**BITS Pilani Hyderabad**

**Microbiology BIO F212**

**Lecture Quiz 2**

**Date: 1-12-2022 Time: 30 minutes Total Marks: 20M**

**IC: Dr. Ruchi Jain Dey**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Instructions:**

**1. Please fill in your answer by colouring the box in case of MCQs. Each question has only 1 correct answer**

**2. NEGATIVE MARKING: For every wrong answer, 0.25M will be deducted**

**4. Submit only the answer sheet.**

1. Epigenetic regulation of gene expression works at level of \_\_\_\_\_\_\_\_ wherein \_\_\_\_\_\_\_\_ are modified by methylation and acetylation that allows a cell to adapt to different conditions, by either gene silencing or gene activity. **[2M]**
2. RNA, histone
3. Protein, RNA Polymerase
4. DNA, histone
5. DNA, Protein
6. To initiate DNA replication, supercoiled DNA is relaxed at origin of replication by action of enzymes such as \_\_\_\_\_\_\_\_\_\_\_\_\_ and the two parental strands are unwound by enzyme called \_\_\_\_\_\_. **[2M]**
7. Topoisomerase (or gyrase), helicase
8. RNA polymerase, gyrase
9. DNA polymerase, helicase
10. helicase, Topoisomerase (or gyrase)
11. In bacterial genome replication, the replication fork goes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_fashion producing DNA molecule via a process of replication which is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in nature. **[2M]**
12. Unidirectional, conservative
13. Unidirectional, semi-conservative
14. Bidirectional, semi-conservative
15. Bidirectional, conservative

4. DNA polymerase and RNA polymerase can add a new nucleotide to the \_\_\_\_\_\_\_\_\_\_of growing nucleic acid chain, but exonucleases can remove nucleotides from \_\_\_\_\_\_\_\_\_\_\_\_\_\_of a nucleic acid. **[2M]**

1. 5’ end; only 3’ end
2. 3’ end; both 3’ and 5’ ends
3. 5’ and 3’end; only 3’ end
4. 3’ end; only 3’ end

5. UUA, UUG, CUU, CUC, CUA, CUG all code for Leucine, this phenomenon is called as \_\_\_\_\_\_\_\_\_\_\_\_\_\_of the code. In these codons the last base is called the \_\_\_\_\_\_\_\_\_\_\_\_\_position. **[2M]**

1. Regeneracy, anticodon
2. Regeneracy, wobble
3. Degeneracy, anticodon
4. Degeneracy, wobble

6. In lactose operon, \_\_\_\_\_\_\_\_\_\_\_\_binds to cAMP serving as sensor for low glucose and \_\_\_\_\_\_\_\_\_\_\_\_\_serves as lactose sensor. **[2M]**

1. no protein, Repressor
2. RNA polymerase, Operator
3. Catabolite Repressor protein, Repressor
4. Catabolite Activator Protein, Repressor

7. During Translation of mRNA, Ribosomes bind to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and they fall off the transcript when they reach\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **[2M]**

1. Okazaki fragment, stop codon and terminator sequence
2. Shine Dalgarno sequence, stop codon and terminator sequence
3. Kozak sequence, Shine Dalgarno sequence
4. -35 sequence, -10 sequence

8. Lactose and Arginine operon follow the below mechanism of gene regulation **[1M]**

1. Positive regulation as presence of these metabolites allows transcription to proceed
2. Negative regulation and positive regulation, respectively
3. Negative regulation as the repressor in both cases when bound to the operator prevents transcription to proceed
4. Positive regulation as the repressor in both cases when bound to the operator promotes transcription to proceed

9. Hunger signal made by bacteria when glucose levels are low is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[1M]**

1. Cyclic AMP
2. AMP
3. ATP
4. Cyclic diAMP

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_base present in the first position of the anticodon can bind to any of the four bases in the third position of codons. **[1M]**

1. Uracil
2. Cytosine
3. Inosine
4. Adenosine

11. Following statement is true about Release Factor **[1M]**

1. Participates in termination of Transcription and release of mRNA from DNA
2. Participates in termination of Translation by recognizing stop codon, thereby causing dissociation of ribosome complex causing the release of polypeptide from P site
3. Participates in termination of Translation by functioning like peptidyl transferase at A site
4. Participates in release of DNA polymerase from Replication fork.

12. You received two mutant strains from a laboratory one which is lacZ+ and other which is lacZ-, but the label on these two tubes got lost while wiping with alcohol. You decided to use Glucose and Lactose media to differentiate the two strains and isolate pure clones? If you grow the two strains what will be the expected phenotype **[2M]**

1. lacZ+ and lacZ- will both grow on media containing lactose but only lac Z+ will grow on glucose containing media.
2. lacZ+ and lacZ- will both grow on media containing glucose, but only lacZ+ will grow on media containing lactose
3. lacZ- will grow on media containing lactose but not grow on glucose. LacZ+  will grow on media containing glucose but not on lactose.
4. There is no way to isolate pure clones and identify the correct label as both the strains lacZ+ and lacZ- can grow on media containing lactose or glucose.

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**(Answer Sheet)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S. No |  | | | | Max Marks | Marks Obtained | Negative mark | Final marks |
|  | A | B | C | D |  |  |  |  |
| 1 |  |  |  |  | 2 |  |  |  |
| 2 |  |  |  |  | 2 |  |  |  |
| 3 |  |  |  |  | 2 |  |  |  |
| 4 |  |  |  |  | 2 |  |  |  |
| 5 |  |  |  |  | 2 |  |  |  |
| 6 |  |  |  |  | 2 |  |  |  |
| 7 |  |  |  |  | 2 |  |  |  |
| 8 |  |  |  |  | 1 |  |  |  |
| 9 |  |  |  |  | 1 |  |  |  |
| 10 |  |  |  |  | 1 |  |  |  |
| 11 |  |  |  |  | 1 |  |  |  |
| 12 |  |  |  |  | 2 |  |  |  |
| Total Marks out of 20M | | | | | | + | - |  |
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**Instructions:**

* 1. Please fill in your answer by colouring the cell corresponding to correct option(s).
  2. Each question carries 1M.
  3. **NEGATIVE MARKING:** For every wrong answer, 0.25M will be deducted
  4. Submit only the answer sheet.