Highlander Help

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Good Luck!
1. Regardless of the level of complexity each transposable element contains:
   a. inverted repeats
   b. gene for reverse transcriptase
   c. gene for transposase
   d. both a. and c. are correct

2. Transposons are called also “jumping genes” due to the fact that some of them move via ______________ transposition, effectively “jumping” from one molecule DNA to another.
   a. conservative
   b. cut and paste
   c. retrotransposition
   d. both a. and b. are correct

3. In contrast to “cut and paste” transposition, replicative transposition does not:
   a. result in a cointegrate intermediate
   b. need recognition sequence
   c. need transposase
   d. damage DNA

4. The first step of the moving mechanism of a retrotransposon is synthesis of
   ____________.
   a. single-stranded RNA
   b. single-stranded DNA
   c. double-stranded RNA
   d. double-stranded DNA

5. Bacteriophage Mu replicates in the host cell as a ____________ and moves between cells as a______________.
   a. retrotransposon, virus
   b. transposon, virus
   c. virus, virus
   d. both a. and b. are correct

6. Composite transposons are:
   a. several transposable elements moving together
   b. insertion sequences surrounding one or more genes
   c. transposons carrying genes for reverse transcriptase
   d. none of the above

7. A sequence named internal resolution site is recognized by
   a. reverse transcriptase
   b. restrictase
   c. resolvase
   d. RNA polymerase
8. Which of the listed enzymes is not needed for replicative transposition?
   a. reverse transcriptase
   b. transposase
   c. DNA polymerase
   d. resolvase

9. Two plasmids are called incompatible if
   a. they have different promoters.
   b. they cannot exist simultaneously in the same cell.
   c. they have the same antibiotic resistance gene.
   d. all of the above

10. The “plasmid addiction” phenomenon is possible due to:
    a. the higher stability of the toxin molecule compared to the antidote molecule
    b. the higher stability of the antidote molecule compared to the toxin molecule
    c. specialized host gene
    d. none of the above

11. Rolling circle replication starts at:
    a. melted origin of replication
    b. double-stranded origin of replication
    c. nicked DNA
    d. none of the above

12. Antibiotic resistance could be a result from:
    a. presence of R-plasmids
    b. mutations in the bacterial genophore (“chromosome”)
    c. transposons
    d. all of the above

13. Some plasmids encode toxins allowing the bacteria that carry them to kill other bacteria, thus minimizing the competition for resources for life. In most cases toxins disrupt
    a. cellular membrane of the target bacteria.
    b. the ribosomes of the target bacteria.
    c. cellular DNA of the target bacteria.
    d. both a. and c. are correct.

14. Viruses that persist silently in the host cell for a long time are called _____________ viruses, whereas viruses that “explode” the cell as soon as their propagation is complete are called _________________.
    a. latent, lysogenic
    b. latent, lytic
    c. lysogenic, lytic
    d. both b. and c. are correct
15. Which of the following is not a stage in virus propagation?
   a. Virion attachment
   b. Replication of the viral genome
   c. Virion assembly
   d. all are stages of viral propagation

16. A viral plaque is:
   a. a membrane – limited sack full of viruses
   b. product of viral division
   c. a clear zone in a monolayer of cultured cells or bacterial lawn, resulting from cell lysis due to viral infection
   d. both b. and c. are correct

17. Hershey and Chase used bacteriophages to demonstrate that DNA is the carrier of the genetic information. Their experiment specifically showed that:
   a. phage DNA is transferred between different viral particles
   b. it is possible to label phage DNA
   c. only phage DNA enters the host cell
   d. none of the above

18. By the nature of its enzymatic activity viral RNA replicases are:
   a. reverse transcriptases
   b. DNA polymerases
   c. RNA polymerases
   d. none of the above

19. Polyproteins are huge polypeptide chains that are cut up to generate multiple individual proteins. Viruses use polyproteins as a strategy to:
   a. use the host protein synthesis machinery more efficiently
   b. maximize the coding capacity of their genomes
   c. increase the stability of viral proteins
   d. both a. and c. are correct

20. Imagine that you are peeling away the different structural elements comprising the HIV virus. Starting from the outer surface of the viral particle the correct order of structural elements is:
   a. envelope, capsid, nucleic acid
   b. nucleocapsid, envelope
   c. capsid, nucleic acid, envelope
   d. envelope, nucleic acid, capsid

21. Which of the following could NOT be found in a cloning vector:
   a. origin of replication
   b. restriction enzyme
   c. polycloning site
   d. a gene for antibiotic resistance
22. Which of the following statements about the mode of action and application of restriction enzymes is INCORRECT?
   a. If DNA from an organism is cut with one restriction enzyme, one of the DNA fragments produced can be ligated into a plasmid that has been cut with the same enzyme.
   b. After DNA has been digested with a restriction enzyme, the DNA fragments produced may have regions of single stranded DNA at their ends.
   c. Restriction enzymes are only used to insert fragments into plasmids for genetic engineering.
   d. A restriction site is a short sequence of DNA that can be cleaved within the sequence leaving sticky or blunt ends.

23. Which of the following sequences in double-stranded DNA is most likely to be recognized as a cutting site for a restriction enzyme?
   a. AAGG    b. AGTC    c. GGCC    d. ACCA
   TTCC    TCAG    CCGG    TGGT

24. The purpose of the gene for antibiotic resistance in cloning vector is:
   a. to ensure more effective plasmid propagation
   b. to allow selection of bacteria carrying the vector
   c. to allow more effective bacteria killing
   d. none of the above

25. Recombinant plasmids are usually introduced in mammalian cells via
   a. transformation
   b. translocation
   c. transfection
   d. all of the above

26. By the nature of their action, restriction enzymes are:
   a. nonspecific endonucleases
   b. specific exonucleases
   c. nonspecific exonucleases
   d. specific endonucleases

27. Shuttle vectors are commonly used to transfer genes between organisms. In order a vector to have the ability to propagate in bacterial and mammalian cells it absolutely has to include:
   a. prokaryotic and eukaryotic origin of replication
   b. prokaryotic and eukaryotic RNA sequences
   c. prokaryotic and eukaryotic ribosomes
   d. all of the above

28. Starting with a cell lysate, separating nucleic acids from proteins can be achieved by treating the lysate with ______________?
   A. Phenol
   B. Alcohol
   C. DNAase
   D. RNAase
29. Starting with a solution containing only DNA and RNA, isolating pure DNA can be achieved by treating the solution with _______________?
A. Phenol
B. Alcohol
C. RNAase
D. Both B & C

30. DNA melting temperature is defined as:
A. the temperature at which double-stranded DNA is completely converted to single-stranded DNA.
B. the temperature at which single-stranded DNA is completely converted to double-stranded DNA.
C. the temperature at which 50% of the DNA molecules are separated.
D. None of the above

31. The amount of DNA in a solution can be measured using absorbance at 260 nm. For an equal amount of DNA the absorbance at 260 will be highest for?
A. Single Stranded DNA
B. Double Stranded DNA
C. Free DNA nucleotides
E. The all absorb equally

32. Assembly of a virus requires which of the following processes
A. Translation
B. Transcription
C. Both A & C
D. None of the above

33. Viruses can have which of the following genome types
A. Double stranded DNA
B. Double stranded RNA
C. Single stranded RNA
D. All of the above