

SARDAR PATEL UNIVERSITY

M. Sc. Microbiology/Biotechnology IInd Semester Examination

PS02CMIC02/PS02CBIT02: Microbial Genetics

Monday, 06/11/2017

Time: 10:00 am to 1:00 pm

Max Marks: 70

Note: Figures on the right indicate marks

Q.1 Choose the most appropriate answer (08)

- i _____ is a repressor of SOS response
a) RecA b) UmuD c) LexA d) MutY
- ii Which of the following agents can induce transversions?
a) 5-BU b) 2-aminopurine c) EES d) ROS
- iii The main *tra* operon is positively regulated by the product of the separately transcribed _____ gene.
a) *traJ* b) *traM* c) *traA* d) *traG*
- iv In conjugation during transfer of plasmid, replication of plasmid occur
a) in donor b) in recipient c) in both d) none of the above
- v The *cl* repressor carries out its repressing function in the lysogenic state by binding to
a) two operators O_L and O_R b) two promoters P_L and P_R
c) promoter P_{RM} d) promoter P_{RE}
- vi Bacterial genes can be mapped based on the co-transduction frequency which is _____ proportional to the distance between two genes.
Directly b) inversely c) not d) none of the above
- vii During tetrad analysis, when frequency of parental ditypes is found to be equal to non parental ditypes for two genes, it implies that the two genes are
a) unlinked b) linked c) dominant d) recessive
- viii Cancer is caused by
a) Uncontrolled mitosis b) Uncontrolled meiosis
c) necrosis d) apoptosis

Q.2 Attempt any **Seven** of the following: (14)

- a) Write in brief on: Point mutations
b) Write on 'Transformasomes'
c) Write in brief on: VSP repair pathway
d) What is F' factor?
e) What are mobilizable plasmids?
f) Define Specialized transduction
g) Explain the term: Chromatid interference.
h) Write in brief on: Integrons.
i) Write in brief on: Cyclins

- Q.3 a) Write a note on: Nucleotide excision repair in prokaryotes. (06)
b) Explain how 5-bromouracil and EES induce mutations. (06)
OR
b) Write on Suppressor mutations (06)
- Q.4 a) With the help of a diagram, discuss salient features of F-plasmid and the role of F-plasmid encoded *tra* genes in conjugation. (06)
b) With the help of an appropriate model, discuss the molecular mechanism of homologous recombination. (06)
OR
b) Write a note on: *vir* regulon (06)
- Q.5 a) 'Competence is a transitory state of the recipient population and its duration is restricted to a small fraction of the growth cycle'. Explain the statement in detail. (06)
b) Explain how generalized transduction can be used to construct genetic maps. (06)
OR
b) Write a note on: M-13 bacteriophages. (06)
- Q.6 a) Discuss salient features of different types of RM systems. (06)
b) Describe genetic organization and mechanism of transposition of any one composite transposon. (06)
OR
b) Write a note on: Tumor suppressor genes (06)

-X-X-X-X-X-

SEAT No. _____

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Sardar Patel University
M Sc II Semester Microbiology/Biotechnology
PSO2MIC/BIT01 Bioprocess and Biochemical Engineering
External Theory Examination

Date : 2nd November, 2017

Max Marks : 70

Time: 10:00 am to 1:00 pm

- Q. 1. Choose the correct answer (08)
- The cyclone column reactor is a type of
 - hydrodynamic system
 - pneumatic system
 - plug flow reactor
 - none of these
 - The C^*-C_L denotes
 - Oxygen transfer
 - Driving force for O_2 dissolution
 - Oxygen uptake rate
 - Oxygen saturation
 - The heat labile components of media can be sterilized by
 - radiation
 - filtration
 - moist heat
 - dry heat
 - Which of these is an example of pneumatically driven reactor
 - Chemostat
 - bubble column reactor
 - cyclone column reactor
 - photobioreactor
 - Productivity means
 - yield/hour
 - product yield
 - production efficiency
 - all
 - Containment means
 - prevent contaminants to enter the reactor
 - prevent cells to leave the reactor
 - kill the contaminants
 - prevent air to enter
 - Thermistors are used to measure
 - weight
 - pressure
 - impeller speed
 - temperature
 - Find the odd one out
 - Chemostat
 - turbidostat
 - Biostat
 - thermostat

Q. 2 Explain the terms in brief: (any seven) (14)

- a) Fed batch cultivation
- b) Oxygen uptake rate
- c) Mixing time
- d) scale up
- e) Packed bed reactor
- f) Fluidized bed reactor
- g) Heat exchanger
- h) Culture degeneration
- i) Salting out

Q. 3 A) List various raw materials and explain carbon sources. (06)
B) Write a note (Any one) (06)

- a) Primary screening
- b) Culture preservation

Q. 4 A) Explain the effect of temperature on media components during sterilization (06)
B) Explain the design of plug flow reactor (06)

OR

B) Explain the methods used to determine K_{La} (06)

Q. 5 A) Explain the kinetics of batch cultivation system (06)

B) Write a note on: (any one) (06)

- a) Incubation control
- b) PID controllers

Q. 6 A) List methods of product purification and explain any two. (06)

B) Write a note on (any one) (06)

- i) Rotary drum filter
- ii) Plate and frame filter

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