

KENDRIYA VIDYALAYA SANGATHAN

SAMPLE QUESTION PAPER

2021-22

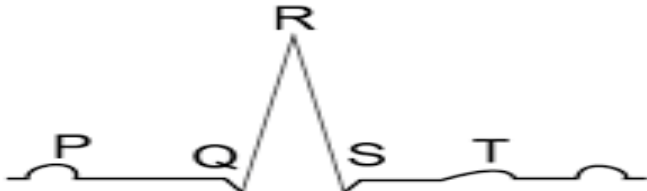
Marking Scheme

CLASS: XI

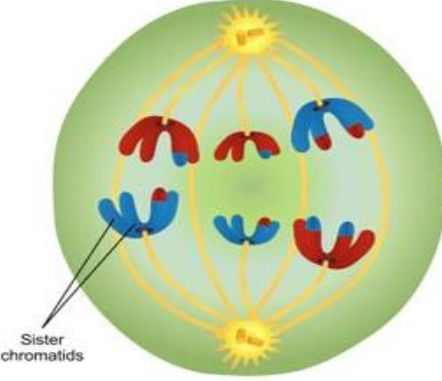
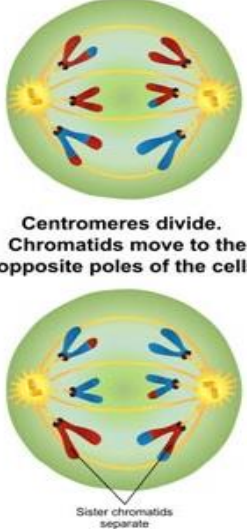
M.M. 35

SUBJECT: BIOLOGY(044)

TIME: 2 HRS.

1.	The correct sequence of the stages in mitosis is: III (Prophase)---II (Metaphase)----- IV (Anaphase)-----I (Telophase)
2.	The diagram is showing cyclic photophosphorylation. Here, A is electron acceptor, B is electron transport system and C is photosystem-I or PS700. In cyclic photophosphorylation, PS-I is functional.
3.	<p>The RQ will be infinity during anaerobic respiration. In anaerobic respiration, CO₂ is evolved, but oxygen is not used. Therefore RQ in such case will be infinite.</p> <p>Equation is as follows:</p> $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + \text{energy}$ $RQ \text{ } CO_2/O_2 = 2/0 = \text{infinity}$ <p>Or i)Pyruvate dehydrogenase ii)2 molecules of NADH are produced</p>
4.	<p>(i) Callus proliferates only when nutrient medium containing auxin was supplemented with coconut milk because it contains kinetin (a cytokinin which stimulated growth of plant tissues).</p> <p>(ii) Rice seedling will grow extremely tall.</p>
5.	It is called osteoporosis. It is an age-related disorder symbolized by diminishing bone mass and higher chances of fractures. In old-aged females, it is commonly caused due to decreasing levels in the estrogen hormones after menopause.
6.	<p>The pineal gland functions as a biological clock because it regulates the circadian rhythms (sleep patterns) of the body. It is situated on the dorsal side of the forebrain. It secretes a hormone called melatonin.</p> <p>OR</p> <p>Formation of RBC is known as erythropoiesis and the hormone erythropoietin stimulates the process.</p>
7.	 <p>If a patient's ECG revealed an abnormally long delay between P wave and the QRS deflection, it suggests that there is a delay of conduction from the atria to the ventricles, hence the stimulation from SA nodes are conducting stimuli very slowly to the ventricles..</p>

8.	<p>a. Tidal Volume (TV): 500 mL</p> <p>b. Residual Volume (RV): 1100 mL-1200 mL</p> <p>c. Inspiratory Reserve Volume (IRV): 2500 mL-3000 mL</p>
9.	<p>a) Outer side of the thylakoid membrane</p> <p>b) The inner side of the thylakoid membrane</p> <p>c) Stroma of chloroplast</p>
10.	<p>Under Aerobic condition: CO₂ + H₂O is formed.</p> <p>ii. Under anaerobic condition in our skeletal muscles lactic acid is formed</p> <p>iii. Under anaerobic condition in yeast ethyl alcohol + CO₂ is produced</p> <pre> graph TD Glucose --> GAP3P[Glyceraldehyde 3-Phosphate] GAP3P --> P3GA[3-Phosphoglyceric acid] P3GA -- "NAD+ → NADH+H+" --> PEP[Phosphoenol Pyruvic acid] PEP --> Pyruvic[Pyruvic acid] Pyruvic --> CO2H2O[CO₂ + H₂O] Pyruvic --> LA[Lactic acid] Pyruvic --> Ethanol[CH₃CH₂OH + CO₂] </pre>
11.	<p>(i) Crossing over occurs during the pachytene stage of prophase-I and meiosis-I. It occurs in the reproductive cells of human body.</p> <p>(ii) At the end of meiosis I and meiosis II, two and four daughter cells are produced, respectively.</p> <p>(iii)</p>

	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Anaphase I</p>  <p>Homologous chromosomes move to the opposite poles of the cell.</p> </div> <div style="text-align: center;"> <p>Anaphase II</p>  <p>Centromeres divide. Chromatids move to the opposite poles of the cells.</p> </div> </div>
12.	<p>Impulse conduction depends upon</p> <ul style="list-style-type: none"> (i) Permeability of axolemma (axon Membrane) (ii) Osmotic equilibrium between the axoplasm and extracellular fluid present outside the axon. <p>The process accounts for the greater speed of an impulse travelling along a myelinated neuron than along a non-myelinated on. It is upto 50 times faster than the non-myelinated nerve fibre.</p> <p>or</p> <ul style="list-style-type: none"> C. Synaptic vesicles are uniform organelles of ~40 nm diameter that constitute the central organelle for neurotransmitter release. B. A neurotransmitter is a signaling molecule secreted by a neuron to affect another cell across a synapse. A. In postsynaptic cells, neurotransmitter receptors receive signals that trigger an electrical signal, by regulating the activity of ion channels.
13.	<ul style="list-style-type: none"> (i) Malphigian body or renal corpuscle filter out large solutes from blood and delivers it small solutes to renal tubule for modification. (ii) Afferent arteriole, Efferent arteriole, Glomerulus, Bowman's capsule, PCT (iii) A brings blood to the Bowman's capsule and B leave it to form Vasa recta. (iii) Podocytes are cells in Bowman's capsule in the kidneys that wrap around capillaries of the glomerulus. Podocytes make up the epithelial lining of Bowman's capsule, the third layer through which filtration of blood takes place. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> (i) Atrial Natriuretic Factor (ii) The hypothalamus produces a polypeptide hormone known as antidiuretic hormone (ADH), which is transported to and released from the posterior pituitary gland. The principal action of ADH is to regulate the amount of water excreted by the kidneys. As ADH (which is also known as vasopressin) causes direct water reabsorption from the kidney tubules, salts and wastes are concentrated in what will eventually be excreted as urine. The hypothalamus controls the mechanisms of ADH secretion, either by regulating blood volume or the concentration of water in the blood. (iii) Glucose and Aminoacids. (iv) When the volume of the filtrate is compared with that of the urine that is formed

	per day, which is 180 litres and 1.5. Litres respectively, it can be extrapolated that 99% of the filtrate needs to be reabsorbed by the renal tubules, the phenomenon is referred to as reabsorption. Substances such as amino acids, Na ⁺ , glucose are actively reabsorbed in the filtrate hence are not found in urine.
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