

Question Booklet No.

Question Booklet Series :

A

AUAT — 2024
2-Year M. Sc. in Microbiology (P16)
(TEST BASED ON MCQ)

Full Marks : 100

Duration : 2 Hours

Roll No. of the Candidate : _____

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IMPORTANT INSTRUCTIONS

Candidates should read the below instructions carefully and follow them accordingly.

1. The Question Booklet has paper seal pasted on it. Please do **NOT** open the Question Booklet until you are asked to do so by the Invigilator.
2. The candidates must check immediately after breaking the seal that the Question Booklet contains **100 Multiple Choice Questions** in two parts (Part—I and Part—II).
3. Answer of questions of Part—I and Part—II both will have to be given on the **OMR Answer Sheet** provided for this purpose. Fill up the necessary fields that are intended for you by writing and/or shading appropriately. Otherwise the **OMR Answer Sheet cannot** be evaluated and will liable to be rejected. Question numbers progress from **1** to **100** continuously with alternative answers being shown as [A], [B], [C] and [D] for each question. Record your response by completely darkening the corresponding bubble. While responding, you should consider the best alternative answer and shade only one bubble with **black/blue ball point pen only**. For each correct response you will be awarded **1** mark. There will be negative marking for wrong responses. For each wrong response, **-0.25** mark will be awarded. Multiple responses against one **MCQ** will be treated as a wrong response.
4. On leaving the examination hall, candidates must submit the **OMR Answer Sheet**. They are allowed to keep the Question Booklet with them.
5. **OMR Answer Sheet** will be processed by electronic means. Any untoward/irrelevant remarks, folding or putting stray notes on the answer sheet, any damage to the answer sheet will lead to the rejection of the same and the sole liability shall remain with the candidate.
6. Rough Work may be done at the end of the Question Booklet.
7. No candidate will be allowed to leave the examination hall before completion of the examination.
8. Use of any Electronic device like Mobile, Programmable Calculator etc. is strictly prohibited.

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PART—I

(Core Subject)

1. Which of the following Prokaryotes lacks the peptidoglycan layer?
[A] Gram negative bacteria
[B] Cyanobacteria
[C] Archaeobacteria
[D] Both [A] and [C]
2. Electrophoretic method generally used for estimation of purity and molecular weight of proteins, makes use of
[A] Sodium Dodecyl Sulphate (SDS)
[B] Gum Arabic
[C] Bisacrylamide
[D] None of the above
3. The study of reaction rates and how they change in response to changes in experimental parameters is called
[A] Kinetics
[B] Allosterism
[C] Zymogen
[D] Enzymology
4. The membrane protein bacteriorhodopsin is a characteristic of
[A] Halobacterium
[B] *Escherichia coli*
[C] Mycoplasma
[D] Both [B] and [C]
5. The histones and DNA associate to form complexes 10 nm in diameter, are called
[A] Myosin
[B] Thylakoids
[C] Actin
[D] Nucleosome
6. Which of the following are the end products of anabolism?
[A] Energy poor products : CO_2 , H_2O and NH_3
[B] Cell macromolecules : Proteins, Polysaccharides, lipids and nucleic acids
[C] Precursor molecules : Amino acids, sugars, fatty acids and nitrogenous bases
[D] None of the above
7. Glycolysis is the break down of 6 carbon glucose into
[A] 3 molecules of 3C pyruvate which takes place in 10 steps
[B] 4 molecules of 3C pyruvate
[C] 2 molecules of 3C pyruvate which takes place in 10 steps
[D] None of the above
8. Which of the following possesses heterocyst?
[A] *Vaucheria*
[B] *Chlorella*
[C] *Gymnodinium*
[D] *Nostoc*

9. Serum is

- [A] the fluid with RBC
- [B] the fluid with WBC
- [C] Both [A] and [B]
- [D] the remaining fluid after the blood has coagulated or clotted

10. Potable water means

- [A] water of an earthen pot
- [B] water fit for drinking
- [C] water of a river
- [D] water in the pot of a copper

11. Which of the following is **true** for sterilization?

- [A] Selective killing of microorganisms
- [B] Heating to boil
- [C] Heating to 100 °C
- [D] To make free from all kind of organisms

12. Which of the following is **true** for CD4 cells?

- [A] Work as receptors of HIV
- [B] Kill HIV
- [C] Keep away HIV
- [D] None of the above

13. Carcinogenic screening test is

- [A] Widal test
- [B] ELISA test
- [C] Ames test
- [D] Enterotube multitest

14. Geosmin production

- [A] makes the soil hard
- [B] makes the soil soft
- [C] changes the colour of the soil
- [D] produces musty odour to the soil

15. A diazotroph is known as

- [A] that releases SO₂
- [B] that fixes up SO₂
- [C] that fixes up N₂
- [D] that fixes up CO₂

16. Biosensors are used

- [A] to survey the number of bacteria
- [B] to locate biological active pollutants
- [C] to locate the presence of carbohydrate in a solution
- [D] Both [B] and [C]

17. Which of the following bacterial species is used as larvicide?

- [A] *Escherichia coli*
- [B] *Rhizobium*
- [C] *Bacillus propillae*
- [D] *Thiobacillus*

18. The enzyme reverse transcriptase is present in

- [A] cyanophage
- [B] bacteriophage
- [C] T.M.V.
- [D] H.I.V.

19. "Mad Cow disease" is caused by

- [A] Rickettsia
- [B] Chlamydia
- [C] Prions
- [D] None of the above

20. Plasmid produces proteins that inhibit the growth of susceptible bacterial strains is known as

- [A] R-plasmid
- [B] Ti-plasmid
- [C] PBR-322
- [D] Col-plasmid

21. RNA polymerase leaves its foot print on a promoter. What is foot printing in view of the following?

- [A] Spotting transcription bubble
- [B] A technique derived from principles is used in DNA sequencing
- [C] Biological inter conversion of DNA and RNA
- [D] Both [A] and [C]

22. *Yersinia pestis* is caused by

- [A] Pneumonic plague
- [B] Influenza
- [C] Tetanus
- [D] Yellow fever

23. In the replication of *E. coli* chromosome, the regulatory apparatus for the synthesis of lagging strand is a travelling protein machine known as

- [A] Okazaki fragments
- [B] Fork movements
- [C] Primosome
- [D] Replisome

24. Catalase converts hydrogen peroxide into

- [A] water and oxygen
- [B] water and carbon dioxide
- [C] water and nitrogen
- [D] Both [A] and [B]

25. A positive strand DNA virus is

- [A] DNA genome with minus configuration
- [B] single stranded DNA of plus configuration
- [C] DNA without any configuration
- [D] double stranded DNA with plus configuration

26. Suitable substratum for the growth of dermatophytes is

- [A] keratin
- [B] fat
- [C] oil
- [D] sugars

27. Which of the following is called retrotransposons from an yeast?

- [A] Copia element
- [B] Primordial exons
- [C] LDL receptors and ribozyme
- [D] Ty element

28. Termination codons are

- [A] UAA, UAG and UGA
- [B] UAA, UAC and UCA
- [C] UUA, UAA and UAT
- [D] None of the above

- 29.** Fully-developed virus particle is called
- [A] Capsomer
 - [B] Virion
 - [C] Capsid
 - [D] Envelope
- 30.** Reason(s) for greenhouse effect is/are
- [A] CO_2
 - [B] CFC
 - [C] Freon and CH_4
 - [D] All of the above
- 31.** Auxotroph are bacteria that can grow
- [A] minimal media
 - [B] minimal media supplemented with some nutrients
 - [C] minimal media supplemented with specific nutrients
 - [D] Both [B] and [C]
- 32.** Plasmid incompatibility occurs
- [A] when the cell removes its plasmid
 - [B] when the genomic DNA removed from the cell
 - [C] when second plasmid introduction causes removal of the first plasmid
 - [D] None of the above
- 33.** Microbes clean up pollution created by human activities is known as
- [A] biodegradation
 - [B] bioremediation
 - [C] bioaugmentation
 - [D] bioengineering
- 34.** Which of the following compounds are most recalcitrant to degradation during bioremediation process?
- [A] Natural gases such as ethane and propane
 - [B] Methane
 - [C] Polycyclic hydrocarbons
 - [D] Straight chain hydrocarbons
- 35.** A bacterial disease is
- [A] Amoebic dysentery
 - [B] Beri-Beri
 - [C] Arthritis
 - [D] Leprosy
- 36.** P-amino salicylic acid i.e. PAS is used for the treatment of
- [A] AIDS
 - [B] Malaria
 - [C] Plague
 - [D] Tuberculosis
- 37.** Uranium bioremediation is dependent on
- [A] fermentation
 - [B] metal reducing bacteria
 - [C] methanogens
 - [D] sulfur oxidizing bacteria
- 38.** F factors can integrate into bacterial chromosome and the cells containing these integrated F factors are called
- [A] F^+ strain
 - [B] F^- strain
 - [C] Hfr strain
 - [D] None of the above

39. Interrupted mating experiment helps in finding
- [A] mapping of genes
 - [B] mapping of chromosome
 - [C] mapping of amino acids
 - [D] studying pathways
40. *Bacillus Calmette Guerin* gives immunity against
- [A] Plague
 - [B] Covid-19
 - [C] Lyme disease
 - [D] Tuberculosis
41. Algae used for the preparation of single cell protein is
- [A] *Aspergillus*
 - [B] *Rhodospseudomonas*
 - [C] *Candida*
 - [D] *Spirulina*
42. Anamox reactions are
- [A] anaerobic and part of nitrogen cycle
 - [B] anaerobic and part of carbon cycle
 - [C] aerobic and part of sulfur cycle
 - [D] aerobic and part of metal ion oxidation
43. Ultimate source of energy in nature is
- [A] ATP
 - [B] GTP
 - [C] Sun
 - [D] Both [A] and [B]
44. The production of antibiotics by one microorganism that inhibits or kills a susceptible microorganism is called
- [A] competition
 - [B] ammensalism
 - [C] synergism
 - [D] neutralism
45. Water from the surface to the depth to which light penetrates with sufficient intensity to support autotrophs is called
- [A] thermocline
 - [B] anoxic zone
 - [C] photic zone
 - [D] primary producer
46. Potable water contains
- [A] less than 1 faecal coliform bacteria
 - [B] fewer than 100 faecal coliform bacteria
 - [C] fewer than 150 faecal coliform bacteria
 - [D] fewer than 10 faecal coliform bacteria
47. Leukocidins are
- [A] membrane disrupting exotoxin
 - [B] specific host site exotoxin
 - [C] super antigens
 - [D] AB toxin with A as the enzyme and B binds to the host receptor
48. Which of the following statements about substrate-level phosphorylation is **false**?
- [A] No final electron acceptor is required
 - [B] It occurs in glycolysis
 - [C] The oxidation of intermediate metabolic compounds releases energy that is used to generate ATP
 - [D] It involves the direct transfer of a high energy phosphate group from an intermediate metabolic compound to ADP

49. A bacterium divides every 35 minutes. If a culture containing 10^5 cells/ml is grown for 175 minutes, what will be cell concentration after that?
- [A] 175×10^5
 - [B] 35×10^5
 - [C] 5×10^5
 - [D] 32×10^5
50. Drugs that act against protein synthesis include
- [A] Beta-lactams
 - [B] Sulphonamides
 - [C] Polymyxin
 - [D] Aminoglycosides
51. Human pathogens fall into
- [A] Mesophiles
 - [B] Thermophiles
 - [C] Psychrophiles
 - [D] Halophiles
52. In tissue culture, hormones are sterilized through
- [A] water bath at 80°C
 - [B] hot air oven
 - [C] filters
 - [D] radiation
53. Zoonoses is the transmission of the disease from
- [A] animal reservoirs
 - [B] non-living reservoir
 - [C] human reservoir
 - [D] Both [A] and [C]
54. The water of Holy Ganges river is pure due to the presence of
- [A] Cyanophages
 - [B] Hydrophytes
 - [C] Bacteriophages
 - [D] All of the above

55. Portal of entry of HIV virus from mother to the embryo is
- [A] Mucous membrane
 - [B] Placenta
 - [C] Skin
 - [D] Conjunctiva
56. Which of the following statements most closely expresses our present understanding?
- [A] The chloroplast is an ancestor of the cyanobacteria
 - [B] The cyanobacteria are descendants of the chloroplast
 - [C] The chloroplast arose from the incorporation of a cyanobacterial-like organism
 - [D] The chloroplast and the cyanobacteria are not closely (or specifically) related
57. Mycoplasma lost their cell walls via reductive evolution. This was possible because
- [A] their cell membranes became extra thick to compensate
 - [B] it allowed them not be sensitive to antibiotics that target the cell wall
 - [C] as obligate parasites they live in the environments with constant osmolarity
 - [D] they live in soils with plenty of available moisture
58. Which of the following is used in negative staining?
- [A] Safranin
 - [B] Crystal violet
 - [C] Acid-water
 - [D] Nigrosin

- 59.** Adipose tissue which consists of adipocytes (fat cells) releases fatty acids through the action of
- [A] Thyrotropin Releasing Hormone (TRH)
 - [B] Antidiuretic Hormone (ADH)
 - [C] Epinephrine
 - [D] Prostaglandins
- 60.** Haemolysin which forms pores on erythrocytes are
- [A] specific host site exotoxins
 - [B] AB toxins
 - [C] membrane disrupting exotoxins
 - [D] super antigens
- 61.** In marine system, the final carbon-nitrogen-phosphorous ratio of the phytoplankton is termed as
- [A] Microbial ecology
 - [B] DOM ratio
 - [C] Redfield ratio
 - [D] None of the above
- 62.** Shine-Dalgarno sequence is present in
- [A] tRNA
 - [B] mRNA
 - [C] rRNA
 - [D] All of the above
- 63.** Hybridoma technology involves
- [A] fusion of antibody producing B cell with a cancer cell
 - [B] fusion of T cell with cancer cell
 - [C] fusion of monoclonal antibody with polyclonal antibody
 - [D] None of the above
- 64.** A specific DNA sequence on a chromosome is detected by
- [A] RFLP
 - [B] Southern blotting
 - [C] FISH
 - [D] Both [A] and [B]
- 65.** MALDI-TOF is used for
- [A] sequencing of proteins
 - [B] sequencing of nucleic acids
 - [C] Both [A] and [B]
 - [D] None of the above
- 66.** Transfection in Eukaryotes means
- [A] degradation of DNA
 - [B] degradation of RNA
 - [C] uptake of RNA
 - [D] uptake of DNA
- 67.** "MRSA" term is used for
- [A] *Streptococcus pyogenes*
 - [B] *Staphylococcus aureus*
 - [C] *Salmonella typhi*
 - [D] *Streptococcus albus*
- 68.** OMIM database gives information of
- [A] bacterial inheritance
 - [B] proteins
 - [C] nucleic acids
 - [D] human inheritance
- 69.** Adjuvants are mixed with antigens
- [A] to decrease the immunogenicity of that antigen
 - [B] to increase the immunogenicity of that antigen
 - [C] to decrease the immunogenicity of that antibody
 - [D] to increase the immunogenicity of that antibody
- 70.** Signature sequence is found in
- [A] 16S rRNA of Prokaryotes
 - [B] 26S rRNA of Eukaryotes
 - [C] 18S rRNA of Eukaryotes
 - [D] All of the above

PART—II

(Islamic History and Culture, General English & General Knowledge)

71. Alhamdulillah means
আলহামদুলিল্লাহ এর অর্থ
[A] Praise be to Allah
[B] Glory be to Allah
[C] Allah is almighty
[D] Allah is the most gracious
72. As per Islam, which of the following is **true** about intoxicants?
ইসলাম অনুসারে মাদকদ্রব্যের ব্যাপারে কোন্ বক্তব্যটি সঠিক?
[A] Totally allowed
[B] Marginally allowed
[C] Marginally forbidden
[D] Strongly forbidden
73. The *Holy Qur'an* is revealed
'পবিত্র কুরআন' অবতীর্ণ হয়েছে
[A] at a time
[B] over a period of 12 years
[C] over a period of 23 years
[D] over a period of 32 years
74. The saying 'Cleanliness is half of faith' is made by
'পবিত্রতা ঈমানের অর্ধেক' এই উক্তিটি করেছেন
[A] Prophet Muhammad
[B] Hazrat Umar
[C] Ibn Taymiyya
[D] Imam Bukhari
75. The prayer at the noon is called
দুপুরের নামাযকে বলা হয়
[A] Fajr
[B] Zuhr
[C] Asar
[D] Isha
76. Mother of Prophet Muhammad (PBUH) died when he was _____ year(s) old.
পয়গম্বর মুহাম্মদ(সা.) মাতৃহারা হন _____ বছর বয়সে।
[A] 1
[B] 3
[C] 6
[D] 12
77. Which of the following is a festival of sacrifice?
নিম্নের কোনটি ত্যাগের উৎসব?
[A] Laylat al-Qadr
[B] Muharram
[C] Eid al-Fitr
[D] Eid al-Adha
78. The first woman martyr in Islam is
ইসলামের প্রথম মহিলা শহীদ হলেন
[A] Asma
[B] Nusaybah
[C] Al-Khansa
[D] Sumayyah
79. Hijri calendar is enumerated from the time of
কোন্ সময় থেকে হিজরি ক্যালেন্ডার গণনা করা হয়?
[A] birth of Prophet Muhammad
[B] migration of Prophet Muhammad to Madinah
[C] journey of Prophet Muhammad into heaven
[D] death of Prophet Muhammad
80. Islam acknowledges
ইসলাম স্বীকৃতি দেয়
[A] only the last Prophet
[B] only the last four Prophets
[C] only the last ten Prophets
[D] all the Prophets

81. On which day Muslims pray Jummah Prayer?

কোন দিনে মুসলমানরা জুমার নামায পড়ে?

- [A] Sunday
- [B] Saturday
- [C] Tuesday
- [D] Friday

82. The term Waqf refers to ____.

ওয়াকফ শব্দটি বোঝায় ____।

- [A] Bill of exchange
- [B] What is due to the State treasury?
- [C] Promissory note
- [D] Charitable foundation or trust

83. The Arabic term Haq means

আরবি শব্দ হক এর অর্থ হলো

- [A] legal rights
- [B] credit proposal
- [C] taking full responsibility
- [D] kind of sale

84. How many gates of Jannah are there?

জান্নাতের দরজা কয়টি?

- [A] Six
- [B] Seven
- [C] Eight
- [D] Nine

85. Name the Angel who was appointed to deliver messages to Prophet Muhammad (SAW) from Allah (SWT)?

আল্লাহর (সুবাহানাহু ওয়া তায়ালা) পক্ষ থেকে নবী মুহাম্মদ(সা.)-এর কাছে বার্তা পৌঁছে দেওয়ার জন্য নিযুক্ত ফেরেশতার নাম কি?

- [A] Jibreel (AS)
- [B] Mikael (AS)
- [C] Israfil (AS)
- [D] Azrael (AS)

86. Which Country is called the 'Land of Prophets'?

কোন দেশকে 'নবীদের দেশ' বলা হয়?

- [A] Saudi Arabia
- [B] Syria
- [C] Palestine
- [D] Iraq

87. Which word is mentioned most times in the *Holy Qur'an*?

'পবিত্র কুরআনে' কোন শব্দটি সবচেয়ে বেশি বার উল্লেখ করা হয়েছে?

- [A] Qul
- [B] Allah
- [C] Rahman
- [D] Āmana

88. What is the name of the fountain which each person of paradise will drink before entering?

জান্নাতে প্রত্যেক ব্যক্তি প্রবেশের পূর্বে যে ঝর্ণার জল পান করবে তার নাম কি?

- [A] Zamzam
- [B] Kawsar
- [C] Tasneem
- [D] None of the above

89. How many times does 'Bismillah' repeat in the *Holy Qur'an*?

'পবিত্র কুরআনে' কতবার 'বিসমিল্লাহ' এসেছে?

- [A] 112
- [B] 113
- [C] 114
- [D] None of the above

90. Which is the longest Surah in the *Holy Qur'an*?

'পবিত্র কুরআনের' দীর্ঘতম সূরা কোনটি?

- [A] Surah Al - Maidha
- [B] Surah An - Nisa
- [C] Surah Al - Imran
- [D] Surah Al - Baqarah

91. The study of various aspects of ageing is called

- [A] Psephology
- [B] Chronology
- [C] Gerontology
- [D] Entomology

92. The fear of being without your mobile phone is called

- [A] Philophobia
- [B] Claustrophobia
- [C] Ophidiophobia
- [D] Nomophobia

93. His courage won him honour. Identify the type of the underlined noun.

- [A] Proper
- [B] Collective
- [C] Abstract
- [D] Common

94. Fill in the blank with the **correct** alternative.

When I met her _____ years after, she looked old and haggard.

- [A] a few
- [B] the few
- [C] few
- [D] some

95. Choose the **correct** alternative from the given sentences :

- [A] Those never fail who dies in great cause
- [B] They never fail who die in a great cause
- [C] They never fails who dies in a great cause
- [D] They never fails who die in a great cause

96. Who is called the first female teacher of India?

ভারতের প্রথম মহিলা শিক্ষক কাকে বলা হয়?

- [A] Sarojini Naidu
- [B] Savitribai Phule
- [C] Rani Lakshmibai
- [D] None of them

97. Mount Etna is a famous volcano located in

মাউন্ট এটনা একটি বিখ্যাত আগ্নেয়গিরি অবস্থিত

- [A] Argentina
- [B] Italy
- [C] Mexico
- [D] Philippines

98. The Battle of Kalinga was fought in the year

কলিঙ্গের যুদ্ধ কবে সংঘটিত হয়েছিল?

- [A] 540 BC
- [B] 320 AC
- [C] 440 BC
- [D] 261 BC

99. In which year the First World War was fought?

প্রথম বিশ্বযুদ্ধ কত সালে সংঘটিত হয়েছিল?

- [A] 1917 – 1920
- [B] 1914 – 1918
- [C] 1912 – 1916
- [D] 1910 – 1914

100. Which country is the largest tea producer in the world?

বিশ্বের বৃহত্তম চা উৎপাদনকারী দেশ কোনটি?

- [A] India
- [B] China
- [C] Bhutan
- [D] Nepal

SPACE FOR ROUGH WORK