S.4 B.Sc - B.T (Bio. Technology) 2015-16 S4BT - III Sem - IV

Q.P. Code - SC4BT030316 PG-2 80

Note : 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Draw diagrams wherever necessary.

Q. 1 A) Explain the following (any four) 8

i) Pribnow box.
ii) pre-mRNA
iii) core promoter
iv) 'cat' box
v) TBPs
vi) Enhancers
vii) polycistronic mRNA
viii) Goldberg Hogness box.

B) Answer the following. (Any two) 12

i) Discuss the similarities and differences between the E.coli RNA polymerases and eukaryotic RNA polymerases.
ii) In detail explain the Rho independent termination of transcription in prokaryotes.
iii) 'Many eukaryotic mRNAs, but not prokaryotic mRNAs contain introns'. Describe how these sequences are removed during the production of mRNA.
iv) In detail explain the transcription initiation process in eukaryotes.

Q. 2 A) Explain the following (Any four) 8

i) Translation
ii) Polysome
iii) Amino acyl (A) site
iv) Degeneracy of code
v) Aminoacylation
vi) Release factors (Rf)
vii) Ribosomal binding site.
viii) formyl methionine (fMet)

B) Answer the following. (Any two) 12

i) Explain the process of initiation of translation in E.coli.
ii) Explain the process of elongation of translation in prokaryotes.
iii) Write in brief about the production of aminoacyl - tRNA with diagram.
iv) Write down the characteristics of the genetic code.

Q. 3 A) Fill in the blanks (Any 4) 4

i) PAGE is a technique of separation of _____ based on their molecular weight and charge density.
a) Proteins b) DNA c) RNA d) Amino acids

ii) The technique which separates charged particles using electric field is _____.
a) hydrolysis b) electrophoresis
c) Protein synthesis d) protein denaturing.

iii) DNA possesses _____
a) no charge b) a positive charge
c) a negative charge d) none of the above.

iv) SDS is _____ detergent.
a) anionic b) cationic c) positive d) none of the above.

v) In agarose gel electrophoresis, the DNA is moved towards the _____.
a) cathode b) anode
c) DNA does'nt move d) none of the above.

vi) The cross-linking agent used for PAGE gel is _____
a) Acrylamide b) TEMED c) APS d) SDS

vii) The resolving gel has a pH of _____
a) 8.8 b) 6.8 c) 7.8 d) 9.8

viii) PAGE stacking gel concetration is always _____ than that of resolving gel.
a) Greater b) lesser
c) same d) May be greater or lesser.

B) Give significance of the following (any two)

i) Comb
ii) Notch plate
iii) CBB
iv) Gel loading buffer.

C) Answer the following. (Any two)

i) Explain the migration of an ion in an electric field with suitable mathematical expression.
ii) Explain the effect of temperature on electrophoretic mobility with suitable diagram.
iii) Explain the native PAGE for protein separation.
iv) Giva an account on the applications of electrophoresis.

Q. 4 Write short notes on: (any three)

i) Rho-dependent termination of transcription
ii) Splicesome
iii) Protein sorting in the cell
iv) Termination of translation
v) Protein gel staining
vi) 2D PAGE.

—— The End ——