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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.

Name of the Examination :

☛ B. Sc. (MEDICAL TECHNOLOGY) (SEM. 3)

Name of the Subject :

☛ MT-05 - MICROBIAL METABOLISM & GENETICS

☛ Subject Code No. : 3 0 3 5 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

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 are the site present on ribosomes for binding to tRNA ?

(A) A site, C site, and S site

(B) A site, P site, and E site

(C) A site, C site, and S site

(D) B site, P site, and E site

2 Protein synthesis is a very expensive process because :

(A) All of these

(B) It is a very complex process

(C) It expenses 3 GTP and 2 ATP during process

(D) It requires 2 GTP and a ATP during process

3 Which antibiotic does inhibit the protein synthesis by binding with 30 S ribosomal Subunit ?

(A) Streptomycin

(B) Erythromycin

(C) Rifampin

(D) Penicillin

4 Which enzyme is encoded by lacZ gene in Lac operon ?

(A) None

(B) β galactosidase

(C) α galactosidase

(D) Catalase

5 Conjugation process experiment was first time performed by :

(A) Watson and Crick

(B) Barbara McClintok

(C) Joshua Lederberg and Edward Tatum

(D) Fred Griffith

6 What is the meaning of competent cell ?

(A) A cell is not able to take up the DNA

(B) A cell is able to take the DNA and be transformed

(C) A cell is able to donate the DNA and be Donor

(D) A cell is able to produce pilus for DNA transformation

7 What is the full form of MTCC ?

(A) None of these

(B) Multi Type Culture Collection

(C) Microbial Technology Culture correlation

(D) Microbial Type Culture Collection and Gene Bank

8 By which method, the culture can be preserved for more than 20 years ?

(A) Saline suspension

(B) Lyophilization

(C) Storage in silica gel

(D) Periodic transfer to fresh media

9 ATPase enzyme contains except :

(A) C ring

(B) F_0 protein

(C) Complex 1

(D) F_1 Protein

10 Which of the following component acts as terminal electron acceptor in aerobic bacteria ?

(A) Hydrogen sulphate

(B) Nitrogen

(C) Oxygen

(D) Sulphur element

11 Which of the following mechanism is present in acidophiles to survive ?
(A) No linkage is present
(B) Its membrane lipids are having ether linkage
(C) Its membrane lipids are having ester linkage
(D) Its membrane lipids are having glycosidic linkage

12 Which is not a ATP generation method ?
(A) Nitrogen fixation
(B) Stick land reaction
(C) Substrate level phosphorylation
(D) Respiration

13 Microorganisms that can tolerate the elevated hydrostatic pressure are called as:
(A) Hyperbarophiles (B) Barophilic
(C) Barotolerant (D) Barobiology

14 Quantitative measurement of bacterial growth can be carried out by measuring :
(A) All of these
(B) Cell count
(C) Cell mass
(D) Cell activity

15 A culture of bacteria produces 6 generations in 3 hours. What is the generation time for this bacterium under those conditions ?
(A) 240 min (B) 24 min
(C) 30 min (D) 20 min

16 Which of the protein will bind to the *ter* sites to terminate the replication ?
(A) None of these (B) Tus protein
(C) SSB protein (D) Replisome

17 What are the subunits of prokaryotic ribosome ?
(A) 50 S and 50 S
(B) 50 S and 30 S
(C) 60 S and 40 S
(D) 70 S and 30 S

18 Which of the following is considered as cardinal temperature ?
(A) All of these
(B) Minimum temperature
(C) Maximum temperature
(D) Optimum temperature

19 Protein synthesis process is also known as translation because :
(A) None of these
(B) It is a decoding process
(C) It is a coding process
(D) It is a recoding process

20 DNA synthesis occur at :
(A) No particular site
(B) Replication fork
(C) Initiation codon
(D) Termination codon

21 Which of the following is not considered as a growth factor ?
(A) Phosphorus
(B) Vitamin
(C) Amino acids
(D) Purines and pyrimidines

22 Which of the following is not the characteristic of genetic code ?
(A) With comma
(B) Consist of 3 latters
(C) Overlapping
(D) Universal

23 What is the generation time of *Escherichia coli* ?
(A) 2 days
(B) 20 min
(C) 10 min
(D) 200 min

24 According to Wobble hypothesis, a single amino acid is coded by many codons. These Codons are generally differing at which position ?
(A) None of these
(B) First base
(C) Second base
(D) Third base

25 AUG code is known as :
(A) Propagation code
(B) Initiation code
(C) Termination code
(D) Elongation code

26 Replicating enzyme is known as :
(A) Lyase
(B) DNA polymerase
(C) RNA polymerase
(D) Ligase

27 If mRNA of a gene is composed of 60 nucleotides would form a protein containing _____ amino acids.
(A) 10
(B) 12
(C) 30
(D) 20

28 Which of the following is not a mRNA codon ?
(A) UCU
(B) UUG
(C) UUU
(D) TAC

29 ~P in ATP represents :
(A) None of these
(B) Two bonds with high energy
(C) Three atoms of high energy phosphorous
(D) Two molecules of phosphorous

30 Organisms, derive their energy from inorganic chemicals, use CO_2 as a carbon source and their electron source is inorganic compounds, are known as :
(A) Chemoorganoheterotrophs
(B) Chemoorganotrophs
(C) Chemolithoautotrophs
(D) Chemolithoheterotrophs

31 What is the function of Sulphur in microbial growth ?
(A) All of these
(B) Used for synthesis of cysteine and biotin
(C) Used for nitrogen fixation process
(D) Majorly present in nucleic acids

32 Which types of bacteria can be grown on silica gel ?
(A) Phototrophs
(B) Autotrophs
(C) Heterotrophs
(D) Chemoheterotrophs

33 Blood agar is :
(A) Selective medium
(B) Differential medium
(C) Enriched medium
(D) Both Differential medium and Enriched medium

34 Abbreviation of FAD is :
(A) Flavin mono nucleotide
(B) Flavo adenine dinucleotide
(C) Flavin adenosine dinucleotide
(D) Flavin adenine dinucleotide

35 Which type of bacteria can be grown by using candle jar ?
(A) All of these
(B) Aerobic bacteria
(C) Anaerobic bacteria
(D) Microaerophic bacteria

36 Which is true for Binary fission process ?
(A) None
(B) Cell elongation $\rightarrow$ replication of chromosome $\rightarrow$ septum formation and separation of chromosome in each cell
(C) Cell elongation $\rightarrow$ septum formations $\rightarrow$ replication of chromosome and separation of chromosome in each cell
(D) Septum formation $\rightarrow$ cell elongation $\rightarrow$ replication of chromosome and separation of chromosome in each cell

37 What is the full form of VNBC ?
(A) Non visibility of bacterial colony
(B) Viable but bacterial controlable
(C) Viable but non culturable
(D) Viable N Bacterial colony

38 The initial phase of the bacterial growth curve is known as :
(A) Lag phase
(B) Stationary phase
(C) Log phase
(D) Exponential phase

39 Which of the following bacteria can grow best at 105°C ?
(A) *Proteus vulgaris*
(B) *Micrococcus cryophilus*
(C) *Escherichia coli*
(D) *Pyrodictiumoccultum*

40 Organisms are required below 2-10% of Oxygen for growth and damaged by atmospheric oxygen are known as :
(A) Obligate aerobes
(B) Microaerophiles
(C) Osmotolerant
(D) Aerotolerant anaerobes

41 What is the name of catalyst used in Gas pack Jar ?
(A) Transferase (B) Palladium pellets
(C) Hydrogen peroxidase (D) Dehydrogenase

42 Which is the most lethal wavelength of Ultraviolet radiation ?
(A) 300nm (B) 400nm
(C) 700nm (D) 260nm

43 Most of the bacteria have their internal pH :
(A) Internal pH change as per temperature of incubation
(B) Slightly alkaline
(C) Slightly Acidic
(D) Near Neutral

44 Nucleosome is :
(A) It is the combination of DNA, RNA, Histones and DNA polymerase
(B) It is the combination of Histone and RNA
(C) It is the combination of Histone and DNA
(D) It is the combination of DNA, RNA and Histones

45 What is the function of SSB proteins ?
(A) It bonds with ss DNA after strands are separated
(B) It binds with DS DNA
(C) It binds with SS RNA
(D) It binds with mRNA

46 What is the replication rate of DNA in prokaryotes ?
(A) 50-100 base pairs per sec
(B) 100-4000 base pairs per second
(C) 250-5000 base pairs per sec
(D) 750-1000 base pairs per sec

47 What is the function of sigma factor of RNA polymerase enzyme during transcription process ?
(A) It has no any precise function
(B) It has no catalytic activity but it will bind to core enzyme to recognize the initiation sequence.
(C) It has catalytic activity and involved in transcriptional process.
(D) It binds to promoter of the gene

48 Which are the consensus sequences ?
(A) –35 and –25 sites
(B) –35 and –10 sites
(C) –10 and –35 sites
(D) –25 and –35 sites

49 What are the subunits of Eukaryotic ribosome ?
(A) 50 S and 50 S (B) 50 S and 30 S
(C) 60 S and 40 S (D) 70 S and 30 S

50 Which of the aminoacyl is involved in protein synthesis initiation process ?
(A) All of these
(B) N-formylaminoacyl - tRNA
(C) N-formylmethionyl mRNA
(D) N-formylmethionyl - tRNA