

SEAL

DO NOT OPEN THE SEAL UNTIL INSTRUCTED TO DO SO

Question Booklet No.

590018

*Invigilator's signature*

2018

**PGT—PAPER—I : BIOLOGY**

**Time : 2 Hours**

**Maximum Marks : 100**

**ROLL NO.**

**INSTRUCTIONS FOR CANDIDATES**

1. This Question Booklet contains 50 optional questions. Each question comprises four responses (answers). You will select ONLY ONE response which you consider the best and darken the bubble on the OMR RESPONSE SHEET.
2. DO NOT write your Name or anything else except Roll No. and the actual answers to the question, anywhere on the OMR RESPONSE SHEET.
3. DO NOT handle your OMR RESPONSE SHEET in such a manner as to mutilate, fold, etc.
4. No candidate shall be admitted to the Examination Hall **20 minutes** after commencement of distribution of the Test Booklet. The invigilator of the Examination Hall will be the time-keeper and his decision in this regard is final.
5. No candidate shall have in his/her possession inside the Examination Hall any book, notebook or loose paper, calculator, mobile phone, etc., except his/her admit card and other things / paper permitted by the Commission.
6. Immediately after the final bell indicating the closure of the examination, stop bubbling. Be seated till the OMR RESPONSE SHEET is collected by the invigilator, thereafter you may leave the Examination Hall.
7. Violation of any of the above rules will render the candidate liable to expulsion from the examination and disqualification from the examination, and according to the nature and gravity of his/her offence, he/she may be debarred from future examinations and interviews to be conducted by the Commission and other such organizations (i.e., UPSC, SSC and SPSCs).

**NB : CANDIDATES ARE ALLOWED TO TAKE THIS QUESTION BOOKLET ONLY AFTER COMPLETION OF 2 (TWO) HOURS OF EXAMINATION TIME.**

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1. Which of the following belongs to the kingdom 'Monera'?
  - (A) Fungi
  - (B) Algae
  - (C) Bacteria
  - (D) All of the above
2. The peptidoglycan layer is found in the cell wall of
  - (A) archaeobacteria
  - (B) protozoa
  - (C) bacteria
  - (D) All of the above
3. Which of the following is a marine amoeba ?
  - (A) Amoeba radiosa
  - (B) Thecamoeba orbis
  - (C) Amoeba verrucosa
  - (D) Amoeba dubina
4. Protists include microorganisms with
  - (A) eukaryotic cell structure
  - (B) prokaryotic cell structure
  - (C) Both (A) and (B)
  - (D) None of the above
5. The type of meristematic tissues in plants includes
  - (A) apical meristems
  - (B) lateral meristems
  - (C) transverse meristems
  - (D) Both (A) and (C)
6. The type of cambium located between phloem and xylem is classified as
  - (A) shoot cambium
  - (B) root cambium
  - (C) vascular cambium
  - (D) cork cambium
7. Fungi differ from algae, because
  - (A) they lack nucleus
  - (B) they are non-photosynthetic and contain cellulose in their cell wall
  - (C) they contain mitochondria
  - (D) their cell wall is chitinous and chloroplast is absent
8. Fungi-producing spores in sac-like structure are members of
  - (A) basidiomycetes
  - (B) ascomycetes
  - (C) deuteromycetes
  - (D) phycmycetes
9. The toxin aflatoxin is produced by
  - (A) virus
  - (B) cyanobacteria
  - (C) protozoa
  - (D) fungi
10. The heterocyst is present in
  - (A) Saccharomyces
  - (B) Nostoc
  - (C) Rhizopus
  - (D) Aspergillus

11. How many molecules of ATP are invested in the preparatory phase of glycolysis?  
 (A) One  
 (B) Four  
 (C) Two  
 (D) Zero
12. Which of the following inhibits the ATP synthase?  
 (A) Carbon monoxide  
 (B) Oligomycin  
 (C) Atrazine  
 (D) Cyanide
13. The agent which uncouples phosphorylation from electron transfer is  
 (A) FCCP  
 (B) DNP  
 (C) Valinomycin  
 (D) All of the above
14. Which of the following represents  $k_{cat}$ ?  
 (A) Enzyme turnover  
 (B) Turnover number  
 (C) Dissociation constant  
 (D) Energy of activation
15. Microorganisms able to grow in purely inorganic media in darkness are called  
 (A) chemoheterotrophs  
 (B) chemoautotrophs  
 (C) prototroph  
 (D) osmotroph
16. Auxotrophic mutants are defective in  
 (A) biosynthetic pathway  
 (B) carbon dissimilatory pathway  
 (C) nitrogen dissimilatory pathway  
 (D) gene encoding a permease
17. Which of the following enzymes is allosterically activated by N-acetylglutamate thus adjusting the flux through urea cycle?  
 (A) Carbamoyl phosphate synthetase I  
 (B) Ornithine transcarbamylase  
 (C) Argininosuccinase  
 (D) Arginase
18. Who among the following worked on denaturation of ribonuclease?  
 (A) Florkin  
 (B) Monod  
 (C) Anfinsen  
 (D) Popjak
19. Transaminases follow which of the following mechanisms?  
 (A) Ping-pong  
 (B) Sequential random order  
 (C) Sequential compulsory order  
 (D) None of the above
20. Plasmids are present in  
 (A) prion  
 (B) virus  
 (C) bacteria  
 (D) protozoa
21. Rearrangement of parts between non-homologous chromosomes is called as  
 (A) deletion  
 (B) inversion  
 (C) duplication  
 (D) translocation
22. In which of the following complexes of mitochondrial ETC, ATP is synthesized?  
 (A) Complex II  
 (B) Complex III  
 (C) Complex IV  
 (D) Complex V

23. By nature, antibody is a  
 (A) protein  
 (B) carbohydrate  
 (C) lipid  
 (D) nucleic acid
24. The carbohydrate insoluble in water is  
 (A) glucose  
 (B) maltose  
 (C) sucrose  
 (D) cellulose
25. Proteins absorb light at  
 (A) 260 nm  
 (B) 280 nm  
 (C) 300 nm  
 (D) 540 nm
26. Alcohol fermentation is due to the activity of  
 (A) yeast  
 (B) agaricus  
 (C) morchella  
 (D) albugo
27. Bt cotton is resistant to  
 (A) bacteria  
 (B) fungus  
 (C) virus  
 (D) insect
28. The process of formation of mRNA from DNA is called as  
 (A) replication  
 (B) transduction  
 (C) translation  
 (D) transcription
29. Anticodons are present on  
 (A) mRNA  
 (B) tRNA  
 (C) rRNA  
 (D) DNA
30. The three codons that direct chain termination are  
 (A) UGA, UAA, UAG  
 (B) UUU, UUC, UAU  
 (C) UGU, UCU, UAU  
 (D) UUU, UUC, UUA
31. Polymerase chain reaction was developed by  
 (A) Robert Gallo  
 (B) Kary Mullis  
 (C) David Baltimore  
 (D) Colin McLeod
32. In a buffer the ratio of base to acid is 1 and if its  $pK_a$  value is 4, then the pH of the buffer will be  
 (A) 3  
 (B) 4  
 (C) 5  
 (D) 6
33. The structure that helps in regulating the entry of substance into and out of cell is  
 (A) plastid  
 (B) nucleus  
 (C) endoplasmic reticulum  
 (D) cell membrane
34. Golden rice is rich in  
 (A) vitamin A  
 (B) beta-carotene  
 (C) vitamin D  
 (D) vitamin C
35. The contraction of muscle is stimulated by the release of  
 (A)  $K^+$  from mitochondria  
 (B)  $Mg^{2+}$  from mitochondria  
 (C)  $Ca^{2+}$  from sarcoplasmic reticulum  
 (D)  $Mg^{2+}$  from sarcoplasmic reticulum

36. Specialized transduction can be mediated by
- (A) T4 bacteriophage
  - (B) lytic bacteriophage
  - (C) lysogenic bacteriophage
  - (D) All of the above
37. A bacterium having F plasmid integrated into its genome is called as
- (A) F<sup>-</sup>
  - (B) F<sup>+</sup>
  - (C) Hfr
  - (D) Hfr<sup>+</sup>
38. Direct uptake and incorporation of exogenous DNA molecule in bacterial genome is called as
- (A) transformation
  - (B) transduction
  - (C) conjugation
  - (D) electroporation
39. Which of the following is used for DNA sequencing?
- (A) Maxam Gilbert method
  - (B) Sanger dideoxy method
  - (C) Both (A) and (B)
  - (D) None of the above
40. Which of the following is *not* a restriction enzyme?
- (A) EcoRI
  - (B) DNA Pol
  - (C) HindIII
  - (D) BamHI
41. Which of the following is responsible for making antibodies?
- (A) B cell
  - (B) T cell
  - (C) RBC
  - (D) Both (A) and (B)
42. Which of the following *cannot* be used as a vector?
- (A) Phage B cells
  - (B) Plasmid
  - (C) Bacteria
  - (D) BACs
43. Which of the following *cannot* be used in PCR?
- (A) dNTP
  - (B) MgCl<sub>2</sub>
  - (C) RNA
  - (D) Taq Pol
44. Which of the following hormones is responsible for the secretion of gastric juice?
- (A) Gastrin
  - (B) Cholecystokinin-PZ
  - (C) Secretin
  - (D) Enterogastrone
45. Which of the following factors is responsible for stabilization of fibrin?
- (A) XI
  - (B) XII
  - (C) XIII
  - (D) III
46. Bilirubin glucuronyl transferase is located in
- (A) gallbladder
  - (B) liver
  - (C) kidney
  - (D) pancreas

47. Which among the following is responsible for allosteric behaviour of haemoglobin?

- (A) 3-phosphoglycerate
- (B) 2,3-bisphosphoglycerate
- (C) 1,3-bisphosphoglycerate
- (D) Glyceraldehyde-3-phosphate

48. Rh antigen is

- (A) protein
- (B) glycolipid
- (C) glycoprotein
- (D) N-acetylneuraminic acid (NANA)

49. Genes present in different species having a clear sequence and functional relationship are called

- (A) orthologs
- (B) paralogs
- (C) alleles
- (D) isoallele

50. A haemoglobinlike substance is present in which of the following plants?

- (A) Banana
- (B) Pomegranate
- (C) Beet
- (D) Pea