

Multiple choice answer type

[If all the choices given in a particular question are incorrect in your opinion, please feel free to suggest a new answer; but you must write not more than 3-4 sentences in separate sheet justifying your new answer. If your answer is found to be incorrect; you will score- 1 points (minus one)]

1. Which of the following is found in plant cells but not animal cells?

A. Lignocellulose B. Lignicellulose C. Haemoglobin D. Haemocyanin

E. None of the above

2. Buckyball means

A. C60

B. C200

C. C80

D. C120

3. Which pair of these restriction endonucleases is from *Bacillus sphaericus*?

A. Bsp1286I and BspDI

B. BsoFI and Bsp1286I

C. BsoBI and BsmFI

D. BsrI and BsrBI

E. None of the above pairs

4. Jhum is-----

A. A folk dance

B. A tribe

C. The name of the river valley

D. A type of cultivation

E. None of the above

5. Avian influenza (Bird Flu) is denoted by

A. NH52 B. NH51 C. N1H5 D. H5N1

E. None of the above

6. If Phenotype is denoted as P, Genotypic contribution as G and

Environmental contribution as E, then P is equal to

A. G multiplied by E

B. G + E

C. G + (G multiplied by E)

D. G + E + (G multiplied by E)

E. None of the above

7. Which of the following metals is present in chlorophyll?

- A. Beryllium
- B. Magnesium
- C. Calcium
- D. Barium
- E. None of the above

8. MICR is an input device

- A. True
- B. False
- C. Not a logical statement

9. www.ncbi.nlm.nih.gov is website for National Center for Biotechnology Information

- A. True
- B. False

10. Fugu sp. (Puffer fish) has one of the most compact genomes in the animal world. This means

- A. Lower amount of non-coding DNA
- B. Higher amount of coding sequences
- C. All of the above

11. State yield index of a crop is

- A. Average yield of state / Average yield of country X 100
- B. Average yield of country / Average yield of state X 100
- C. Average yield of state / Average yield of state + Average yield of

country x 100

D. All of the above

12. If W is the dry weight of the crop, dw is the change in weight of a crop and dt refers to time intervals (t_1 and t_2) for the observations, then relative growth

rate (RGR) is equal to

- A. $1/W \times dw/dt$
- B. $W \times dt/dw$
- C. $1/2W \times dw/dt$
- D. $2W \times dw/dt$
- E. All of the above

13. If standard Human genomic DNA is cut with EcoRI restriction

endonuclease, then one EcoRI site is usually found after

- A. exactly 1024 base pairs
- B. approximately 2 million base pairs
- C. after 2048 base pairs
- D. approximately 5000 base pairs
- E. None of the above

14. DNA Drop dialysis is

- A. removing high molecular weight contaminants

- B. removing low molecular weight contaminants
- C. removing low and high molecular weight contaminants

5

- D. removing >200 KD contaminants
- E. None of the above

15. PHI-BLAST is

- A. position hit intron blast
- B. position specific blast
- C. position gapped hit blast
- D. position hit initiated blast
- E. All of the above

16. DNA PAM matrices

- A. uses Lodka model
- B. uses Markov model
- C. uses AI algorithm
- D. uses immuno-network algorithm
- E. None of the above

17. Ping and Ring is used for

- A. for sample spotting by a noncontact mechanism
- B. for solution mixing in faster kinetics
- C. solution preparation for fine chemicals
- D. for dissolving genomic DNA
- E. All of the above

18. Protein G was first isolated from-

- A. Streptococcal strains C and G
- B. Streptococcal strains A and B
- C. Streptococcal strain D
- D. Streptococcal Strain E and F
- E. All of the above

19. Golf was found to be involved in

- A. nasal epithelium
- B. nasal septal neurons
- C. vomeronasal neurons
- D. olfactory neurons
- E. All of the above

20. Goldman prize is for

- A. None of the choices below
- B. Environment
- C. Science
- D. Medicine
- E. Sports

21. ABDG, CDFI, EFHK, ?

- A. GHJM

- B. HILN
 - C. HIMN
 - D. HIKM
 - E. None of the above.
- 6

Short Answer type model questions

[Please answer only with the salient points, preferably in bullet form]

1. Describe the process of 'Viability Staining' of cultured cells?
2. Why Lithium Chloride is used for precipitating large RNA molecules?
3. Describe different methods of quantifying BAC DNA in solution?
4. Describe how Beer-Lambert law is utilized in absorption spectroscopy of nucleic acid?
5. What is HOECHAST33258 and Ethidium bromide? What is their principal use in cell biology?
6. Describe the method of precipitation of nucleic acid with Trichloroacetic acid?
7. What is DE-81 filters and what is their principal use in DNA studies?
8. Describe briefly a method of decontamination of ethidium bromide in your laboratory?
9. Describe pros and cons of four common hydrodynamic shearing methods used to fragment DNA?
10. What are the differences between Coomassie brilliant blue R250, Brilliant Blue G and brilliant R?
11. What are disadvantages of using the SYBR Green I and II?
12. Describe the mechanism of action of firefly luciferase enzyme?
13. Name five major insect pests and diseases of Rice.
14. Define crop-weed competition.
15. How herbicides are classified on the basis of the target plants?
16. Define weed. What are different types of weeds found in Agricultural land of Eastern India?
17. Write five common mechanical measures of erosion control in India.
18. What are the major types of soil and what are their names according to international soil taxonomy?
19. What are the major mites that affect coconut plants?
20. What is ER and mention three important functions of ER?
21. What is oxysomes and what are the dimensions of oxysomes?
22. What is the function of golgi in the life of a secretory protein?

23. What are the major functions of the Claude's particles?
24. Write the structure and function of the cardiac muscle?
25. What do you mean by Donnan membrane equilibrium? Discuss its major

physiological properties.

26. Write the major features of BLAST? What are the statistical components

in the BLAST?

27. What is RBD? What is ANOVA and when it is used in biological research?

28. Define prion and RNAi?

29. What is the size of RBC? How RBC is produced in the human body? How mRNAs in RBC degrades in mature human RBC?

30. Define leghaemoglobin and haemocyanin?

31. What is a genetically modified crop? Which agency in India acts as regulatory agency for GM crop? What is known as 'iron fortified rice'? Name one such transgene, which has been used to make fortified rice?

32. What is colostrum? What is immature and mature milk?

33. Name two root promoting hormones which are frequently used in plant

tissue culture.

34. What is the role of Trypsin-EDTA and Papain in animal cell cultures?

35. Name one gaseous plant hormone. Mention its function in Agro-business.

36. Define anal and integumental respiration in insects.