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Sincerity, Nobility and Service

CLASS: IX **SEPTEMBER MONTHLY TEST – BIOLOGY** **MARKS : 40**

DATE: 26.9.19 **SCIENCE CODE: 044** **Time: 1½ hrs**

Part – I

I. Choose the best answer: **(15X1=15)**

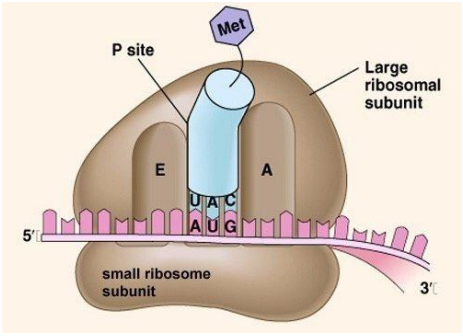
1. If the double standard DNA has 20%cytosine, calculate the percent of adenine in DNA.

a. 20% b.40% c.60% d.80%

2. The flow chart shows an important concept in the genetic implication of DNA. Identify the A to C.

a. A- translation, B- transcription, C- James Watson and Francis Crick
b. A- transcription, B- translation, C- James Watson and Francis Crick
c. A- translation, B- transcription, C- Roger Kornberg
d. A- transcription, B- translation, C- Roger Kornberg

3. Identify the given diagram and write the anticodon in it.



a. ribosome, UAC
b. ribosomal subunits, AUG
c. ribosomal subunits, UAC
d. ribosome, AUG

4. Find the amino acids having only one codon.

a. Methionine and Tryptophan
b. Methionone and Tyrosine
c. Methionine and Glysine
d. Methionine only

5. State which human chromosome has the least number of genes.

a. chromosome – I b. Y- chromosome
c. chromosome- 7 d. chromosome -14

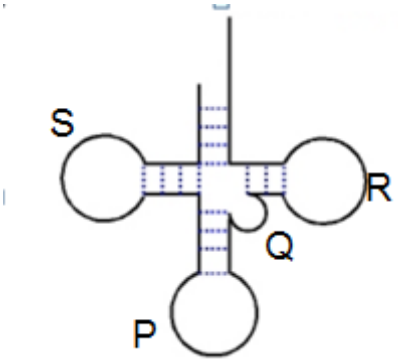
6. Which of the following bacterial strain used by Griffth in his experiment?

a. *Streptococcus pneumonia* b. *Klepsiella pneumonia*
c. *Streptococcus aureus* d. Psedomaonas sp

7. The linkage between nitrogenous base and pentose sugar in DNA.
a. N- glycosidic linkage b. α - glycosidic linkage
c. β - glycosidic linkage d. L- glycosidic linkage

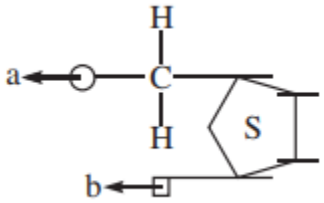
8. Technique used to separate the fragments of DNA.
a. Gel electrophoresis b. Southern blotting
b. Northern blotting d. Western blotting

9. **Assertion:** Genetic code is universal. **Reason:** Genetic code is same for all organisms.
a. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
b. If both the assertion and reason are true but the reason is not a correct explanation of the assertion
c. If the assertion is true but the reason is false
d. If both the assertion and reason are false



10. What do P, Q, R and S regions of tRNA?
a. P- anticodon loop Q- variable loop
R- T ψ C loop S- D- loop
b. P- variable loop, Q- anticodon loop,
R- D- loop, S- T ψ C loop.
c. P - T ψ C loop Q - anticodon loop,
R- Variable loop, S- D- loop
d. P- variable loop Q- variable loop
R- D- loop S- T ψ C loop

11. Identify the 'a' and 'b' in the nucleotide with purine represented below.
a. a- phospahate, b- pyrimidine
b. a- pyrimidine, b- adenine
c. a- phospahate, b- purine
d. a- adenine, b- phospahate



12. **Assertion:** Helicase is called unwidase
Reason: DNA helix uncoils and splits into single strands by breaking of hydrogen bonds between complementary bases.
a. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
b. If both the assertion and reason are true but the reason is not a correct explanation of the assertion
c. If the assertion is true but the reason is false
d. If both the assertion and reason are false

13. Match the column I with column II and choose the correct answer.

Column I		Column II	
(A)	Southern blotting	(p)	separation of DNA fragments on gel slab
(B)	Electrophoresis	(q)	DNA amplification
(C)	PCR	(r)	DNA transferred to nitrocellulose sheet
(D)	Autoradiography	(s)	X-ray photography

a. A-r, B-p, C-q, D- s
b. A-p, B-q, C-r, D- s
c. A-r, B-p, C-s, D- p
d. A-p, B-r, C-q, D- s

14. Arrange the following events in the order of synthesis of a protein
i. A peptide bond forms
ii. A tRNA matches its anticodon to the codon in the A- site
iii. The movement of second tRNA complex from A-site to P-site
iv. The large subunit attaches to the small subunit and the initiator tRNA fits in the P-site
v. A small subunit binds to the mRNA
vi. The activated amino acid tRNA complex attaches the initiation codon on mRNA

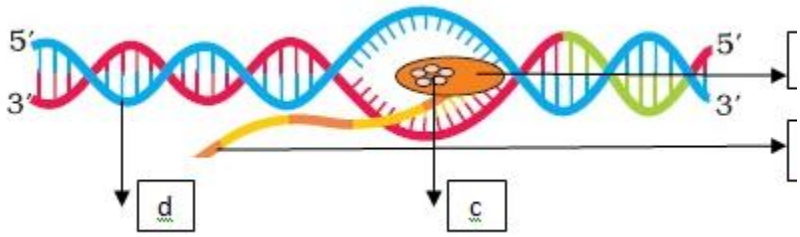
a. iv, v, iii, ii, i, vi
b. iv, vi, v, ii, I, iii
c. v, iv, iii, ii, vi, I
d. v, vi, iv, ii, i, iii

15. What is not true for DNA in prokaryotes?
a. Present in the form of a compact structure called nucleotide.
b. The coils are maintained by non-histone basic proteins.
c. Found in cytoplasm in a super coiled condition.
d. Packaged as nucleosomes along with histones.

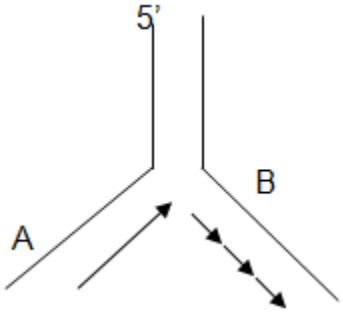
Part-II

II. Answer the following in two sentences: (3X2=6)

16. State two reasons why both the strands of DNA are not copied during transcription.
17. The process of termination during transcription in a prokaryotic cell is being represented here. Name the label a, b, c and d.

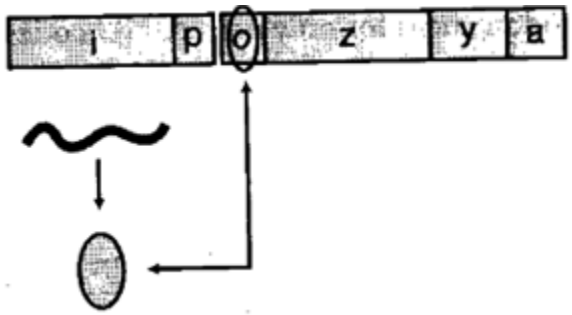


18. Why do you see different types of replicating strands in the given DNA replication fork? Name of these strands.



III. Answer the following briefly: **(3X3=9)**

19. Observe the schematic diagram given below:



a. Identify i and p.

b. name the 'inducer' for this operon and explain its role.

c. why is this operon regulation referred to as negative regulation?

20. A tRNA is charged with the amino acid methionine.

(i) Give the anti-codon of this tRNA.

(ii) Write the Codon for methionine.

(iii) Name the enzyme responsible for binding of amino acid to tRNA.

21. a. Draw a neat labeled diagram of a nucleosome.

b. Mention what enables histones to acquire a positive charge.

IV. Give detail answer for the following: **(2x5=10)**

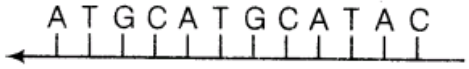
22. i. Describe the process of DNA replication with the help of a diagram.

ii. In which phase of the cell cycle does replication occur in eukaryotes?

iii. What would happen if cell division is not followed after DNA replication?

23. i. Name the parts A and B of the transcription unit given diagram.

ii. a. Construct and complete transcription unit with promoter and terminator based on hypothetical template strand given below.



b. Write the RNA strand transcribed from the above transcription unit along with its polarity.

iii. Describe Meselson and Stahl's experiment and write the conclusion they arrived at.