DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 2

Topic :- Cell the Unit of Life

1 **(a)**
Chemiosmotic theory of ATP synthesis in the chloroplasts and mitochondria is based on proton gradient.

2 **(a)**
In prokaryotes, ribosome attach to the 5' end of *m*RNA as soon as transcription begins. A bunch of ribosome moves along a single *m*RNA molecule adding 15 amino acids/second to the polypeptide chain, almost the same speed at which RNA polymerase transcribes the *m*RNA.

3 **(d)**
In eukaryotic cell, plasmodesma is lined by plasma membrane. It encloses tubular extension of endoplasmic reticulum called desmotubule

4 **(d)**
I, II, III and IV

5 **(b)**
Endoplasmic Reticulum is a network of interconnected cisternae, tubules and vesicles present in cytoplasm. Depending on presence or absence of ribosomes it is of two types-
(i) **Rough ER :** It has ribosomes attached to its surface by ribophorin
(ii) **Smooth ER:** It does not have ribosomes.

6 **(d)**
A cilium has the appearance of a sharp-pointed straight or curved hair that projects 5-10μm. Many cilia often project from a single cell. The cilium moves forward with a sudden rapid whiplike stroke 10-20 times per second than it moves backward slowly to its original position.

7 **(a)**
DNA polymerase enzyme was discovered by **Kornberg** in 1957 in *E. coli*. There are three polymerases present in *E. coli* namely, polymerase-I, polymerase-II, polymerase-III.

8 **(d)**
Plant cells possess cell wall, plastids and large central vacuole.
Schwan (1839), a British Zoologist, studies different types of animal cells and reported that cells had a thin outer layer. Which is today known as the 'plasma membrane'. Based on his studies on plant tissues, he also concluded that the presence of a cell wall is a unique character of the plant cells. On the basis of this, Schwann proposed the hypothesis that the bodies of animals and plants are composed of cells and its products
Scheiden and Schwann together formulated the cell theory. This theory however, did not explain as to how new cells were formed. Rudolf Virchow (1855) first explained that cells gets divided and new cells are formed from pre-existing cells (*Omnis cellula-e-cellula*)

He modified the hypothesis and Schwann to give the cell theory a final shape. *Cell theory as understood today is*
(i) All living organism are composed of cells and products of cells
(ii) All cells arise from pre-existing cells

9 **(d)**
All the statements are correct

10 **(d)**
Ribosomes are naked ribonucleoprotein protoplasmic particles in which a covering membrane is absent. The ribosomes are of two types, i.e., cytoplasmic and organelle.
The organelle ribosomes are found in plastids and mitochondria. The cytoplasmic ribosomes may remain free in the cytoplasmic matrix or attached to the cytosolic surface of ER with the help of SRP protein.
The bound ribosomes, generally transfer their proteins to cisternae of the ER for their transport to other parts, both inside and outside the cell

11 **(c)**
In prokaryotes, a nucleus is absent but nucleoid is found which is equivalent to a single chromosome or prochromosome

12 **(c)**
In a DNA molecule, a complete line measures 34Å (3.4 nm) with a distance of 3.4Å (0.34nm) between two successive base pairs.

13 **(c)**
J D Watson and F H C Crick (1953) showed that DNA has a double helical structure with two polynucleotide chains connected by hydrogen bonds and running in opposite directions (antiparallel). The antiparallel strands of a DNA molecule means that the phosphate groups at the start of two DNA strands are in opposite position (pole).

14 **(b)**
Steps of Gram's staining technique
(i) Staining with weak alkaline solution of crystal violet
(ii) Treatment with 0.5% iodine solution
(iii) Washing with water
(iv) Treatment with absolute alcohol/acetone

15 **(a)**
In eukaryotes, DNA is tightly bound to histones which form a DNA protein particle called **nucleosome**.

16 **(c)**
The ability to distinguish different neighbouring cells is important for organism's function
Glycolipids are lipids with attached carbohydrate, which acts as recognition sites during cell-cell interaction, as well as sites of attachment in a tissue
Glycoproteins are often integral membrane proteins and are also important for cell recognition

17 **(b)**

DNA multiplication or duplication of DNA takes place by **replication**. It takes place during S-phase of interphase in cell-cycle.

18 **(c)**
70 S ribosomes are found in prokaryotes, *i. e.*, bacteria and blue green algae. The 70 S ribosomes have 2 subunits, *i. e.*, 50 S and 30 S. The ribosomes of mitochondria are small, *i. e.*, 55-60 S type, which are comparable to 70 S than 80 S type.

19 **(b)**
In protoplasm, fat store in the form of **triglycerides.** Polypeptides, polysaccharides and nucleoside are proteins, carbohydrates ad nucleic acid, respectively.

20 **(a)**
Each spindle is a bipolar fibrous structure composed mainly of microtubules. The spindle fibres are mainly composed of tubulin protein.

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**a**	**a**	**d**	**d**	**b**	**d**	**a**	**d**	**d**	**d**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**c**	**c**	**c**	**b**	**a**	**c**	**b**	**c**	**b**	**a**