

**C****DF-3033****B. Sc. (Bioscience) (Sem. III) Examination****March / April – 2016****302 : Molecular Biology**

Time : 2 Hours]

[Total Marks : 50

**Instructions :**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
B. Sc. (BIOSCIENCE) (SEM. 3)

Name of the Subject :  
302 : MOLECULAR BIOLOGY

Subject Code No. : 3 0 3 3 Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

- (2) There are total-50 multiple choice questions (MCQ) in question paper.
- (3) All questions are compulsory.
- (4) Select the best one from given options to give an answer.
- (5) Answer the questions only into the OMR answer-sheet which is given to you.

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ  
O.M.R. Sheetની પાછળ છે.  
Important instructions to fillup O.M.R. Sheet  
is given back side of provided O.M.R. Sheet.***

- 1 By which bonds the purine and pyrimidine pairs of Complementary Strands of DNA held together ?  
 (A) C - bonds (B) N - bonds  
 (C) H - bonds (D) O - bonds
- 2 State the nature of the 2 Strands of DNA duplex.  
 (A) Disimilar and non — complementary  
 (B) Anti parallel and Non - complementary  
 (C) Identical and Complementary  
 (D) Anti parallel and complementary
- 3 The code AUG stands for  
 (A) N-formyl methionine (B) A lanine  
 (C) Glycine (D) Methionine
- 4 A Sequence of three Consecutive bases in a t- RNA molecule which Specifically binds to a complementary Codon Sequence in m - RNA is known as  
 (A) Anti Codon  
 (B) Termination Codon  
 (C) Triplet Codon  
 (D) Non - Sense Codon
- 5 A Codon is made up of  
 (A) Three nucleotides (B) Four nucleotides  
 (C) Single nucleotide (D) Two nucleotides
- 6 Nucleus of a cell is the site of Synthesis of  
 (A) t - RNA (B) All of these  
 (C) DNA (D) m - RNA
- 7 DNA replication requires  
 (A) Ligase only  
 (B) RNA polymerase  
 (C) DNA polymerase only  
 (D) DNA polymerase and Ligase
- 8 The enzyme involved in transcription is  
 (A) DNA polymerase II  
 (B) DNA polymerase III  
 (C) RNA polymerase  
 (D) DNA polymerase I
- 9 Enzymes needed for formation of replication fork  
 (A) Hexokinase and aldolase  
 (B) Ligase and endo nuclease  
 (C) RNA polymerase and DNA polymerase I  
 (D) Helicase and gyrase
- 10 Okazaki fragments are Synthesized on  
 (A) Leading and Lagging Strands  
 (B) Complementary DNA Strand  
 (C) Leading strands of DNA only  
 (D) Lagging Strands of DNA only

- 11 Which of the following is used in DNA multiplication ?  
 (A) DNA exonuclease (B) DNA Polymerase  
 (C) RNA polymerase (D) DNA endonuclease
- 12 t - RNA attaches aminoacid at its  
 (A) Anticodon (B) Loop  
 (C) 3' end (D) 5' end
- 13 .DNA acts as a template for synthesis of  
 (A) Both RNA and DNA  
 (B) Protein  
 (C) RNA  
 (D) DNA
- 14 Antiparallel strand in DNA is due to  
 (A) Phosphodiester bond  
 (B) Ionic bond  
 (C) Disulphide linkage  
 (D) Hydorgen bond
- 15 Multiplication of DNA is called  
 (A) Transduction (B) Transcription  
 (C) Translation (D) Replication
- 16 Which is the smallest RNA ?  
 (A) t-RNA (B) nuclear RNA  
 (C) r RNA (D) m-RNA
- 17 Genetic information are transfered from nucleus to cytoplasm of cell through  
 (A) Lysosomes (B) Anticodon  
 (C) DNA (D) RNA
- 18 The information from RNA to DNA are transfered by which process  
 (A) Translation (B) Reverse transcription  
 (C) Replication (D) Transcription
- 19 Which statement is correct ?  
 (a) Degeneracy of code is related to third member of codon  
 (b) Single codon, codes for more than one aminoacid  
 (c) In codon first two bases are more specific  
 (d) In codons third base is wobble  
 (e) code is universal  
 (A) (a), (c), (d)  
 (B) (a), (c), (d), (e)  
 (C) (a), (b), (c), (d), (e)  
 (D) (a), (b), (d)
- 20 DNA molecule has uniform diameter due to ?  
 (A) Specific base pairing between purine and pyrimidine  
 (B) Specific base pairing between purine and purine  
 (C) Double stranded  
 (D) Presence of phosphate

- 21 In a transcription unit promotor is said to be located towards
- (A) 5' end of template strand
  - (B) 3' end of template strand
  - (C) 3' end of structural gene
  - (D) 5' end of structural gene
- 22 In DNA replication the primer is
- (A) Helix destalilizing protein
  - (B) Enzyme taking part in joining nucleotides of new strands
  - (C) A Small deoxyribonucleotide polymer
  - (D) A small ribonucleotide polymer
- 23 Non - sense codons take part in
- (A) Releasing t-RNA from polynucleotide chain
  - (B) Conversion of sense DNA in to non-sense one
  - (C) formation of unspecified aminoacids
  - (D) Terminating message of gene controlled protein synthesis
- 24 Select the correct sequence of following in DNA replication
- (A) Helicase - DNA polymerase - Topoisomerase - Single stranded binding proteins
  - (B) Helicase - Topoisomerase - DNA polymerase - Single stranded binding proteins
  - (C) Single stranded binding proteins - Helicase - Topoisomerase - DNA polymerase
  - (D) Helicase - single stranded binding proteins -Topoisomerase - DNA polymerase
- 25 Which of the following enzymes can detect and correct the wrong inserted base during DNA replication ?
- (A) Primase
  - (B) Ligase
  - (C) DNA polymerase - I
  - (D) DNA polymerase - II

- 26 Which one is a responsible for unwinding of DNA ?
- (A) Peptidyl transferase
  - (B) Both Ribonuclease and Peptidyl transferase
  - (C) Helicase
  - (D) Ribonuclease
- 27 Which of the following pairs is not correctly matched ?
- (A) r-RNA - RNA molecules found in ribosomes
  - (B) Recombinant DNA - DNA forming by union of segments of DNA from different Sources
  - (C) Purines - Nitrogenous bases Cytosine , thymine and Uracil
  - (D) ATP - The principal energy carrying compound in the cell
- 28 Which one of the following pairs is correctly matched ?
- (A) Anticodon - Site of t-RNA that binds to the m-RNA
  - (B) Translation - Process by which m RNA carries the information from nucleus to ribosomes
  - (C) Ribosomal RNA - Carries amino acids to the site of protein synthesis
  - (D) Transcription - Process by which protein is synthesized
- 29 Which is not the step of transcription ?
- (A) Elongation
  - (B) Termination
  - (C) Initiation
  - (D) Replication
- 30 The enzyme RNA polymerase facilitates.
- (A) Synthesis of all RNA in eukaryotes
  - (B) Synthesis of t- RNA in bacteria
  - (C) Synthesis of all RNA in prokaryotes
  - (D) Synthesis of m- RNA in eukaryotes

- 31 The two strands in a double helix DNA is joined by  
(A) Ionic bond  
(B) Phosphodiester bond  
(C) Co-valent bond  
(D) Hydrogen bond
- 32 A Nucleotide is composed of  
(A) a base + a phosphate  
(B) none of these  
(C) a base + a sugar  
(D) a base + a sugar + phosphate
- 33 The type of sugar in DNA are  
(A) Tetrose  
(B) Hexose  
(C) Triose  
(D) Pentose
- 34 The width of DNA molecule is  
(A) 20 Å  
(B) 25 Å  
(C) 15 Å  
(D) 3.4 Å
- 35 A short length of DNA has 70 Thymine and 70 Guanine bases, the total numbers of nucleotide in the DNA fragment is  
(A) 340  
(B) 380  
(C) 160  
(D) 280
- 36 RNA is the genetic material in  
(A) In some viruses, some prokaryotes and some eukaryotes  
(B) Only in some viruses  
(C) Viruses only  
(D) In some viruses and some prokaryotes
- 37 Thymine in RNA is replaced by  
(A) Cytosine  
(B) Uracil  
(C) Guanine  
(D) Adenine

- 38 Ribosome are composed of  
(A) DNA and Proteins  
(B) RNA only  
(C) DNA and RNA  
(D) RNA and Proteins
- 39 Brings amino acids to the ribosome for protein synthesis  
(A) rRNA  
(B) snRNA  
(C) mRNA  
(D) tRNA
- 40 The sites of protein synthesis is  
(A) Cytoplasm  
(B) Mitochondria  
(C) Ribosome  
(D) Nucleus
- 41 The basic repeating units of DNA molecule is  
(A) Histones  
(B) Amino acids  
(C) Nucleoside  
(D) Nucleotide
- 42 The experiment by \_\_\_\_\_ showed that DNA not protein is the genetic material.  
(A) Hershey and Chase  
(B) Mendel  
(C) Griffith  
(D) Watson and Crick
- 43 If one side of a DNA molecule contains the following sequence of nucleotides, AGTCCG, the complementary sequence on the other side would be:  
(A) TCAGGC  
(B) CTGAAT  
(C) GCCTGA  
(D) AGTCCG
- 44 In Griffith's experiment  
(A) heat-killed S strain bacteria killed the mice  
(B) a mixture of heat-killed S strain bacteria and R strain bacteria failed to kill the mice  
(C) S strain bacteria killed the mice  
(D) R strain bacteria killed the mice

- 45 Genetic information must \_\_\_\_\_.  
(A) be able to undergo changes that increase genetic variability  
(B) all of these  
(C) be able to store information  
(D) stable so it can be replicated and passed from one generation to the next
- 46 Hershey and Chase used radioactive \_\_\_\_\_ to label the DNA core of the bacteriophage.  
(A) Sulfur  
(B) Nitrogen  
(C) Phosphorus  
(D) Carbon
- 47 Which of the following statement is false ?  
(A) Degenerate codons specify the same amino acids.  
(B) The genetic code is triplet.  
(C) The genetic code is overlapping.  
(D) The genetic code is universal.
- 48 The first mRNA codon to specify an amino acid is always  
(A) UAG  
(B) AUG  
(C) TAC  
(D) UAA
- 49 The effort to decipher the genetic code was led by \_\_\_\_\_ who was awarded a Nobel Prize for his work.  
(A) Watson  
(B) Crick  
(C) Nirenberg  
(D) Lederberg
- 50 Central dogma of protein synthesis is  
(A) RNA → DNA → Protein  
(B) DNA → protein → RNA  
(C) DNA → RNA → Protein  
(D) DNA → DNA → Protein