Paper code :6202

M. Sc. SEM-III (NEW COURSE)
Microbiology
Paper – 302: Genetics of bacteria and bacteriophages

કુલ સમય :– ૬૦ મીનીટ કુલ પ્રશ્નો : ૫૦ વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

1. The first demonstration of recombination in bacteria was achieved by _____
a) Lederberg and Tatum b) Luria and Delbruck c) Joshua and Lederberg d) Luria and Tatum
2. Which type of E.coli strain was chosen to prove the experiment of conjugation?
a) prototrophs b) auxotrophs c) polyauxotrophs d) autotrophs
3.What is the shape of DNA in the male cells of E.coli?
a) linear b) supercoiled c) circular d) relaxed
4.What is the frequency of formation of recombinants in a F+ X F— cross?
a) 100 b) 40 c) 10 d) 1
5.Which of the following is true for an Hfr X F— cross?
a) frequency of recombination high, transfer of F factor low b) frequency of recombination high, transfer of F factor high
c) frequency of recombination low, transfer of F factor high d) frequency of recombination low, transfer of F factor low
6. The Hfr chromosome is transferred to the F— cell in a _____ fashion.
a) circular b) coiled c) dimer d) linear
7How much time is required to inject a copy of the whole Hfr E.coli genome?
a) 24 hrs b) 30 mins c) 100 mins d) 48 hrs
8How much time is taken by the new DNA to make whole phage particles?
a) 24 hours b) 60 mins c) 2 mins d) 10-20 mins
9. When viral genome can become integrated into the bacterial genome they are known as
a) temperate phage b) prophage c) bacteriophage d) episome
10 What is the frequency of defective phage particles in progeny phage produced?
a) 100 b) 10-1 c) 10-5 d) 1000
11 Fragments transferred by a bacteriophage contains how many genes?
a) 20 b) 50 c) 1 d) 100
12 When the phage transduces only those bacterial genes adjacent to the prophage in the bacterial chromosome then it is known as?
a) generalized transduction b) specialized transduction c) restricted transduction d) conjugation
13Introduction of DNA molecules into the recipient organism is termed as _____
a) transformation b) translation c) transduction d) transcription
14Many bacterial species are having a natural ability to take up the exogenous DNA material. Which of the statement is not correct in regard to it?
a) This ability is termed as competence b) It is not limited to particular growth phases
c) The bacteria may develop new biochemical abilities under special conditions such as nutrient deprivation
d) Induction of specific set of bacterial proteins may take place
15 Viral infection can also be used to take up the DNA by the cells.
a) True b) False
16Transformation carried out using a particle gun is known as biolistic transformation. It falls under which category of transformation?
a) Physical b) Chemical c) Electroporation d) Natural
17Which of the following role is performed by a bacteriophage in transduction?
a) vector b) donor c) recipient d) episome
18Which of the following involves remarkable capacity of a short segment of DNA to move from one place to another?
a) DNA transposition b) DNA replication c) Translation d) Transcription
19 Which of the following process generates a new copy of the transposable element at a new location of DNA?
a) Homologous genetic recombination b) Site specific recombination
c) Non-homologous recombination d) Replicative recombination
20The transposable elements of bacteria are generally retrotransposons.
a) True b) False
21The IS elements can be identified by the presence of _____
a) Antibiotic resistance geneb) Endonuclease cleavage site c) 50 bp inverted repeat d) Integrase site
22Direct repeats in the IS element are present _____
a) Within the transposon b) Upstream the inverted repeat
c) Within the inverted repeat d) Downstream the inverted repeat
23 The enzyme that catalyzes the transposition of an IS element is called _____
a) Transposase b) Integrase c) Transcriptase d) Polymerase

24The central block of the composite transposable element consists a gene for _____
a) Transposase b) Antibiotic resistance c) Integrase d) Lactamase
25. Which of the following about the P-element is false?
a) 25 bp inverted repeats b) 2907 bp long element c) Encodes for transposase d) DNA transposon
26.Which of the following is true for a plasmid?
a) Contains an origin of replication b) Imparts a useful characteristic to the host bacterium
c) Possesses one or more genes d) Replicates only when the host genome is undergoing replication
27.Which among the following are the smallest plasmid and an ideal cloning vector?
a) ColE1 b) RP4 c) PUC8 d) F
28.What are relaxed plasmids?
a) The ones having copy numbers above 50 per cell b) The ones that can't be digested by endonucleases
c) The ones that can't be isolated d) The ones present in more than one strains of the same host
29.How can conjugative and non-conjugative plasmids be differentiated?
a) On the basis of size b) Presence of antibiotic resistance
c) Number of cloning and digestion sites d) Presence of transfer genes
30.To be able to coexist in the same cell, different plasmids must be _____
a) Conjugative b) Of high copy number c) Stable at high temperatures d) Compatible
31.The main problem in the formation of the chimera Ti plasmid is _____
a) It is unstable b) Large size c) High virulence d) No unique restriction site
32.Which of the following does not play any role in the infection of plant cell by the Ti plasmid of A. tumefaciens?
a) T-DNA b) Virulence region c) Host specificity region d) 25 base pair repeats
33.Insertion of the T-DNA into the host genome depends on the T-DNA itself.
a) True b) False
34.The Ti cloning vector pBIN19 contains which of the following genes?
a) Tetracycline resistant gene b) Stress resistant gene
c) Kanamycin resistant gene d) Ampicillin resistant gene
35.Antibiotics are used in genetic engineering. They are useful
a) to keep culture free of microbial infections b) to select healthy vectors
c) to identify replication start sites d) as selectable markers
36.Degradative plasmid TOL, responsible for the metabolism of toluene is present in which of the organisms?
a) E.Coli b) Saccharomyces Cerevisiae c) Staphylococcus Aureus d) Pseudomonas putida
37. Col plasmids are responsible for _____
a) Degrading unusual molecules b) Taking up colchicine stain c) Coding for colicins d) None
38.cro gene is an example of an immunity repressor.
a) True b) False
39.Hershey and Chase proved that DNA is the genetic material. They worked on
a) bacteriophages b) viroid c) fungus d) bacterium
40Transduction is mediated by
a) F-factors b) cosmids c) phage vectors d) plasmid vectors
41.Lac operon is an example of
a) only positive regulation b) only negative regulation
c) both positive and negative regulation d) sometimes positive sometimes negative
42.In the presence of lactose, how long does it take for the lac operon to be expressed?
a) when lactose equals glucose concentration b) when glucose is more than lactose concentration
c) as long as lactose is more than glucose concentration d) as long as lactose is more than galactose concentration
43The sequence of the structural genes in the lac operon is
a) lacA-lacZ-lacY b) lacZ-lacY-lacA c) lacZ-lacA-lacY d) lacA-lacY-lacZ
44. In a cell as per the Operon Concept, the regulator gene governs the chemical reactions by
a) Inhibiting the substrate in the reaction b) Inhibiting migration of mRNA into cytoplasm
c) mRNA transcription inhibited d) Enzyme-reaction inactivation
45. Which of these operons is anabolic?
a) Lac b) Ara c) Trp d) Phe
46.Which of these properties do not agree with trp operon attenuator?
a) It brings about repression of trp operon b) It consists of one stem loop system
c) It has two codons for tryptophan in sequence d) Ribosome stalls at the attenuator
47.We know that lactose has a positive impact on the activity of the lac operon. Tryptophan's presence has a
a) Positive feedback b) Negative feedback c) No difference d) Highly positive impact
48.Which of these Ara genes is a mode of feedback autoregulation?
a) Ara A b) Ara B c) Ara C d) Ara D
49. In which of this condition is Ara operon functional?
a) When repressor binds to O2 and I1 b) When repressor binds to O1 and I2
c) When repressor binds to I2 and I1 d) When repressor binds to O2 and Pc
50.Which of the Ara promoter regulation is controlled by binding of repressors on the O1 regulating unit?
a) PA b) PB c) PC d) PD