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NEET MOLECULAR BASIS OF INHERITANCE — DNA REPLICATION (MESELSON–STAHL EXPERIMENT, MACHINERY) — PYQS

Max. Marks: 40 **Questions:** 10

Section A (MCQ) — 10 questions

Q.1 Which of the following statement is correct regarding the process of replication in *E. coli*? [NEET (UG) 2024]

(1) The DNA dependent DNA polymerase catalyses polymerization in one direction that is $3' \longrightarrow 5'$

(2) The DNA dependent RNA polymerase catalyses polymerization in one direction, that is $5' \longrightarrow 3'$

(3) The DNA dependent DNA polymerase catalyses polymerization in $5' \longrightarrow 3'$ as well as $3' \longrightarrow 5'$ direction

(4) The DNA dependent DNA polymerase catalyses polymerization in $5' \longrightarrow 3'$ direction

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Q.2 Ten *E. coli* cells with ^{15}N-dsDNA are incubated in medium containing ^{14}N nucleotide. After 60 minutes, how many *E. coli* cells will have DNA totally free from ^{15}N? [NEET (UG) 2022]

(1) 20 cells (2) 40 cells (3) 60 cells (4) 80 cells

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Q.3 Given below are two statements

Statement-I: DNA polymerases catalyse polymerisation only in one direction, that is $5' \longrightarrow 3'$.

Statement-II: During replication of DNA, on one strand the replication is continuous while on other strand it is discontinuous.

In the light of the above statements, choose the correct answer from the options given below: [NEET (UG) 2022 (Phase 2)]

(1) Statement-I is incorrect but Statement-II is correct

(2) Both Statement-I and Statement-II are correct

(3) Both Statement-I and Statement-II are incorrect

(4) Statement-I is correct but Statement-II is incorrect

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Q.4 The experimental proof for semi-conservative replication of DNA was first shown in a [NEET 2018]

(1) fungus (2) bacterium

(3) plant (4) virus

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Q.5 During DNA replication, Okazaki fragments are used to elongate [NEET 2017]

(1) The leading strand away from replication fork

(2) The lagging strand towards replication fork

(3) The lagging strand away from the replication fork

(4) The leading strand towards replication fork

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Q.6 Taylor conducted the experiments to prove semiconservative mode of chromosome replication on [NEET 2016 (Phase 2)]

(1) *Vicia faba*

(2) *Drosophila melanogaster*

(3) *Vinca rosea*

(4) *E. coli*

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Q.7 Semi-conservative replication of DNA was first demonstrated in: [AIPMT 2009]

(1) *Drosophila melanogaster*

(2) *Streptococcus pneumoniae*

(3) *Salmonella typhimurium*

(4) *Escherichia coli*

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Q.8 Telomerase is an enzyme which is a - [AIPMT 2005]

(1) RNA (2) Repetitive DNA

(3) Simple protein (4) Ribonucleoprotein

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Q.9 During replication of a bacterial chromosome DNA synthesis starts from a replication origin site and [AIPMT 2004]

(1) RNA primers are involved
(2) is facilitated by telomerase
(3) moves in one direction of the site
(4) moves in bi-directional way

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Q.10 Method of DNA replication in which two strands of DNA separate and synthesize new strands

[AIPMT 2000]

(1) Conservative (2) Non conservative
(3) Dispersive (4) Semiconservative

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	**4**	**3**	**2**	**2**	**3**	**1**	**4**	**4**	**4**	**4**	