S.S.COLLEGE, JEHANABAD

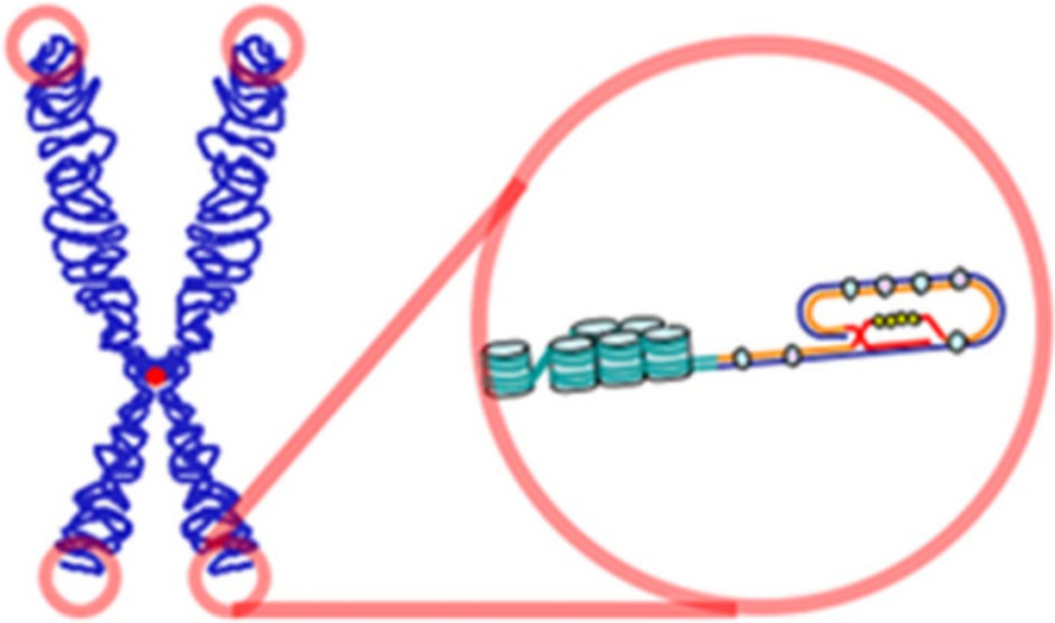
Department of Zoology

Name:	Class:
Class Roll No.:	Total Marks: 20
Assignment: June 15, 2021	Submission: June 16, 2021

M.Sc. Zoo. Sem I - CC-3 Test (Genetics)

This MCQs is for evaluation of students peresnt on the Zoom class held on June 14, 2021. It has a total of 20 questions and a total of 20 marks. Each question carries 1 mark. There is no minus marking.

1.



What are the telomeres?

(A) Telomeres are the part of DNA found at the ends of each of our chromosomes.

(B) Telomeres are the part of chromosomes which are actually present everywhere.

(C) Telomeres are fragmented part of the chromosomes present in cytosol.

(D) Telomeres are part of DNA which has similar function that of transposons.

2. Telomeres are repeat sequence of 6 particular nucleotide base pairs. What is the sequnec of bp repeat in vertebrates?

(A) AUUCGG

(B) CTCTGCT

(C) GGAACA

(D) TTAGGG

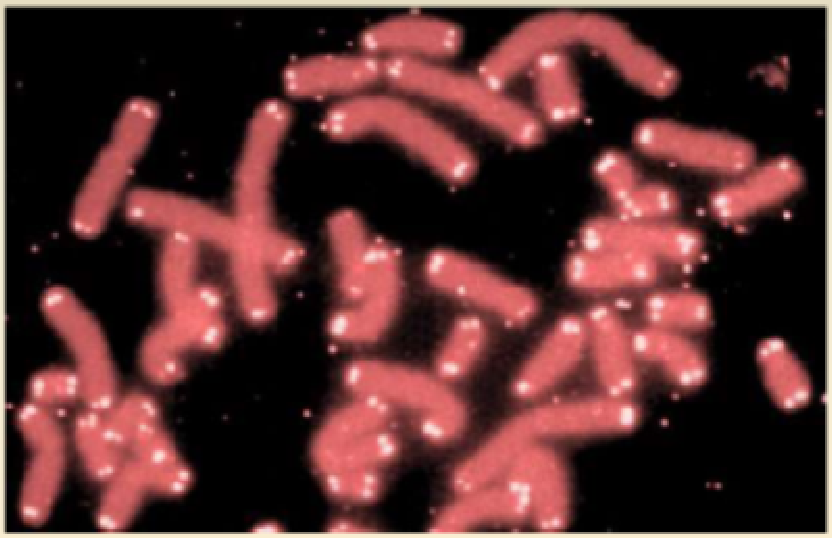
3. Formation of telomeres in cells is achieved through following enzyme?

   (A) Poly α primase
   (B) DNA polymerase
   (C) RNA polymerase
   (D) Telomerase

4. Amongst the following, which has highest level of telomerase?

   (A) Germ line cells & stem cells
   (B) Tumor cells
   (C) Somatic cells of newborn baby
   (D) All of the above
   (E) Only a. & b

5. Why is telomere important for cell?



Telomeres (seen as bright white dots) cap and protect the ends of chromosomes like the caps on shoelaces.
Wood M. 2016. UChicago Medicine Forefront Biological Sciences

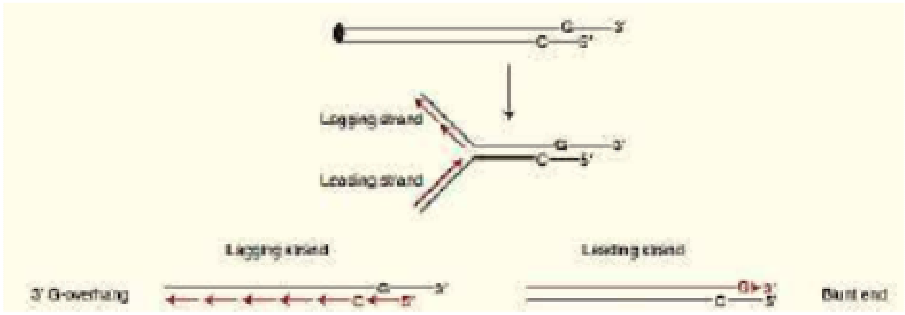
   (A) It forms a cap at the end of chromosomes just like plastic tip on shoelaces to confer chromosome stability.
   (B) It binds the ends of the chromosomes in the same way as a rope tie to confer chromosome stability.
   (C) It assists in chromosome segregation during karyokinesis and helps in providing constant pool of genetic material through the generation.
   (D) None of the above

6. Molecular structural analysis suggests that telomere is consists of _____.

   (A) DNA displacement loop or D-loop and RNA displacement loop or R-loop
   (B) Overhanging G-rich region
   (C) Looped C-rich region
   (D) Non of the the above

7. It has been observed that successive cell division leads to loss of certain number of telomeric repeats. Can it be restored?

   (A) Yes. By the involvement of telomerase enzyme.
   (B) No, resulting short telomere can't be push to lengthen.
   (C) Sometime a. and sometimes b. depending upon the internal cellular environment.
   (D) Can't say.

8. 

   Leading strand of (5'→ 3') in telomere is replicated by which enzyme and lagging strand of (3'→ 5') in telomere is replicated by which enzyme?

   (A) Both strands are replicated by telomerase.
   (B) Leading strands are replicated by telomerase and leagging by Poly α primase.
   (C) Both strands are replicated by Poly α primase.
   (D) None of the above

9. Why is telomerase mecessary for the replication and maintenance of telomere?

   (A) DNA polymerase can't bind to stickty end of chromosome.
   (B) DNA polymerase exhausts up to the late S stage of cell division.
   (C) Telomerase is more potent enzymes.
   (D) All of the above.

10. Can it be possible for DNA polymerase to take over the function of telomerase during the loss of telomerase function?

    (A) Yes
    (B) No
    (C) May be
    (D) Can't say

11. Senescence of cells is due to loss of telomere length. Is it correct?

    (A) Yes
    (B) No
    (C) Sometimes
    (D) Can't say

12. What is the consequence of gradual loss of telomere leading to excessive shortness of telomere length?

(A) It prevents Non Homologous End Joining and Homologous Recombination of chromosome ends resulting in replication and recombination crisis.

(B) It directs the pathway that is resulting in the activation of telomerase.

(C) Both of these

(D) None of these

13. What happens when the telomere becomes too short up to a critical length?

(A) The chromosome is no longer replicated.

(B) Chromosome experiences mutation during successive cell division.

(C) It initiates aneuploidy in successive cell division.

(D) None of these

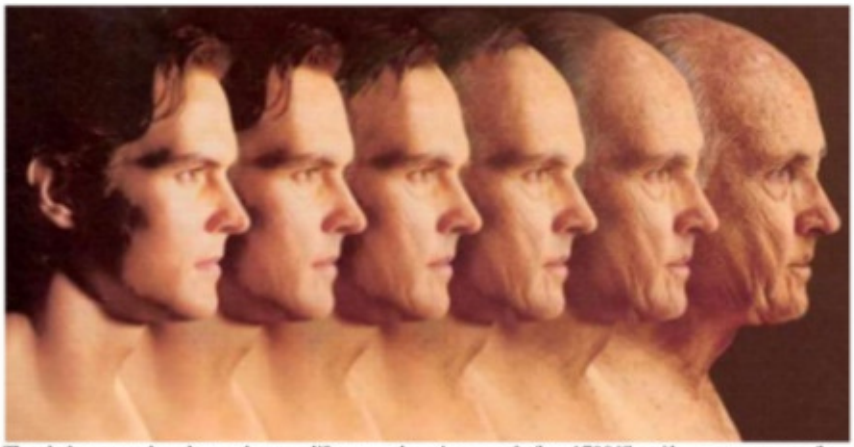
14. Which is caused by tumor cell formation?

(A) Loss of shortening of telomere length.

(B) By activating telomerase function.

(C) By inactivating DNA damage checkpoint.

(D) All of the above

15. 

The below graphs shows human life span has increased from1700'S with an average of 5years

How ageing is related to the telomeric length of cell?

(A) Crtically short telomere activates the pathway of programmed cell death or apoptosis.

(B) Critical length of telomere activates the formation of collagen in the skin.

(C) Critical length of telomere slows down the peripheral circulation of animals.

(D) None of the above

16. Physical injury and pain will lead to _____.

(A) increase in the length of telomere.
(B) shortening of telomere in the cell.
(C) activation of telomerase in the cell.
(D) activation of DNA polymerase in the cell.

17. The stress in internal cellular environment results in average loss of _____ nucleotide base pairs of telomere.

(A) 25 to 100 bp
(B) 50 to 100 bp
(C) 50 to 200 bp
(D) 100 to 200 bp

18. Which of the following are known to slow down loss of telomere in the cells?

(A) Seasonal fruits and vegetables
(B) Happiness and satisfaction
(C) Exercise and meditation
(D) All of the above
(E) None pf these

19. How is quality sleep able to slow down loss of telomere in human?

(A) Quality sleep repairs all damaged cells and tissues.
(B) Quality sleep inhibits GABA production in the neurons.
(C) Quality sleep enhances the molecules that inhibits telomere loss.
(D) Quality sleep reduces the production of free radicals or oxidative stress molecules in the cell.

20. The relationship of telomeric length and cancer formation encourages scientist to use this peice of information in the cancer therapeutics. Is it true? How is it possibe?

(A) Yes, by using the potential compounds that inhibit telomerase activity.
(B) Yes, by using the potential compounds that are able to kill telomerase-producing cells.
(C) No, it is not plausible and therefore it can't be possible.
(D) Both a. & b.