1. Insertion vectors are a type of vectors. Choose the correct statement for this type of vector.

a) These are complex vectors

b) DNA is inserted through many restriction sites

c) There is an upper limit on the size of the DNA to be packaged

d) Lambda gt09 is an example of this type of vector

2. Choose the correct statement for lambda gt10.

a) It is having an EcoRI site

b) It is having cII gene

c) It accepts an insert of size greater than that of 8 kbp

d) This size is less than that the size which is generally accepted by wild type phage

3. The presence of insert leads to inactivation of which gene?

a) cII

b) cI

c) cIII

d) both cII and cIII

4. A portion of phage is removed and in place of it, the DNA of interest is inserted. This type of vector is called as _____

a) displacement vector

b) insertion vector

c) substitution vector

d) transposition vector

5. Choose the incorrect statement for the central portion of the lambda genome.

a) The central portion is not required for lytic growth

b) The central portion includes repressor gene

c) The repressor gene is not required for lysogenic growth

d) It is approximately 10kbp long

6. The fragment inserted in the place of the central portion of the genome is known as _____

a) insertion fragment

b) substitution fragment

c) stuffer fragment

d) displacement fragment

7. Choose incorrect statement for the substitution vector EMBL4.

a) It is having two single multiple cloning sites

b) The region to be removed is on one side of the multiple cloning sites

c) If a digestion within the multiple cloning sites, it generates central portion and right and left arms

d) The right and left portions are called as arms

8. Is it necessary to stop the relegation of the central portion before the stiffer fragment is ligated.

a) True

b) False

9. At times, a second enzyme is used while the central portion is removed and the stuffer fragment is placed there. Choose the statement which doesn't holds for this process.

a) It is a method which is used for avoiding the relegation of central portion before the stuffer fragment is attached over there

b) In this method, the central portion is cut with another enzyme after being separated from the arms

c) The arms are also cut with this second enzyme

d) It is not necessary to remove the fragments generated

10. Physical separation is also used at times. Choose the correct statement with respect to this method.

a) Physical separation constitutes of gel electrophoresis and or by using centrifugation in sugar density gradient

b) In sugar density gradient, the molecules are separated on the basis of density

c) The central portion is recovered from the gel or the gradient

d) Gel is more efficient than the sugar density gradient

11. Packaging in vitro is also carried out to introduce the lambda DNA into the cells. Choose the incorrect statement in respect to it.

a) Packaging in phage coat is a more efficient process than the normal transformation process

b) The lambda DNA is incubated with lysate of lambda infected cells in a concatemeric configuration

c) Lysate constitutes of lambda proteins needed for phage assembly

d) The amount of non-recombinant phage in the background is less

12. Packaging in vitro is basically carried out by two different strategies. Choose the incorrect statement for it.

a) Separate strains with chain-termination mutations in different genes for coat components are used _____

b) Temperature sensitive cI repressor is used

c) Due to heat shock packaging proteins are induced

d) Packaging is carried out in each strain

13. Chain-termination mutations in coat proteins genes are carried out. The coat protein coat genes used are _____

a) A gene

b) D gene

c) E and D gene

d) D and A gene

14. What happens if chain-termination mutation is in the S gene?

a) Cell lysis is blocked

b) Growth of cells containing low levels of packaging proteins is not allowed

c) The lysis of cells is not carried artificially

d) Packaging is not carried out efficiently

15. Which of the following is used for blocking the phage-encoded recombination?

a) Mutation in D gene

b) Mutation in E gene

c) Red mutation

d) Mutation in S gene

16. Which of the following is not a consequence of deletion in the b region?

a) Excision of the prophage on induction is prevented

b) It reduces the amount of endogenous phage DNA in the packaging mix

c) It reduces the amount of exogenous phage DNA in the packaging mix

d) It reduces the level of background non-recombinant phage

17. If a single system is used for packaging, there are increased chances of endogenous material being packed.

a) True

b) False

18. The cI function can be scanned in order to check whether the recombinants are present or not. Which of the following doesn't hold true?

a) The cI protein is required for the formation of lysogen

b) The plaques formed are turbid in the case if the cI gene is active

c) The plaques formed are clear in the case if the cI gene is inactive

d) hflA mutant host reduces the amount of cII stability

19. What is the function of red and gam gene products?

a) It promotes the growth of the phage in the E. coli cells which are lysogenic for bacteriophage P1

b) It inhibits the growth of the phage in the E. coli cells which are lysogenic for bacteriophage P2

c) It inhibits the growth of the phage in the E. coli cells which are lytic for bacteriophage P1

d) It activates the growth of the phage in the E. coli cells which are lytic for bacteriophage P2

20. The red and gam genes are removed in which type of phages?

a) Substitution phage

b) Replacement and substitution phages both

c) Replacement phage

d) Substitution is preferred over replacement phage

21. Phages which are designated as spi-are _____

a) red+ gam+

b) red+ gam-

c) red- gam+

d) red- gam-

22. Choose the correct statement for RecBCD nuclease.

a) It promotes rolling circle replication

b) It is blocked by Gam protein

c) It blocks theta mode of replication

d) It is blocked by Red protein

23. The essential sites for recombination are known as _____

a) chi sites

b) rec sites

c) gam sites

d) red sites

24. The replication rate remains the same for all the phages irrespective of what sequence is there in the phage.

a) True

b) False

25. There is a limit on upper size of the DNA to be packed. Choose the correct statement with respect to phages in this context.

a) There is some phage DNA lost in this process

b) The phages are known as transformed phages

c) These type of phages can't be selected and harvested

d) Lambda is not a special attachment site

26. There are some phages which don't preferentially transduce some special regions of the phage genome. These phages are known as _____

a) transducing phages

b) specialized transducing phages

c) generalized transducing phages

d) transforming phages

27. Choose the correct statement for the lambda ZAP vector.

a) It is not based on bacteriophage lambda

b) It contains a region that can be excised in vivo

c) The excision leads to the formation of bluescript plasmids and it contains an initiator region only

d) The multiple cloning site is not flanked by the initiator and the terminator region

28. The initiator is recognized by which gene?

a) Gene I

b) Gene I and II

c) Only gene II

d) Gene III

29. Choose the incorrect statement for the replication process.

a) The initiator site is nicked and replication of one strand is started

b) Replication takes place in both the directions

c) Replication continues through the bluescript

d) It is stopped at the terminator and then again a nick is made

30. Which of the following doesn't takes place after replication?

a) The single stranded sequence is generated

b) It is circularized to form closed single stranded molecule

c) It may circularize or remain linear

d) The double stranded molecule can be synthesized by cellular DNA synthesis

31. Choose the correct statement for cosmids.

a) It can be regarded as lambda substitution vector

b) Less amount of phage DNA is deleted

c) Only cos packaging sites are left

d) It doesn't contains a origin of replication

32. Once cosmids are inside the E.coli cells, they don't generate phage but are propagated as plasmids.

a) True

b) False

33. Which of the following is the correct method to check whether the DNA has entered into the cell or not in the case of cosmid?

a) If a transformation has taken place turbid plaques are formed

b) If a transformation has taken place clear plaques are formed

c) If a transformation has taken place, it can be confirmed via ampicillin resistance

d) If a transformation has taken place, it can be confirmed if forms plaques and is ampicillin resistant also

34. Which size of the insert is accepted by the cosmids?

a) 10-20 kbp

b) 35-45 kbp

c) 50-60 kbp

d) 100-120 kbp

35. What happens once the cosmid enters the E. coli cells?

a) There is strict size selection inside E. coli cells

b) Partial deletion may take place

c) The tendency of deletion may is increased by using low copy number

d) The tendency of deletion can't be altered

36. If colEI derived origin of replication is replaced by the origin of replication of F plasmid, it is called as:

a) phagemid

b) F cosmid

c) plasmid

d) fosmid