

BANKIM SARDAR COLLEGE

Semester II Examination 2020

B.Sc Honours

SUB : ZOOLOGY

PAPER : **CCH-4**

Answers of each group should be in separate answer-sheet

ANSWER Q.1, Q.2 AND Q.3 COMPULSORILY AND ANY SIX FROM THE REST

Time : 2 hours

Total marks 90

**GROUP A MCQ(1x10 =10 marks)**

Q. 1) i) The trilaminar structure of Plasma membrane can be observed only under \_\_\_\_\_ ?

- a) Light Microscope  
b) Compound Microscope  
c) Transmission Electron Microscope  
d) all of them

Q.1) ii) Danielli and Davson in 1935, proposed the Sandwich Model of Plasma Membrane. Upon electron microscopy, they proposed the total thickness of P.M. to be?

- a) About 7.5 nm      b) 1.0 nm      c) About 8.0 nm      d) None of the Above

Q.1) iii) Glycophorin is a major erythrocyte membrane protein, Which type of membrane protein is it?

- a) Extrinsic      b) Intrinsic      c) Both      d) none of these

Q.1) iv) Which of the following cell organelles, absent in mature mammalian erythrocytes, are found exclusively in Animal cells and very few plant cells.

- a) Centrosome      b) Lysosomes      c) Golgi complex      d) Ribosomes

Q.1) v) How does lysosome protect itself from the lytic effects of its own enzymes?

- a) The lysosomal membrane proteins are highly glycosylated  
b) The lysosomal membrane is thicker than other organelles  
c) Lysosomal enzymes are active at a high acidic pH  
d) All of the above

Q.1) vi) In our body, Peroxisomes are mainly concentrated in Two organs where they detoxify various toxic molecules entering our blood stream. What are they?

- a) LIVER AND KIDNEY
- b) LIVER AND LUNGS
- c) LUNGS AND KIDNEY
- d) KIDNEY AND HEART

Q.1) vii) Approximately, 10% activity of TWO enzymes in pentose phosphate pathway is completed in Peroxisomes. Name the enzymes?

- a) Transaldolase and Glu-6-phosphate dehydrogenase
- b) Gluconolactonase and Phosphogluconate dehydrogenase
- c) Glu-6-phosphate dehydrogenase and Phosphogluconate dehydrogenase
- d) None of the above

Q.1) viii) How many ATP are generated when one NADH passes through the electron transport chain in mitochondria?

- a) 2 ATP
- b) 2.5 ATP
- c) 4 ATP
- d) 1 ATP

Q.1) ix) G-protein linked receptors are a type of \_\_\_\_\_?

- a) Internal receptor
- b) Cell-surface receptor
- c) both
- d) none of the above

Q.1) x) Cdc28p/Cdc2p is involved in the regulation of cell cycle in Yeast. In which transition stages are they observed?

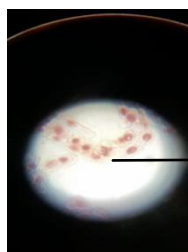
- a) G<sub>1</sub>-S (START) transition
- B) G<sub>2</sub>-M transition
- c) both of them
- d) none of these

**GROUP B (3 x 10 = 30)**

Q. 2)i) a) Write the procedure of fixation of onion root tips. (4)

Q.2) i) b) Identify the stage of mitosis from the given slide and mention at least two identifying characters. (1+2)

Q.2) i) c) Identify the stage of mitosis from the given slide and mention at least two identifying characters. (1+2)

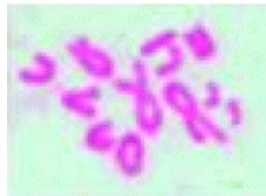


Stage of Mitosis ?

Q.2) ii) a) Draw a diagram to differentiate between male and female grasshopper used in meiotic study. (2)

Q.2) ii) b) Write the scientific name of the grasshopper species used to study meiotic stages. (1)

Q.2) ii) c) Identify the meiotic stage in grasshopper, from the image provided and write its characteristics. (1+2)



Q.2) ii) d) What is the procedure of a temporary squash preparation from grasshopper testis. (4)

Q.2) iii) a) Draw a labelled diagram of buccal epithelial cells showing Barr body in a human female. (3)

Q.2) iii) b) How many Barr bodies can be observed in a cell? (1)

Q.2) iii) c) What is the principle of Trypan blue exclusion test? What are its areas of application? (3+3)

**GROUP C (20 + 30 = 50)**

Q.3. All questions are compulsory. (2x10 = 20)

Q.3.i) Zymogen granules

Q.3.ii) Nucleosome

Q.3.iii) Centrosome and cancer

Q.3.iv) Intermediate filaments

Q.3.v) What is N-linked glycosylation?

Q.3.vi) Nucleation in actin

Q.3.vii) NOR

Q.3.viii) GPCR

Q.3.ix) Chemiosmotic gradient

Q.3.x) Tight junctions

Q.4. Differentiate between active and passive transport.

Q.5. Justify the statement – “p53 is the guardian of the genome”

Q.6. Describe the structure of NPC with appropriate diagram.

Q.7. Comment on the JAK-STAT pathway of signalling.

Q.8. Comment on the Endosymbiotic hypothesis of mitochondrial origin.

Q.9. Explain the role of phospholipids and cholesterol in maintaining membrane fluidity.

Q.10. Write a note on the functions of peroxisomes.

Q.11. Discuss the mechanisms involved in Gain of function mutation converting Proto-oncogenes to oncogenes.