

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

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

- 18 Which of the following is not a mRNA codon ?
(A) UUU
(B) TAC
(C) UCU
(D) UUG
- 19 ~P in ATP represents :
(A) Three atoms of high energy phosphorous
(B) Two molecules of phosphorous
(C) None of these
(D) Two bonds with high energy
- 20 Organisms, derive their energy from inorganic chemicals, use CO₂ as a carbon source and their electron source is inorganic compounds, are known as :
(A) Chemolithoautotrophs
(B) Chemolithoheterotrophs
(C) Chemoorganoheterotrophs
(D) Chemoorganotrophs
- 21 What is the function of Sulphur in microbial growth ?
(A) Used for nitrogen fixation process
(B) Majorly present in nucleic acids
(C) All of these
(D) Used for synthesis of cysteine and biotin
- 22 Which types of bacteria can be grown on silica gel ?
(A) Heterotrophs
(B) Chemoheterotrophs
(C) Phototrophs
(D) Autotrophs
- 23 Blood agar is :
(A) Enriched medium
(B) Both Differential medium and Enriched medium
(C) Selective medium
(D) Differential medium
- 24 Abbreviation of FAD is :
(A) Flavin adenosine dinucleotide
(B) Flavin adenine dinucleotide
(C) Flavin mono nucleotide
(D) Flavo adenine dinucleotide

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

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

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

- 46 What is the meaning of competent cell ?
- (A) A cell is able to donate the DNA and be Donor
 - (B) A cell is able to produce pilus for DNA transformation
 - (C) A cell is not able to take up the DNA
 - (D) A cell is able to take the DNA and be transformed
- 47 What is the full form of MTCC ?
- (A) Microbial Technology Culture correlation
 - (B) Microbial Type Culture Collection and Gene Bank
 - (C) None of these
 - (D) Multi Type Culture Collection
- 48 By which method, the culture can be preserved for more than 20 years ?
- (A) Storage in silica gel
 - (B) Periodic transfer to fresh media
 - (C) Saline suspension
 - (D) Lyophilization
- 49 ATPase enzyme contains except :
- (A) Complex 1
 - (B) F₁ Protein
 - (C) C ring
 - (D) F₀ protein
- 50 Which of the following component acts as terminal electron acceptor in aerobic bacteria ?
- (A) Oxygen
 - (B) Sulphur element
 - (C) Hydrogen sulphate
 - (D) Nitrogen