

C 41691

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Name.....

Reg. No.....

P.G. / INTEGRATED P.G. ENTRANCE EXAMINATION, APRIL 2023

BIOTECHNOLOGY

Time : Two Hours

Maximum : 200 Marks

*Each question carries 4 marks.
1 mark will be deducted for each wrong answer.*

1. Lime water is :

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|-----------------------|-------------------------|
| (a) CaO . | (b) Ca(OH)_2 . |
| (c) CaCO_3 . | (d) CaCl_2 . |

2. The substance not responsible for the hardness of water is :

- | | |
|------------------------|---------------------------------|
| (a) Sodium nitrate. | (b) Calcium hydrogen carbonate. |
| (c) Calcium carbonate. | (d) Magnesium carbonate. |

3. Soaps are formed by saponification of :

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|--------------------|-----------------------|
| (a) Alcohols. | (b) Glycosides. |
| (c) Simple esters. | (d) Carboxylic acids. |

4. Which is not true about the noble gases ?

- | | |
|--------------------------------------|---|
| (a) They are non-metallic in nature. | (b) They exist in atomic form. |
| (c) They are radioactive in nature. | (d) Xenon is the most reactive among these. |

5. Rancidity can be prevented by :

- | | |
|-----------------------------------|-----------------------------------|
| (a) Adding antioxidants. | (b) Storing food away from light. |
| (c) Keeping food in refrigerator. | (d) All of these. |

Turn over

6. Entropy is the measure of _____.
(a) Energy changes. (b) Disorderliness.
(c) Heat content. (d) None of the above.
7. Which of the following is true for a closed system ?
(a) Mass entering = mass leaving.
(b) Mass does not enter or leave the system.
(c) Mass entering can be more or less than mass leaving.
(d) None of the above.
8. Which of the following components are used to generate x-rays ?
(a) Meyer tube. (b) West tube.
(c) Anger tube. (d) Coolidge tube.
9. Which of the following radiation have longest wavelength ?
(a) IR radiation. (b) X-rays.
(c) Micro waves. (d) Radio waves.
10. Beer Lamberts law gives the relation between which of the following ?
(a) Reflected radiation and concentration.
(b) Scattered radiation and concentration.
(c) Energy absorption and concentration.
(d) Energy absorption and reflected radiation.
11. The largest number which divides 70 and 125, leaving remainders 5 and 8, respectively, is :
(a) 13. (b) 65.
(c) 17. (d) 875.

12. $n^2 - 1$ is divisible by 8, if n is :

- (a) An integer. (b) A natural number.
(c) An odd integer greater than 1. (d) An even integer.

13. If the 2nd term of an Arithmetic Progression is 13 and the 5th term is 25, what is its 7th term ?

- (a) 30. (b) 33.
(c) 37. (d) 38.

14. 100 cards are numbered from 1 to 100. Find the probability of getting a prime number.

- (a) $\frac{3}{4}$. (b) $\frac{27}{50}$.
(c) $\frac{1}{4}$. (d) $\frac{29}{100}$.

15. If the arithmetic means of $x, x + 3, x + 6, x + 9$ and $x + 12$ is 10, then $x = ?$

- (a) 1. (b) 2.
(c) 6. (d) 4.

16. One gene one enzyme hypothesis detected in which organism ?

- (a) *E. coli*. (b) *Saccharomyces servecea*.
(c) *Neurospora crassa*. (d) *Caenorhabditis elegans*.

17. Natural competency for transformation occur on :

- (a) *E. coli*. (b) *Bacillus subtilis*.
(c) *Bacillus licheniformis*. (d) *Pseudomonas aeruginosa*.

18. The Bacterial start codon is :

- (a) AUG. (b) UCC.
(c) UAG. (d) UGA.

19. Rho factor is involved in :
- (a) Transcription termination.
 - (b) Transcription initiation.
 - (c) Translation termination.
 - (d) Translation initiation.
20. Which among the following is a promoter for plant gene expression ?
- (a) CMV promoter.
 - (b) SV40 promoter.
 - (c) CaMV 35 S promoter.
 - (d) RSV promoter.
21. Which is the co-factor of T4 DNA ligase ?
- (a) NAD.
 - (b) ATP.
 - (c) GTP.
 - (d) FAD.
22. Most predominant organic molecule on earth :
- (a) Glucose.
 - (b) Cellulose.
 - (c) Starch.
 - (d) Hemoglobin.
23. Which one is a cryoprotectant ?
- (a) DMSO.
 - (b) Sodium chloride.
 - (c) EDTA.
 - (d) Sucrose.
24. Which of the following intracellular or plasma membrane proteins require Ca^{2+} for full activity ?
- (a) Calmodulin.
 - (b) JAK kinase.
 - (c) Protein kinase A.
 - (d) Guanylyl cyclase.
25. Haploid plants can be obtained through :
- (a) Meristem culture.
 - (b) Embryo culture.
 - (c) Endosperm culture.
 - (d) Pollen culture.
26. The process of removal of stamen from flower during hybridization is called :
- (a) Grafting.
 - (b) Emasculation.
 - (c) Sterilization.
 - (d) Crossing.

27. A mass of fungal filaments is called a :
- (a) Colony. (b) Hyphae.
(c) Mycelium. (d) Mycorrhizae.
28. Chemical nature of agar :
- (a) Carbohydrate. (b) Lipid.
(c) Polysaccharide. (d) Protein.
29. A lipoprotein that favors atherogenesis :
- (a) LDL. (b) HDL.
(c) VLDL. (d) IDL.
30. A method used to identify pentose sugars :
- (a) Anthrone test. (b) Bial's test.
(c) Tager's test. (d) Molisch's test.
31. Generally, the color of flowers is due to the presence of :
- (a) Flavonoids. (b) Chlorophylls.
(c) Anthocyanins. (d) Alkaloids.
32. Which immunoglobulin class is elevated in atopy ?
- (a) IgA. (b) IgM.
(c) IgD. (d) IgE.
33. Which of the following antibiotic inhibits cell wall synthesis ?
- (a) Erythromycin. (b) Tetracycline.
(c) Streptomycin. (d) Vancomycin.
34. Which of the following is suitable for the primary screening for the antibiotic Producers ?
- (a) Crowded plate technique. (b) Auxanography.
(c) Disc diffusion test. (d) MIC Test.

35. Which of the following is not coming under Archaea ?
- (a) Methanogens. (b) Halophiles.
(c) Thermoacidophiles. (d) Cyanobacteria.
36. T4 DNA ligase is capable of :
- (a) Stick end ligation only. (b) Blunt end ligation only.
(c) Both stick and blunt end ligation. (d) None of the above.
37. Turner syndrome karyotype is :
- (a) 44 + XO. (b) 44 + XXX.
(c) 44 + XXY. (d) 44 + OY.
38. Which among the following results in acquiring homozygosity in a population at the fastest rate ?
- (a) Out crossing. (b) Migration.
(c) Genetic drift. (d) Inbreeding.
39. Bulbosum technique is for :
- (a) Triploid plant production in.
(b) Hybrid plant production in barley.
(c) Aneuploid plant production in barley.
(d) Haploid plant production in barley.
40. Which among the following is not the property of cancerous cells ?
- (a) Anchorage independence. (b) Contact inhibition.
(c) Metastasis. (d) Uncontrolled division.
41. Which of the following acts as ionizing gas in Geiger Muller Counter ?
- (a) Argon. (b) Oxygen.
(c) Nitrogen. (d) Krypton.

42. Which of the following is a protein data base ?
- (a) DDBJ. (b) EMBL.
(c) Gen Bank. (d) PIR.
43. Which of the following is a multiple sequence alignment tool ?
- (a) Clustal W. (b) Chime.
(c) Dismol. (d) PDB.
44. Which one of the following triplets' codes for valine ?
- (a) GGG. (b) A AG.
(c) G A A. (d) GUG.
45. Which of the following will not result in variations among siblings ?
- (a) Independent assortment of genes. (b) Crossing over.
(c) Linkage. (d) Mutation.
46. New approach to conservation is the establishment of :
- (a) Sanctuaries. (b) Biosphere reserves.
(c) National parks. (d) Reserve forests.
47. One of the ex situ conservation methods for endangered species is :
- (a) Wild life sanctuaries. (b) Biosphere reserves.
(c) Cryopreservation. (d) National parks.
48. In RNAi, genes are silenced using :
- (a) ss DNA. (b) ds DNA.
(c) ds RNA. (d) ss RNA.

49. Which of the following steps are catalyzed by Taq polymerase in a PCR reaction ?

- (a) Denaturation of template DNA.
- (b) Annealing of primers to template DNA.
- (c) Extension of primer end on the template DNA.
- (d) All of the above.

50. BOD of waste water is estimated by measuring the amount of :

- (a) Total organic matter.
- (b) Biodegradable organic matter.
- (c) Oxygen evolution.
- (d) Oxygen consumption.