

**C****DF-3035**

**B. Sc. (Medical Technology) (Sem. III) Examination**  
**March / April – 2016**  
**MT-05 - Microbial Metabolism & Genetics**

Time : 2 Hours]

[Total Marks : 50

**Instructions :**

(1)

|                                                                                                                                                                    |                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.<br>Fillup strictly the details of signs on your answer book.                                                | Seat No. :                                                                                                                    |
| Name of the Examination :                                                                                                                                          | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |
| <input type="checkbox"/> B. Sc. (MEDICAL TECHNOLOGY) (SEM. 3)                                                                                                      | <input type="text"/>                                                                                                          |
| Name of the Subject :                                                                                                                                              |                                                                                                                               |
| <input type="checkbox"/> MT-05 - MICROBIAL METABOLISM & GENETICS                                                                                                   |                                                                                                                               |
| Subject Code No. : <input type="text"/> 3 <input type="text"/> 0 <input type="text"/> 3 <input type="text"/> 5 Section No. (1, 2,.....) : <input type="text"/> Nil | Student's Signature                                                                                                           |

- (2) This exam contains 50 multiple choice questions, each worth 1 mark.
- (3) Choose only ONE most appropriate answer per question.
- (4) Do not crease or fold the answer sheet.
- (5) All questions are compulsory.

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ  
O.M.R. Sheet-ની પાછળ છાપેલ છે.  
Important instructions to fillup O.M.R. Sheet  
is given on back side of the provided O.M.R. Sheet.***

- 1 What is the name of catalyst used in Gas pack Jar ?  
 (A) Dehydrogenase (B) Transferase  
 (C) Palladium pellets (D) Hydrogen peroxidase
- 2 Which is the most lethal wavelength of Ultraviolet radiation ?  
 (A) 260nm (B) 300nm  
 (C) 400nm (D) 700nm
- 3 Most of the bacteria have their internal pH :  
 (A) Near Neutral  
 (B) Internal pH change as per temperature of incubation  
 (C) Slightly alkaline  
 (D) Slightly Acidic
- 4 Nucleosome is :  
 (A) It is the combination of DNA, RNA and Histones  
 (B) It is the combination of DNA, RNA, Histones and DNA polymerase  
 (C) It is the combination of Histone and RNA  
 (D) It is the combination of Histone and DNA
- 5 What is the function of SSB proteins ?  
 (A) It binds with mRNA  
 (B) It bonds with ss DNA after strands are separated  
 (C) It binds with DS DNA  
 (D) It binds with SS RNA
- 6 What is the replication rate of DNA in prokaryotes ?  
 (A) 750-1000 base pairs per sec  
 (B) 50-100 base pairs per sec  
 (C) 100-4000 base pairs per second  
 (D) 250-5000 base pairs per sec
- 7 What is the function of sigma factor of RNA polymerase enzyme during transcription process ?  
 (A) It binds to promoter of the gene  
 (B) It has no any precise function  
 (C) It has no catalytic activity but it will bind to core enzyme to recognize the initiation sequence.  
 (D) It has catalytic activity and involved in transcriptional process.
- 8 Which are the consensus sequences ?  
 (A) -25 and -35 sites  
 (B) -35 and -25 sites  
 (C) -35 and -10 sites  
 (D) -10 and -35 sites
- 9 What are the subunits of Eukaryotic ribosome ?  
 (A) 70 S and 30 S (B) 50 S and 50 S  
 (C) 50 S and 30 S (D) 60 S and 40 S
- 10 Which of the aminoacyl is involved in protein synthesis initiation process ?  
 (A) N-formylmethionyl - tRNA  
 (B) All of these  
 (C) N-formylaminoacyl - tRNA  
 (D) N-formylmethionyl mRNA

- 11 Which are the site present on ribosomes for binding to tRNA ?
- (A) B site, P site, and E site
  - (B) A site, C site, and S site
  - (C) A site, P site, and E site
  - (D) A site, C site, and S site
- 12 Protein synthesis is a very expensive process because :
- (A) It requires 2 GTP and a ATP during process
  - (B) All of these
  - (C) It is a very complex process
  - (D) It expenses 3 GTP and 2 ATP during process
- 13 Which antibiotic does inhibit the protein synthesis by binding with 30 S ribosomal Subunit ?
- (A) Penicillin
  - (B) Streptomycin
  - (C) Erythromycin
  - (D) Rifampin
- 14 Which enzyme is encoded by lacZ gene in Lac operon ?
- (A) Catalase
  - (B) None
  - (C)  $\beta$  galactosidase
  - (D)  $\alpha$  galactosidase
- 15 Conjugation process experiment was first time performed by :
- (A) Fred Griffith
  - (B) Watson and Crick
  - (C) Barbara McClintok
  - (D) Joshua Lederberg and Edward Tatum

- 16** What is the meaning of competent cell ?
- (A) A cell is able to produce pilus for DNA transformation
  - (B) A cell is not able to take up the DNA
  - (C) A cell is able to take the DNA and be transformed
  - (D) A cell is able to donate the DNA and be Donor
- 17** What is the full form of MTCC ?
- (A) Microbial Type Culture Collection and Gene Bank
  - (B) None of these
  - (C) Multi Type Culture Collection
  - (D) Microbial Technology Culture correlation
- 18** By which method, the culture can be preserved for more than 20 years ?
- (A) Periodic transfer to fresh media
  - (B) Saline suspension
  - (C) Lyophilization
  - (D) Storage in silica gel
- 19** ATPase enzyme contains except :
- (A)  $F_1$  Protein
  - (B) C ring
  - (C)  $F_0$  protein
  - (D) Complex 1
- 20** Which of the following component acts as terminal electron acceptor in aerobic bacteria ?
- (A) Sulphur element
  - (B) Hydrogen sulphate
  - (C) Nitrogen
  - (D) Oxygen

- 21 Which of the following mechanism is present in acidophiles to survive ?  
 (A) Its membrane lipids are having glycosidic linkage  
 (B) No linkage is present  
 (C) Its membrane lipids are having ether linkage  
 (D) Its membrane lipids are having ester linkage
- 22 Which is not a ATP generation method ?  
 (A) Respiration  
 (B) Nitrogen fixation  
 (C) Stick land reaction  
 (D) Substrate level phosphorylation
- 23 Microorganisms that can tolerate the elevated hydrostatic pressure are called as:  
 (A) Barobiology (B) Hyperbarophiles  
 (C) Barophilic (D) Barotolerant
- 24 Quantitative measurement of bacterial growth can be carried out by measuring :  
 (A) Cell activity  
 (B) All of these  
 (C) Cell count  
 (D) Cell mass
- 25 A culture of bacteria produces 6 generations in 3 hours. What is the generation time for this bacterium under those conditions ?  
 (A) 20 min (B) 240 min  
 (C) 24 min (D) 30 min
- 26 Which of the protein will bind to the *ter* sites to terminate the replication ?  
 (A) Replisome (B) None of these  
 (C) Tus protein (D) SSB protein
- 27 What are the subunits of prokaryotic ribosome ?  
 (A) 70 S and 30 S  
 (B) 50 S and 50 S  
 (C) 50 S and 30 S  
 (D) 60 S and 40 S
- 28 Which of the following is considered as cardinal temperature ?  
 (A) Optimum temperature  
 (B) All of these  
 (C) Minimum temperature  
 (D) Maximum temperature
- 29 Protein synthesis process is also known as translation because :  
 (A) It is a recoding process  
 (B) None of these  
 (C) It is a decoding process  
 (D) It is a coding process
- 30 DNA synthesis occur at :  
 (A) Termination codon  
 (B) No particular site  
 (C) Replication fork  
 (D) Initiation codon

- 31 Which of the following is not considered as a growth factor ?  
(A) Purines and pyrimidines  
(B) Phosphorus  
(C) Vitamin  
(D) Amino acids
- 32 Which of the following is not the characteristic of genetic code ?  
(A) Universal  
(B) With comma  
(C) Consist of 3 latters  
(D) Overlapping
- 33 What is the generation time of *Escherichia coli* ?  
(A) 200 min  
(B) 2 days  
(C) 20 min  
(D) 10 min
- 34 According to Wobble hypothesis, a single amino acid is coded by many codons. These Codons are generally differing at which position ?  
(A) Third base  
(B) None of these  
(C) First base  
(D) Second base
- 35 AUG code is known as :  
(A) Elongation code  
(B) Propagation code  
(C) Initiation code  
(D) Termination code
- 36 Replicating enzyme is known as :  
(A) Ligase  
(B) Lyase  
(C) DNA polymerase  
(D) RNA polymerase
- 37 If mRNA of a gene is composed of 60 nucleotides would form a protein containing \_\_\_\_\_ amino acids.  
(A) 20  
(B) 10  
(C) 12  
(D) 30

- 38 Which of the following is not a mRNA codon ?  
(A) TAC  
(B) UCU  
(C) UUG  
(D) UUU
- 39 ~P in ATP represents :  
(A) Two molecules of phosphorous  
(B) None of these  
(C) Two bonds with high energy  
(D) Three atoms of high energy phosphorous
- 40 Organisms, derive their energy from inorganic chemicals, use CO<sub>2</sub> as a carbon source and their electron source is inorganic compounds, are known as :  
(A) Chemolithoheterotrophs  
(B) Chemoorganoheterotrophs  
(C) Chemoorganotrophs  
(D) Chemolithoautotrophs
- 41 What is the function of Sulphur in microbial growth ?  
(A) Majorly present in nucleic acids  
(B) All of these  
(C) Used for synthesis of cysteine and biotin  
(D) Used for nitrogen fixation process
- 42 Which types of bacteria can be grown on silica gel ?  
(A) Chemoheterotrophs  
(B) Phototrophs  
(C) Autotrophs  
(D) Heterotrophs
- 43 Blood agar is :  
(A) Both Differential medium and Enriched medium  
(B) Selective medium  
(C) Differential medium  
(D) Enriched medium
- 44 Abbreviation of FAD is :  
(A) Flavin adenine dinucleotide  
(B) Flavin mono nucleotide  
(C) Flavo adenine dinucleotide  
(D) Flavin adenosine dinucleotide

- 45 Which type of bacteria can be grown by using candle jar ?  
(A) Microaerophilic bacteria  
(B) All of these  
(C) Aerobic bacteria  
(D) Anaerobic bacteria
- 46 Which is true for Binary fission process ?  
(A) Septum formation → cell elongation → replication of chromosome and separation of chromosome in each cell  
(B) None  
(C) Cell elongation → replication of chromosome → septum formation and separation of chromosome in each cell  
(D) Cell elongation → septum formations → replication of chromosome and separation of chromosome in each cell
- 47 What is the full form of VNBC ?  
(A) Viable N Bacterial colony  
(B) Non visibility of bacterial colony  
(C) Viable but bacterial controlable  
(D) Viable but non culturable
- 48 The initial phase of the bacterial growth curve is known as :  
(A) Exponential phase  
(B) Lag phase  
(C) Stationary phase  
(D) Log phase
- 49 Which of the following bacteria can grow best at 105°C ?  
(A) *Pyrodictiumoccultum*  
(B) *Proteus vulgaris*  
(C) *Micrococcus cryophilus*  
(D) *Escherichia coli*
- 50 Organisms are required below 2-10% of Oxygen for growth and damaged by atmospheric oxygen are known as :  
(A) Aerotolerant anaerobes  
(B) Obligate aerobes  
(C) Microaerophiles  
(D) Osmotolerant