

Question Booklet Series: **A**

Question Booklet Serial No. **313060**

## Ph.D. Entrance Exam – 2015

### Subject: Microbiology

### Paper – I

**Important:** Please consult your Admit Card/Roll No. slip before filling your Roll Number on the Test Booklet and Answer Sheet.

Roll No.                      *In Figure*                      *In Words*

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O.M.R. Answer Sheet Serial No.

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Signature of Candidate: \_\_\_\_\_

Signature of Invigilator: \_\_\_\_\_

**Time: 60 Minutes      Number of Questions: 50      Maximum Marks: 50**

**DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO.**

### INSTRUCTIONS:

1. Write your Roll No. on the Questions Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Question Booklet Serial No. on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball Point/Black Gel Pen**.
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. Please check that this Question Booklet contains **50** Questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of Test.
5. Each question has four alternative answer (A,B,C,D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point/Black Gel Pen**. **There shall be no negative marking for wrong answers.**
6. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Booklet. No marks will be deducted in such cases.
7. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the question given in the Question Booklet.
8. If you want to change an already marked answer, erase the shade in the darkened bubble completely.
9. For rough work only the blank sheet at the end of the Question Booklet be used.
10. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e. not following the instructions completely, shall be of the candidate only.**
11. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
12. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.
13. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistant or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
14. **Communication equipment such as mobile phones, pager, wireless set, scanner, camera or any electronic/digital gadget etc., is not permitted inside the examination hall. Use of calculators is not allowed.**
15. The candidates will not be allowed to leave the Examination Hall/Room before the expiry of the allotted time.



1. Who introduced the techniques of sterilisation?  
 A) Robert Koch  
 B) Louis Pasteur  
 C) John Needham  
 D) Joseph Lister
2. The most widely used disinfectant for human immunodeficiency virus (HIV) infected material is:  
 A) Hypochlorite solution  
 B) Lysol  
 C) Formaldehyde  
 D) Mercuric chloride
3. During maturation, when a purine is replaced by pyrimidine and vice-versa, it is named:  
 A) Transversion  
 B) Transition  
 C) Induced mutation  
 D) Transfection
4. Penicillin resistance in *Staphylococcus aureus* may be acquired by:  
 A) Transformation  
 B) Transduction  
 C) Conjugation  
 D) Mutation
5. The following may cause teratogenic infections except?  
 A) Toxoplasma  
 B) Cytomegalovirus  
 C) Rubella virus  
 D) Trypanosoma
6. Which component of complement is present in the highest concentration in the serum?  
 A) C1  
 B) C2  
 C) C3  
 D) C5
7. Which of the following HLA types is associated with rheumatoid arthritis?  
 A) HLA-B27  
 B) HLA-DR4  
 C) HLA-A1  
 D) HLA-DR6
8. The following mechanisms can be used to induce immunological tolerance except?  
 A) Clonal anergy  
 B) Clonal deletion  
 C) Suppression  
 D) Appropriate antigen selection
9. Lepromin test is an example of:  
 A) Type I hypersensitivity reaction  
 B) Type II hypersensitivity reaction  
 C) Type III hypersensitivity reaction  
 D) Type IV hypersensitivity reaction
10. Which antibody is responsible for systemic lupus erythematosus?  
 A) Antiplatelet antibodies  
 B) Antinuclear antibodies  
 C) Antibasement membrane antibodies  
 D) Anti-RBC antibodies
11. All of the following are coagulase negative staphylococci except:  
 A) *Staphylococcus epidermidis*  
 B) *Staphylococcus saprophyticus*  
 C) *Staphylococcus aureus*  
 D) *Staphylococcus haemolyticus*





23. Synergy of symbiotics can be expected in
- A) Upper respiratory tract  
B) Lower respiratory tract  
C) Anterior gastrointestinal tract  
D) Posterior gastrointestinal tract
24. DTH reaction may be demonstrated in the following except
- A) Tuberculosis  
B) Salmonellosis  
C) Gas gangrene  
D) Contact dermatitis
25. Which of the following is most severely affected in Kala-azar
- A) Liver  
B) Spleen  
C) Adrenal gland  
D) Bone
26. Which of the following enzymes in algae is involved in the biological production of hydrogen by photolysis of water?
- A) Nitrogenase  
B) Zymase  
C) Phosphoenol pyruvate  
D) Hydro lyase
27. Glucose-6-phosphate inhibits which of the following enzymes
- A) Glucokinase  
B) Hexokinase  
C) Phosphorylase kinase  
D) Fructose-1, 6-bisphosphatase
28. Minimata disease is due to pollution by
- A) Organic waste into drinking water  
B) Oil spills in oceans  
C) Industrial waste mercury into fishing water  
D) Entry of Cadmium into drinking water
29. Nitrites are oxidized to nitrates by a microorganism
- A) *Nitrosomonas*  
B) *Nitrosococcus*  
C) *Nitrobacter*  
D) *Azotobacter*
30. Which one of the following mutagens act only on replicating DNA?
- A) Ethidium bromide  
B) Nitrosoguanidine  
C) Acridine orange  
D) Nitrous acid
31. Poly A tail is frequently found in
- A) Histone in RNA  
B) Bacterial RNA  
C) Eukaryotic RNA  
D) tRNA
32. Which of the following is an example of RNA virus?
- A) SV 40  
B) T4 phage  
C) Tobacco mosaic virus  
D) Adeno virus
33. The diagrammatic representation of the total no. of genes in DNA is
- A) Genome  
B) Gene map  
C) Gene-structure  
D) Chromatin

34. A gene that takes part in the synthesis of polypeptide is
- A) Structural gene  
B) Regulator gene  
C) Operator gene  
D) Promoter gene
35. DNA replicates during
- A) G1 - phase  
B) S - phase  
C) G2 - phase  
D) M - phase
36. DNA-replication is by the mechanism of
- A) Conservative  
B) Semi-conservative  
C) Dispersive  
D) Semi-disruptive
37. Production of RNA from DNA is called
- A) Translation  
B) RNA splicing  
C) Transcription  
D) Transposition
38. Nucleic acids contain
- A) Alanine  
B) Adenine  
C) Lysine  
D) Arginine
39. Microorganisms usually make acetyl CO-A by oxidizing
- A) Acetic acid  
B) Pyruvic acid  
C)  $\alpha$ -ketoglutaric acid  
D) Fumaric acid
40. Double strand RNA is seen in
- A) Reo virus  
B) Rhabdo virus  
C) Parvo virus  
D) Retro virus
41. The gene transfer occurs by -
- A) Transformation  
B) Transduction  
C) Conjugation  
D) Cell fusion
42. The utilization of light energy to drive the synthesis of ATP is called as
- A) Photolysis  
B) Photophosphorylation  
C) Photosynthesis  
D) Respiration
43. Artificial transformation in laboratory is carried out by treating the cells with
- A)  $MgCl_2$   
B)  $CaCl_2$   
C) NaCl  
D) HCl
44. Which of the following organisms requires tryptophan for growth?
- A) *H. influenza*  
B) *Vibrio*  
C) Gonococci  
D) *S. typhi*

45. Mycotoxins are formed during the end of
- A) Lag phase
  - B) Log phase
  - C) Death phase
  - D) Stationary phase
46. Which of the following introduced the use of slant culturing as a means of culture preservation?
- A) Robert Koch
  - B) Louis Pasteur
  - C) Joseph Lister
  - D) John Tyndall
47. Bacteria are more sensitive to antibiotics at which phase of growth curve?
- A) Decline phase
  - B) Stationary phase
  - C) Lag phase
  - D) Log phase
48. DNA finger printing is based on
- A) Repetitive sequences
  - B) Unique sequences
  - C) Amplified sequences
  - D) Non-coding sequences
49. Agar is obtained from
- A) Brown algae
  - B) Red algae
  - C) Green algae
  - D) Blue-green algae
50. The largest protozoa is
- A) *Balantidium coli*
  - B) *Entamoeba coli*
  - C) *Trichomonas vaginalis*
  - D) *Toxoplasma gondii*

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