DEPARTMENT OF ZOOLOGY

MARWARI COLLEGE, RANCHI

Question Bank- B.Sc (Hons.) Sem II

Paper- C-4

(CELL BIOLOGY)

FILL IN THE BLANKS:

1. In case of virus nucleic acid is wrapped in a protective coat of protein called .....
2. The reproductive cycle of virus which results in death of host cell is.....
3. Capsule layer of bacteria serves ..... function.
4. Nuclear material is usually concentrated in a specific region of cytoplasm called.....
5. Extra chromosomal genetic material in bacteria is called.....
6. Passive transport occurs along ..... gradient
7. Tight junction is also known as .....
8. Gap junction consist of transmembrane protein called .....
9. Site of ATP synthesis in a cell is .....
10. Electron carriers are present in (inner/outer).....mitochondrial membrane.
11. Complex 1 of electron transport chain is also known as .....
12. Chemi-osmatic coupling theory was prpposed by .....
13. The theory that supports the evolution of mitochondria in eukaryotes is ..... theory.
14. Specialize form of peroxisome present in plant is .....
15. Peroxisomes were discovered by.....
16. During metaphase chromosomes are arranged in ..... plane.
17. The contractile ring made during cytokinasis is made up of .....
18. Crossing over occurs during ..... stage of meiosis1.
19. Meiosis is a .....division.
20. In the intact stage GPCR is bound to .....complex
21. cAMP acts as a .....messenger.
22. The most important protein in microfilament is.....

23. Microfilaments associate to form ……. shaped bundles.
24. The thickness of intermediate filament is……
25. Glial filaments are found in…….
26. Intermediate filaments found in muscles are called……
27. ……. are un-branched hollow sub microscopic tubules of tubulin protein
28. ……...prevents assembly of microtubules
29. Each basal body contains…….sets of triplet tubules.
30. A- tubule has ……..number of protofilaments.
31. Space between outer and inner nuclear membrane is called……
32. The electron dense ring present in nuclear pore is called……
33. The nucleolus is the most active site for…….

TRUE OR FALSE

1. viruses that parasitize on bacterial cell is called becteriophage T/F
2. prokaryotes are the most primitive type of cell T/F
3. Mesosomes are not involved in cross wall (septum) formation during cell devision. T/F.
4. Cell wall of prokaryotes is made up of peptidoglycan . T/F.
5. Organells common to both prokaryotes and eukaryotes is ribosome T/F.
6. Flagella of bacteria is made up of protein subunit called microtubule T/F.
7. Transport via. Transport protein is selective in nature T/F.
8. Active transport occurs towards the concentration gradient. T/F
9. Primary active transport require metabolic source of energy T/F
10. Gap junction serves as indirect connection between cytoplasm of adjacent cells T/F
11. Cyclin is a catalytic component T/F
12. P53 has a role in cell cycle regulation T/F

13. Cyclins undergo cycle of synthesis and degradation in each cell cycle . T/F
14. Cdk level is variable during cell cycle T/F
15. GPCR are the largest class of membrane protein in humans T/F
16. The outer nuclear membrane communicates with endoplasmic reticulum. T/F
17. Nuclear pore complex have a 6 fold symmetry. T/F
18. Lamins are made up of globular heads and rod shaped tail. T/F
19. A nucleus strictly consists of only one nucleolus. T/F
20. The precursor RNAs undergo the process of trimming. T/F

WRITE THE FULL FORM OF FOLLOWING ABBREVIATIONS

1. **PPLO** Stands for .....
2. **CDK** Stands for .....
3. **CKI** Stands for .....
4. **GPCR** stands for .....
5. **NUP** stands for.....
6. **NLS** stands for.....
7. **MTOC** stands for.....

A. CHOOSE THE CORRECT OPTION:

A. Type of symmetry not found in virus is

1 helical symmetry 2 icosahedral symmetry

3 complex symmetry 4 linear symmetry.

B. Mycoplasma lacks

1. Cell wall 2. Cell membrane

3. DNA 4. Granule

C. Cell wall of plants is made up of

1.fatty acid 2 protein

3.Cellulose 4 glycoprotein

D. How many respiratory enzyme complex is present in mitochondria

1.two 2 five

3 six 4 four

B. WRITE SHORT NOTES ON THE FOLLOWING:

1) Well labelled diagram of prokaryotic cell
2) Structure of virus
3) Mycoplasma
4) differentiate between virus and viroids
5) prions
6) well labelled diagram of eukaryotic cell
7) bacterial flagellum
8) reproduction in bacteria
9) active transport
10) passive transport
11) facilitated diffusion
12) gap junction
13) desmosomes
14) fluid mosaic model
15) structure of plasma membrane
16) plasma membrane function
17) secondary active transport
18) ultra structure of mitochondria
19) function of mitochondria
20) Anaphase stage of mitosis
21) Cytokinesis
22) Check points

23) m-phase
24) S-phase
25) Diplotene stage of meiosis1
26) Zygotens stage of meiosis 1
27) Cyclin
28) cAMP
29) Cytoskeleton
30) Actin protein
31) Arrangement of tubulin in microtubules
32) Ultrastructure of microtubule
33) Microtubule assembly and disassembly
34) Nuclear lamina proteins
35) Function of nuclear envelope
36) Chromatin
37) Ribonucleoprotein
38) Autophagosome
39) Pinocytosis
40) Cisternae of golgi
41) Tubules of endomembranes
42) Difference between smooth and rough endoplasmic reticulum

C. ANSWER THE FOLLOWING (LONG ANSWER QUESTIONS):

i. Differentiate between prokaryotic cell and eukaryotic cell with well labelled diagram?
ii. Explain the structural organization of prokaryotic cell with their function?
iii. Give an account on the ultra structure of eukaryotic cell with example ?
iv. Give an overview on viruses ,with special emphasis on its reproductive cycle?
v. Describe various models of plasma membrane structure ?
vi. How are bio molecules transported across the plasma membrane ,explain passive transport?
vii. What do you understand by active transport ,what is the source of energy in primary active transport?
viii. What are cell junctions ? give an account on different types of cell junction.?
ix. What are transport protein? Explain its role in facilitated transport of molecule ?

x. What is gap junction ,explain its role in cell –cell communication?

xi. Explain endosymbiotic theory of mitochondrial origin?

xii. What do you understand by oxidative phosphorylation?

xiii. Give an account of various respiratory enzyme complex involved in respiratory chain?

xiv. Provide suitable evidence to prove semi autonomous nature of mitochondria, and draw a labelled diagram of ultra structure of mitochondria?

xv. Differentiate between mitosis and meiosis .?

xvi. What are the stages of meiosis ,why is it called reductional division?

xvii. Define mitosis, write down its significance ,describe its different stages with suitable diagram?

xviii. Explain cell cycle control system for regulation of cell cycle with its significance ?

xix. What is the role of cyclin and CDK in cell cycle regulation, what are the different checkpoints in its regulation?

xx. Elaborate GPCR signalling pathway with suitable flow chart ?

xxi. Define cytoskeleton. Name the three types of cytoskeleton. Briefly describe the structure and functions of intermediate filaments.?

xxii. Describe the ultrastructure of microtubules. Diagrammatically explain the effect of presence and absence of colchicine, temperature and pressure on assembly and disassembly of its structure.?

xxiii. Describe the arrangement of nuclear pore complex in nuclear envelope.What are the four important elements of nuclear pore complex?

xxiv. What are the various functions of nucleolus? Decribe briefly about Ribosome biogenesis.?

xxv. Describe the structure and function of Smooth and rough endoplasmic reticulum.?

xxvi. Diagrammatically explain the structure of golgi appararus and its parts.?

xxvii. What are the important functions of golgi apparatus?

xxviii. What are lysosomes?Describe various functions of lysosomes inside a cell with the help of diagram.?