**ST.JOSEPH’S UNIVERSITY, BENGALURU -27**

Registration Number:

Date & session:21-12-2022, 1pm

**B.Sc. (BIOTECHNOLOGY) – I SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2022**

**(Examination conducted in December 2022)**

**BTOE1 – BIOTECHNOLOGY FOR HUMAN WELFARE**

**Time: 1 ½ Hours Max Marks: 50**

**This paper contains 5 printed pages and 1 part**

1. **Choose the correct answer and mark your option on the OMR sheet. 50x 1 = 50 marks**
2. The Vectors in Recombinant DNA technology

a) degrade nucleic acids

b) are molecules that help in replication

c) are DNA that are able to covalently bond to and carry foreign DNA into cells

d) molecules that protect host cells from invasion by foreign DNA

1. Which of the following enzymes is used to covalently bond foreign DNA to a vector plasmid?

a) DNA polymerase b) Restriction endonuclease

c) DNA ligase d) DNA helicase

1. Strain improvement can be done by

i. Using alcohol ii. Recombinant DNA technique iii. Washing iv. Mutations

1. i only b) ii only c) ii and iv d) i and iii

4. The initial work in getting a microbe to produce an industrially important product is to

 a) test the microbe if it is producing toxic agents

 b) test the microbe if it can produce the product.

 c) test the microbe if it can grow in a particular media

 d) test the microbe if it can be isolated from the environment.

5. Microorganisms are capable of synthesizing vitamins. Which among these is a vitamin synthesized by microbes?

a) vitamin B12 b) penicillin c) Botox d) All the above

6. In composition, what is the nature of enzymes?

a) Fats b) Proteins c) Nucleic acids d) Vitamins

7. Rennet is a part of the ……………of cheese making

a) fat component b) enzyme component

c) sugar component d) vitamin component

8. The massive generation of plastic waste in India is due to which of the following segments ?

 i) rapid urbanization; ii) spread of retail chains; iii) plastic packaging from grocery for food and vegetable products; iv) plastic packing of cosmetics and consumer items.

1. i and ii b) i and iii c) i and iv d) i ,ii,iii and iv

9. The initial development of biofuels was because of

1. Concerns over the rising price of oil and the emission of greenhouse gases
2. More vehicles being used
3. Exhaustion of fossil fuels
4. Was to run industries only

10. Bioremediation utilizes which of the following in its process?

 i)fungal ii)bacterial iii) plants iv) animals

1. i and ii only b) i, ii and iii only c) iii and iv only d) i ,ii,iii and iv

11.The process in which we use fungi for the operation of decontamination is termed as: a)mycoremediation b) phytoremediation c) Biotransformation d) contamination

12.What among these is a ex-situ bioremediation process

a) biopiling b) biostimulation c) bioventing d) bioagumentation

13. The Bengaluru city daily waste generation is a combination of which of these sources?

 i) Commercial establishment ii) Household iii) Street sweeping

 a)i only b)i ii and iii c)ii only d)i and ii only

14.The primary problem associated with organising a bioremediation process on site is that

a) the environment is very complicated and the degrading ability of exogenously added microorganisms tends to be affected by the features of the soil in the environment

b) to get a bioremediating microbe to act on the pollutant and having a organism of choice for the project is difficult

c) the environmental protection laws do not allow this process.

d) the metabolic understanding of degradation of pollutants by the microbe is not understood.

15. In your study of the article “Lake of fire”, which of the lake was referred to and for what reasons?

i) Bellandur ii) Baglur iii) Begur

1) methane and phosphorus gasses creating fire in a lake

2) becoming a tourist spot called lake of fire

3) for being the cleanest lake

4) for being encroached by a company called fire

Choose the correct combination:

1. i and 4 b) ii and 3 c) iii and 2 d)i and 1

16.*Pseudomonas putida* is the choice organism for which bioremediation concept

1. composting b) biomining c) oil spills d) metal degradation

17. The organism that utilises ore of copper in mines is:

1. *Pseudomonas putida b) Lactobacillus acidophillus*

 *c) Acidithiobacillus ferrooxidans d) Penicillium notatum*

*18.* In Yogurt manufacturing process, the temperature at which the fermentation is set is

1. 57-63oC b) 50-56oC c) 43-49oC d) 37-42oC

19. In bioplastics manufacturing, PHB can be extracted from:

 a) corn b) plant cellulose c) bacteria d) beet syrup

20. Which product of the following was developed through Rec DNA technique and was marketed for Indian consumers?

1. BT Alcohol b)BT Cotton c) BT Brinjal d) BT Corn

21. As hosts for rDNA techniques, what among these are generally regarded as safe?

1. viral- *coronaviridae*  b) bacteria-*E. coli* c) plant-*Rice* d) animal-*Sheep*

22.What are single cell proteins derived from?

a) dry cells of algae b) live cells of algae

c) proteins broken down from egg d) proteins broken down from milk

23. In the waste management situation in Bengaluru, which one of the following have had an impact on the health of the collecting staff?

a) waste spills from the trucks

 b) waste loaded manually in trucks without using protective gears

c) Waste segregation d) non adequate waste segregation

24. The most common route of entry of Soil pollutants into our body is

1. Contact b)Air) c)Food chain d) Water

25.The various sources of air pollution are classified into different sectors, which include transportation, industries, agriculture, power, waste treatment, biomass burning, residential, construction. What according to statistics is the main contributor in major cities?

 a)transportation b) industries c)agriculture d)waste treatment

26. There was a murder which happened and at the site of crime, a blood sample was found which did not belong to the victim. Which among the following techniques are used for solving this case.

 a) Cloning b) Antibiotic selection c) DNA Fingerprinting d) All the above

27. Insulin gene deficient mice are used in study of

1. Cancer b) AIDS c) Tuberculosis d) Diabetes

28. Among the list of hosts used for rDNA techniques, which one is simple to use and was used in the initial days of this technique being developed ?

 a)virus b)bacteria c)plant d)animal

29. *Pencillium notatum* produces which of the following antibiotics

1. Clotrimazole b) Streptomycin c) cefixime d) Penicillin

30. Cephalosporin acyclase catalyzes which reaction among the following

1. Pencillin from 7-cyclopencillin b) Cephalosporin to 7-AminoCephalosporanic acid

 c) Nucleoside to Nucleotide d) GDP to DHAP

31. Replacement of defective insulin with a correct copy is known as

1. Gene silencing b) Genome editing c) Diabetes d) Gene replacement therapy

32. Insulin is produced in which among the following for therapy

1. Arabidopsis b) E coli c) HIV d) all the above

33. Is pro-insulin directly suitable for treatment of diabetes in humans?

1. Yes b) No c) only on animals d) still Hypothetical

34. Louis Pasteur was involved in production of which vaccine?

1. COVID b) Rabies c) HIV d) Hepatitis

35. Covaxin is a

1. Inactivated vaccine b) recombinant vaccine c) attenuated vaccine d) All the above

36. The size of human genome is

1. 3 hundred bases b) 3 thousand bases c) 3 million bases d) 3 billion base pairs

37. Most inexpensive method of animal vaccines is

1. Bioreactor b) Animal Cell lines c) Embryonated Eggs d) Plants

38. Casein gene is used for enhanced

1. Growth b) Meat c) Milk d) Eggs

39. Which among the following is not used for storage of semen

1. Liquid Nitrogen b) Liquid Air c) both d) none of these

40. Supermice are produced by cloning and expression of which among the following genes

1. YFP b) GFP c) somatotrophin d) Thyroxine

41. GFP cloned into fish will produce the following product

1. Flow fish b) Glo fish c) Superfish d) salt fish

42. Real time PCR is used in

1. Immunodiagnosis b) Molecular diagnosis c) Image diagnosis d) a & c

43. Super pigs are produced by cloning of which of the following genes

1. Human albumin gene b) Equine serotonin gene c) Ovine growth hormone

 d) Swine serum albumin gene

44. Which among the following is used for treatment of Anaemia

1. Hemolysin b) Erythropoetin c) plasminogen d) trypsin

45. Glycerol is preservative used in cryoprotection of

1. Blood b) Saliva c) Semen d) all of these

46. Fortified Eggs are used to supplement

1. Vitamins b) medicine c) both d) none of these

47. Lysostaphin is used in engineering resistance to

1. Dermatitis b) Pneumonia c) Mastitis d) Myostatitis

48. Restriction enzymes

1. Join fragments of DNA b) Cleave DNA c) rearrange DNA d) all the above

49. Eggs expressing anti-HIV protein are produced by

1. Harvard University b) Rosalin Institute c) Pasteur Institute d) None of these

50. Who is the father of child from the as per the interpretation of the results below:

a) Father 1 b) Father 2 c) Father 3 d) None of the two