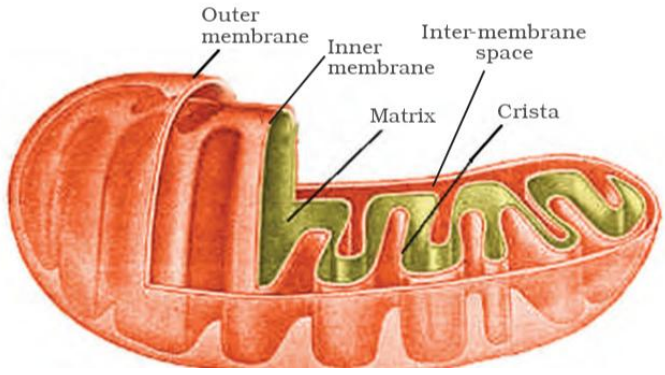
Indian School Al Wadi Al Kabir

Unit Test (2026-2027)

MARKING SCHEME

Class: XI Subject: SCIENCE (086) Max. marks: 30

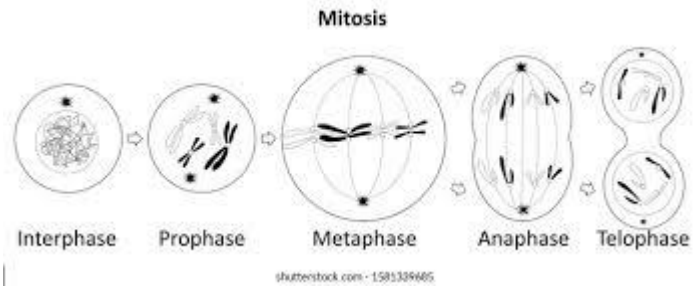
Date:19/05/2026 Set- II Time: 1hour

SECTION – A		
Q. No.	**QUESTION**	**Marks**
1	C. Lysosomes are double membrane bound vesicles which contain hydrolytic enzymes.	1
2	D. Absence of nucleus	1
3	D. Two homologous chromosomes	1
4	B. Four chromatids and two centromeres	1
Question No. 5 to 6 consist of two statements – **Assertion (A) and Reason (R)**.		
5	C) A is true but R is false	1
6	A) Both A and R are true and R is the correct explanation of A.	1
SECTION-B		
7	A. The infoldings or invaginations of the cell membrane in bacteria are known as **mesosomes.** Cell Wall Formation, DNA Replication and Distribution OR B. An elaborate network of filamentous proteinaceous structures consisting of microtubules, microfilaments and intermediate filaments present in the cytoplasm is collectively referred to as the cytoskeleton. The cytoskeleton in a cell are involved in many functions such as mechanical support, motility, maintenance of the shape of the cell.	(1+1=2)
8		(1+1=2)
9	Meiosis is sometimes called "reduction division" because it reduces the number of chromosomes to half the normal number so that, when fusion of	(1+ ½ + ½ =2)

	sperm and egg occurs, baby will have the correct number. Meiosis is essential for sexual reproduction, producing haploid gametes (sperm/eggs) and ensuring a stable chromosome number across generations.	
	SECTION-C	
10	The leucoplasts are the colourless plastids of varied shapes and sizes with stored nutrients: Amyloplasts store carbohydrates (starch), e.g., potato; elaioplasts store oils and fats whereas the aleuroplasts store proteins.	3
11	**i) Acrocentric chromosomes have the centromere positioned near one end, forming one very short arm and one long arm, whereas telocentric chromosomes have the centromere located at the very tip (terminal end) of the chromosome.** • **Acrocentric: Centromere is subterminal (close to the end).** • **Telocentric: Centromere is terminal (at the end).** ii) Neutral solutes move across the plasma membrane via **simple passive diffusion**, passing directly through the lipid bilayer along a concentration gradient (high to low). Polar molecules generally **cannot** cross via simple diffusion because they are repelled by the hydrophobic lipid core. They are instead transported through the membrane by **facilitated diffusion** (via carrier/channel proteins) or **active transport** (using ATP). OR i) Plasmodesmata (singular: plasmodesma) are microscopic, plasma-membrane-lined channels that traverse the cell walls of plant and some algal cells, directly connecting the cytoplasm of adjacent cells. They act as "living bridges" that facilitate direct transport, communication, and signaling between cells. ii) prokaryotic ribosomes are 70S. Each ribosome has two subunits, larger and smaller subunits Here 'S' (Svedberg's Unit) stands for the sedimentation coefficient; it is indirectly a measure of density and size.	3
12	i) Metaphase, the sister chromatids align along the equator of the cell by attaching them centromeres to the spindle fibres. ii) Cytokinesis in plant cells differs from animal cells primarily due to the presence of a rigid cell wall, which prevents pinching. Instead of cleaving, plant cells form a cell plate in the center that grows outward (centrifugal), while animal cells use a contractile ring to create a cleavage furrow that pinches inward (centripetal)	3

	SECTION-D	
13	**CASE STUDY –**	
I	A. (i) DNA replication occurs during S-phase of interphase of cell cycle so that each chromosome is now formed of two sister chromatids joined at the centromere. (ii) Duplication of centrioles occurs during G2 phase of interphase of cell cycle. B.	1

	The cell cycle has two main phases: **Interphase** and **M phase (Mitotic phase)**. **Interphase** — **Mitotic Phase (M phase)** Cell grows and DNA replication occurs. — Cell division takes place. It is the longest phase of the cell cycle. — It is comparatively shorter in duration.	2
	C. G1 phase (Gap 1),- 2N,2C S phase (Synthesis), -2 N,4C G2 phase--2 N,4C	1
	OR D. The **G_0 (G-zero) or quiescent stage** is a resting stage of the cell cycle in which cells leave the active cycle after the G_1 phase and stop dividing temporarily or permanently.	1
	SECTION-E	
14	a. **Leptotene:** In this stage, chromosomes are visible clearly under the light microscope. The chromosomal compaction continues through this stage. The bond between the sister chromatids is so much that one cannot be differentiated from another. b. **Zygotene:** During this stage, chromosomes start forming pairs. This process is called synapsis. The formation of synapsis is accompanied by the formation of synaptonemal complexes. Each & every pair is called a bivalent or the tetrad. c. **Pachytene:** The bivalent chromosomes distinct and the recombination nodules(site at which crossing over takes place) appear on the tetrads. The process of crossing over takes place between non-sister chromatids of homologous chromosomes & it facilitates the exchange of genes between them. d. **Diplotene:** During this stage, the synaptonemal complex gets dissolved & the recombined chromosomes begin to separate from each other. But they remain attached at the site of crossing over. This makes an X-shaped structure that is termed chiasmata. e. **Diakinesis:** Chiasmata is terminated at this stage. The nucleolus as well as the nuclear membrane disappears.	

	OR **i)**  ii) Mitosis is called equational division because the daughter cells formed after cell division contain the same number of chromosomes as the parent cell.	