

Topic :- Cell the Unit of Life

- 1 **(b)**
Glycocalyx (mucilage sheath) of a bacterial cell may occur in the form of a loose sheath called
I. Slime layer or it may be thick and tough called
II. Capsule
- 2 **(b)**
Rough endoplasmic reticulum contains ribosomes on their surface, which are the site for protein synthesis by the processes of translation in cytoplasm.
- 3 **(c)**
Small cells have a large surface area per volume ratio as compared to large cells.
- 4 **(c)**
Unicellular organisms are capable of (i) independent existence, (ii) performing the essential functions of life. Anything less than a complete structure of a cell do not ensure independent living. Hence, cell is the fundamental structural and functional unit of all living organisms
- 5 **(b)**
Basic fuchsin is used by **Feulgen** to stain DNA.
- 6 **(a)**
Out of A-T-, G-C pairing, bases of DNA may exist in alternate valency state owing to arrangement called tautomerisational mutation. It involves presence of tautomeric forms of nitrogen bases, *e.g.*, imino tautomer instead of amino group (*i.e.*, cytosine-adenine) or enol group instead of keto group (*i.e.*, thymine-guanine).
- 7 **(b)**
Cell is a unit of structure and function of an organism. Term 'Cell' was coined by **Robert Hooke** in 1665.
- 8 **(d)**
Okazaki fragments are produced during DNA synthesis.

- 9 **(d)**
Cellulose ($C_6H_{10}O_5$)_n is the most abundant organic polymer. It is a polysaccharide and consists of long unbranched chains of glucose residues linked by β , 1-4 glycosidic bonds.
- 10 **(b)**
Motility of eukaryotic flagella is dependent upon ATPase activity. Enzyme **asconic dynein** catalyses ATP activity.
- 11 **(d)**
During DNA replication, there occur a simultaneous continuous synthesis of DNA at both the strands of template in 5' → 3' direction of newly synthesised strand.
Okazaki et. al, (1968) suggested that it is only one strand, which shows such a continuous replication (called leading strand), while other strand replicates in a discontinuous manner, *i.e.*, synthesises short fragments called **Okazaki fragments**. This discontinuous strand is called lagging strand.
- 12 **(d)**
According to Chargaff's rule, in DNA, the proportion of adenine always equals to that of thymine and proportion of guanine always equal to that of cytosine, *i.e.*, A=T and G=C. Thus, in a DNA, if guanine is 20%, cytosine also will be 20%. So, both adenine and thymine together will be 60%, *i.e.*, 30% adenine and 30% thymine.
- 13 **(b)**
Protoplasm is a complex, granular, elastic viscous, colourless fluid-like substance, which is selectively permeable.
J Huxley defined it as '**Physical basis of life**'.
Dujardin discovered it and called '**Sarcode**'.
Purkinje renamed it as **Protoplasm**.
- 14 **(a)**
Antony von Leeuwenhoek first saw and described a living cell. Robert Brown later discovered the nucleus
- 15 **(c)**
Primary lysosomes are formed either directly from ER (endoplasmic reticulum) of indirectly from Golgi complex. Generally, hydrolytic enzymes are synthesised first by ribosomes and then transferred to ER. From ER, these are conveyed to Golgi complex through blebbing. Golgi complex then gives birth to lysosomes through blebbing in itself.
- 16 **(c)**
Bacteriophage experiment was conducted by Hershey and Chase, (1952). They selected T₂ type phages for experimentation. From this experiment, they conclude that only DNA (and not proteins) pass from one generation to another.

- 17 **(b)**
In eukaryotic cells, DNA accommodated by super-coiling in nucleosomes.
- 18 **(a)**
The bases in DNA can interact *via* hydrogen bonds. This base pairing stabilises the three dimensional structure of DNA (*i.e.*, diameter of DNA also).
- 19 **(d)**
Nucleic acids are of two types, *i.e.*, DNA and RNA. RNA. DNA contains deoxyribose sugar (5 carbon),while RNA contains ribose sugar (5 carbon).
- 20 **(c)**
Kingdom-Monera have prokaryotic organisation, *E. coli* is a prokaryote and *paramecium* is a eukaryote

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

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