACOR08T-PHYSIOLOGY (CC8)

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.

Answer any five questions from the following

8×5 = 40

1. (a) What is glycogenin? What role does it play in glycogenesis? (2+2)+4
(b) "Gluconeogenesis is just not the simple reversal of glycolysis."— Justify.
2. (a) Why HMP-shunt is named so? 2+3+(2+1)
(b) Discuss the oxidative steps of HMP-shunt pathway.
(c) What is Rapaport-Luebering cycle? State its physiological significance.
3. (a) State the significance of Cori cycle and glucose-alanine cycle. (2+2)+(2+2)
(b) What is deamination? How is it different from transamination?
4. (a) Write the significance of SDA. 2+3+3
(b) How is BMR determined?
(c) Define NPU, PER and RQ.
5. (a) Discuss the steps of formation of ketone bodies. 4+4
(b) Give the account of utility of ketone bodies.
6. (a) Describe the process of synthesis of mevalonate from acetyl CoA. 4+4
(b) Briefly describe the fatty acid synthase complex.
7. (a) Describe the chemiosmotic theory of oxidative phosphorylation. 4+2+2
(b) What do you mean by redox couple?
(c) Give one example of inhibitor of the respiratory chain and inhibition of oxidative phosphorylation mentioning their site of action.
8. (a) Compare CPS-I and CPS-II. 2+2+4
(b) Discuss the mitochondrial steps of urea cycle.
(c) Describe the metabolism of triglyceride in human body.

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WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 4th Semester Examination, 2023

PHYACOR10T-PHYSIOLOGY (CC10)

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.

Answer any five questions from the following

8×5 = 40

1. (a) State the peculiarities of pulmonary circulation. 4+2+2
 (b) Why pulmonary bed remains dry? *Lymphatics near terminal bronchioles*
 (c) State the functions of clara cells. *bronchiolar surfactant, contains cyt P450 dependent oxidase → detox. role*
2. (a) What is Bohr's effect? *Hb ↓ affinity for O₂ → ↑ PCO₂, ↓ pH → ↑ unloading of O₂ in tissues.* 2+2+(2+2)
 (b) What do you mean by the term Cheyne-Stokes breathing? *periodic breathing betⁿ central apnoea.*
 (c) How does 2,3-BPG and CO₂ affect oxyhemoglobin dissociation curve? *↓ P₅₀ → shift to left*
3. (a) Describe the non-respiratory functions of lung. 4+2+2
 (b) Compare the oxygen dissociation curve of adult and fetal hemoglobin.
 (c) What is apnoea?
4. (a) Briefly outline the neural control of breathing with special reference to different respiratory centers. 5+2+1
 (b) Distinguish between physiological dead space and anatomical dead space.
 (c) What is emphysema? *lung alveoli damaged, shortness of breath*
→ resp. centre → hyperventilation → sym NS
5. (a) What are J-receptors? 2+4+2
 (b) Briefly describe the working mechanism of Glomus cells. *secretory sensory neurons that release nt in response of ↓ pO₂, ↑ pCO₂ or ↓ pH.*
 (c) What is Biot's breathing? *periods of apnea alternate irregularly wth series of breaths of equal depth that terminate abruptly, associated wth meningitis. → abnormal resp. pattern.*
6. (a) What do you mean by spirometry? 1+3+4
 (b) Mention the importance of spirometry in the diagnosis of respiratory diseases.
 (c) Mention the physiological significance of ventilation-perfusion ratio.
7. (a) What is central cyanosis? 2+4+2
 (b) State the significance of lung compliance.
 (c) What is atelectasis? *alveoli cant inflate properly*
8. (a) Describe briefly the effects of high altitude on respiration. 3+3+2
 (b) Describe briefly the mechanism of central chemoreceptors.
 (c) Classify hypoxia.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 6th Semester Examination, 2023

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) Briefly discuss the process of sex differentiation. 6
(b) What is Turner's syndrome? 2
2. (a) What is ovulation? 2
(b) Explain the role of hormones in the regulation of the menstrual cycle in human females. 6
3. (a) Discuss the role of prostate gland in male reproductive function with special reference to its connectivity with testis. 6
(b) What is cryptorchidism? 2
4. (a) Discuss the processes of spermatogenesis mentioning the hormonal control during the process. 6
(b) Describe the histological structure of a mature sperm with a labelled diagram. 2
5. (a) Discuss the histological structure of Graafian follicle with diagram. Mention two functions of it. 2+2
(b) What is blastocyst? State the role of amniotic fluid. 2+2
6. (a) Describe the fetal circulation with a diagram. 4
(b) Discuss the changes in uterus in different phases of menstrual cycle mentioning the role of hormones in such changes. 4
7. (a) Discuss different phases of lactation, mentioning the role of hormones of each phase. 6
(b) State the endocrine regulation of parturition. 2
8. (a) Outline the process of in vitro fertilization (IVF). 4
(b) Mention two etiological causes of PCOS. 2
(c) What is tube pregnancy? 2

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WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2022-23

PHYADSE02T-PHYSIOLOGY (DSE1/2)

MICROBIOLOGY AND IMMUNOLOGY

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.
All symbols are of usual significance.*

Answer any five questions

8×5 = 40

1. (a) Based on nucleic acid, classify viruses with proper examples. 4+4
(b) Describe briefly the process of replication of retroviruses within the host body.
2. (a) Write down the composition of liquid broth for bacterial culture. 3+3+2
(b) What are the physical factors affecting growth of bacteria? Mention significance of each factor.
3. (a) Describe the structure of bacterial cell wall with proper diagram. 3+2+3
(b) State the importance of peptidyl transferase in the bacterial cell wall formation.
4. (a) Briefly describe gram staining procedure of bacteria. 4+4
(b) What are the bacteriostatic and bacteriocidal? Write down their action.
5. (a) With proper diagram describe the structure of IgG antibody. 4+4
(b) What are the structural and functional characteristics of IgA and IgM?
6. (a) What is cytokine? 2+6
(b) Discuss the role of cytokines in the hypersensitivity reaction. Briefly illustrate the process mentioning the role of some specific cytokines.
7. (a) Which cells act as antigen presenting cells (APCs) in the immune system? 3+5
(b) How do APCs induce humoral immunity?
8. (a) Briefly describe the process of ELISA test. 4+4
(b) With suitable diagram describe the structure of MHC class I and MHC class II antigens.

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WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2022-23

PHYADSE01T-PHYSIOLOGY (DSE1/2)

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.

Answer any five questions

8×5 = 40

1. (a) Distinguish between a population and sample. 2
(b) What are dichotomous variables? 2
(c) Discuss the method of computation of standard deviation. 4
2. (a) Define parameter and statistic. Give example. 2+2
(b) What is Type I and Type II error? 2
(c) Define degrees of freedom. 2
3. (a) What is Kurtosis? 4
(b) What are the measures of central tendency? 4
4. Write short notes on any *two*: 4×2
(i) Histogram
(ii) Pie diagram
(iii) Probability
(iv) Ogive graph.
5. (a) Compare normal distribution with 't' distribution. 4
(b) With a suitable diagram, elucidate the difference between a positively skewed distribution and a normal probability curve. 4
6. (a) What is Chi-square test? 2
(b) What are the assumptions for z-scores? 4
(c) What are the differences between dispersion and skewness? 2
7. (a) What is variance? 2
(b) What is standard score? 2
(c) Describe a frequency polygon. 4
8. (a) What are errors of inference? 2
(b) What is nonparametric statistics? 2
(c) What are the properties of t-distribution? 4

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