



# PhD ENTRANCE EXAM RESULT , VMSBUTU

Answer Key for Biotechnology Branch

Question	Options
1 : If AIRLINE is written as ENILRIA7, then RAILWAY will be written as	1) YAWILAR8 <b>2) YAWLIAR7</b> 3) YAWILAR7 4) YAWLIAR8
2 : Which number is wrong in the series 2, 6, 15, 31, 56, 93?	1) 31 2) 56 <b>3) 93</b> 4) 6
3 : If PINK is coded as 1691411, then RED will be coded as	1) 1963 2) 1853 3) 1954 <b>4) 1854</b>
4 : Statement 1: A is bigger than B but shorter than C; Statement 2: D is smaller than C and bigger than A; Statement 3: B is greater than D; If statement 1 and statement 2 are true, statement 3 will be	1) "TRUE" <b>2) "FALSE"</b> 3) uncertain 4) none
5 : Arrange the following words in a meaningful sequence : 1-sun, 2- rain, 3-child, 4-rainbow,5-happy	<b>1) 2, 1, 4, 3, 5</b> 2) 3, 2, 1, 4, 5 3) 2, 1, 3, 4, 5 4) 4, 5, 1, 3, 2
6 : What is the probability of getting two tails when two coins are tossed?	1) 0.3333333333333333 2) 0.166666666666667 3) 0.5 <b>4) 0.25</b>

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7 : A man covers a distance of 110 km between two cities in 10 hours. He travelled partly on foot at 9 km/hr and partly on a bicycle at 15 km/hr. Find the distance travelled on foot.	1) 92 2) 94 <b>3) 60</b> 4) 80
8 : Vikas and Mohan working together can complete a work in 6 days. If Vikas alone completes the same work in 10 days, in how many days Mohan alone can complete the same work?	1) 13 2) 14 <b>3) 15</b> 4) 16
9 : The HCF of $\frac{2}{3}$ , $\frac{8}{9}$ , $\frac{64}{81}$ and $\frac{10}{27}$ is	1) 0.666666666666667 2) $\frac{160}{3}$ <b>3) <math>\frac{2}{81}</math></b> 4) $\frac{160}{81}$
10 : A 60 liter mixture of milk and water contains 10% water. How much water must be added to make water 20% in the mixture?	1) 8 liters <b>2) 7.5 liters</b> 3) 7 liters 4) 6.5 liters
11 : Who Invented the 3-D printer?	1) Nick Holonyak 2) Elias Howe <b>3) Chuck Hull</b> 4) Christiaan Huygens
12 : Which Veda depicts the information about the most ancient Vedic age culture?	1) Atharvaveda 2) Samaveda 3) Yajurveda <b>4) Rig Veda</b>
13 : The first pico satellite of India is-	1) GSAT-4 2) ANUSAT 3) INSAT <b>4) STUDSAT</b>
14 : Which of the following is known as the Diamond City of India?	1) Aurangabad 2) Jaipur <b>3) Panna</b> 4) Jhiria

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15 : In which year Forest Conservation Act was passed?	<p><b>1) 1980</b></p> <p>2) 1988</p> <p>3) 1986</p> <p>4) 1990</p>
16 : What is a hypothesis in research?	<p><b>1) A conclusion drawn from data analysis</b></p> <p>2) A summary of research findings</p> <p>3) A measurement of data accuracy</p> <p>4) A statement of predicted relationship between variables</p>
17 : What is the purpose of a literature review in research?	<p><b>1) To analyze data</b></p> <p>2) To summarize research findings</p> <p>3) To collect primary data</p> <p>4) To identify the research gaps</p>
18 : What is a dependent variable in research?	<p>1) The variable that is manipulated by the researcher</p> <p>2) The variable that remains constant throughout the research</p> <p><b>3) The variable that is measured and observed</b></p> <p>4) The variable that is not relevant to the research question</p>
19 : What is a research design?	<p>1) A plan for data analysis</p> <p>2) A method for data collection</p> <p><b>3) A framework for conducting research</b></p> <p>4) A statistical technique</p>

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20 : What is the appropriate statistical analysis for comparing means between two groups?	<p>1) <b>T-test</b></p> <p>2) Chi-squared test</p> <p>3) Analysis of variance (ANOVA)</p> <p>4) Regression analysis</p>
21 : Which of the following is the process of using living organisms or their systems to manufacture products or improve existing processes?	<p>1) Microbiology</p> <p>2) <b>Biotechnology</b></p> <p>3) Bioinformatics</p> <p>4) Molecular Biology</p>
22 : Enzymes are essential biological catalysts that speed up chemical reactions. Which of the following is NOT true about enzymes?	<p>1) Enzymes are highly specific in their actions</p> <p>2) <b>Enzymes increase the activation energy of a reaction</b></p> <p>3) Enzymes are usually proteins</p> <p>4) Enzymes can be denatured by high temperature or extreme pH</p>
23 : A DNA sequence has the following complementary strand: 5'-ATCGTAG-3'. What is the original DNA sequence?	<p>1) 5'-ATCGTAG-3'</p> <p>2) 3'-TAGCATC-5'</p> <p>3) <b>5'-CTACGAT-3'</b></p> <p>4) 3'-GCATCGA-5'</p>
24 : The process by which genetic information from DNA is transferred to RNA is called	<p>1) Replication</p> <p>2) <b>Transcription</b></p> <p>3) Translation</p> <p>4) Mutation</p>
25 : Which of the following techniques is used to separate molecules based on their size and charge using an electric field?	<p>1) <b>Gel-electrophoresis</b></p> <p>2) Polymerase chain reaction</p> <p>3) Southern blotting</p> <p>4) Western blotting</p>
26 : In genetic engineering, the DNA construct used to transfer genes into another organism is known as:	<p>1) Restriction enzyme</p> <p>2) Plasmid</p> <p>3) <b>Vector</b></p> <p>4) Ligase</p>

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27 : The unit of fermentation where microorganisms are grown under controlled conditions to produce desired products is called a:	1) Bioreactor <b>2) Fermenter</b> 3) Incubator 4) Photobioreactor
28 : Downstream processing in biotechnology involves:	1) Cell culture and fermentation 2) Genetic engineering and cloning <b>3) Purification and isolation of the product</b> 4) Microbial growth and optimization
29 : Agrobacterium tumefaciens is commonly used for which of the following biotechnological applications?	1) Transgenic animal production 2) Production of biofuels <b>3) Plant transformation</b> 4) Genetic modification of bacteria
30 : Which of the following is an example of a genetically modified organism in agriculture?	1) Cloned sheep 2) Human insulin-producing bacteria <b>3) Roundup Ready soybean</b> 4) Vaccinia virus for gene therapy
31 : The technique used to amplify specific DNA sequences to obtain multiple copies is called:	1) Gel electrophoresis <b>2) Polymerase chain reaction (PCR)</b> 3) DNA sequencing 4) Southern blotting
32 : CRISPR-Cas9 is a revolutionary tool used in biotechnology. What is its main function?	1) DNA sequencing <b>2) Gene knockout or editing</b> 3) Protein purification 4) Microarray analysis

Question	Options
33 : Who is considered the father of modern genetics?	1) Charles Darwin <b>2) Gregor Mendel</b> 3) Thomas Hunt Morgan 4) Francis Crick
34 : Which of the following is a vector used in gene cloning?	<b>1) Plasmid</b> 2) Antibody 3) Ribosome 4) Lysosome
35 : What is the potential application of CRISPR-Cas9 technology in treating genetic disorders?	1) DNA sequencing <b>2) Gene therapy</b> 3) Cell culture 4) Protein purification
36 : Nanobiotechnology is an interdisciplinary field that combines nanotechnology with biotechnology. Which of the following is a potential application of nanobiotechnology?	1) DNA sequencing <b>2) Drug delivery systems</b> 3) Western blotting 4) Cell culture
37 : The process of aligning two or more biological sequences to identify similarities or differences is known as:	1) Cloning 2) DNA sequencing <b>3) Sequence alignment</b> 4) Protein purification
38 : What is the primary purpose of biosafety regulations in biotechnology laboratories?	1) To promote competition among researchers <b>2) To ensure the safe handling of biohazardous materials</b> 3) To reduce the number of experiments conducted 4) To prevent researchers from sharing information

Question	Options
39 : Bioremediation is a process that involves:	1) Using biotechnology in medical treatment <b>2) Cleaning up environmental pollution using biological organisms</b> 3) Producing biofuels from renewable resources 4) Creating genetically modified organisms for industrial purposes
40 : Which of the following allows inventors to exclude others from making, using, or selling their invention for a limited time?	1) Copyright 2) Trademark <b>3) Patent</b> 4) Trade secret
41 : Which type of stem cells can differentiate into any cell type in the body?	1) Totipotent stem cells <b>2) Pluripotent stem cells</b> 3) Multipotent stem cells 4) Unipotent stem cells
42 : Monoclonal antibodies are produced by:	<b>1) Cloning hybridoma cells</b> 2) Inserting foreign genes into bacteria 3) Culturing embryonic stem cells 4) Performing polymerase chain reaction (PCR)
43 : Which enzyme is commonly used in the production of high-fructose corn syrup?	1) Protease 2) Lipase 3) Amylase <b>4) Glucose isomerase</b>
44 : Bacillus thuringiensis (Bt) crops are genetically modified to produce:	1) Vitamin A 2) Beta-carotene <b>3) Toxins against insect pests</b> 4) Antibiotics

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45 : Which of the following is NOT a biopharmaceutical drug?	1) Insulin 2) Erythropoietin (EPO) <b>3) Aspirin</b> 4) Interferon-alpha
46 : Methanogenesis is a process in which microorganisms produce methane by the breakdown of organic matter in the absence of:	<b>1) Oxygen</b> 2) Carbon dioxide 3) Nitrogen 4) Water
47 : Yeast is commonly used in the fermentation of sugars to produce:	<b>1) Ethanol</b> 2) Biodiesel 3) Acetic acid 4) Lactic acid
48 : The primary function of antibodies is to:	1) Stimulate the immune response 2) Kill pathogens directly 3) Regulate gene expression <b>4) Bind to antigens and neutralize them</b>
49 : The process of adding a methyl group to DNA to regulate gene expression is known as:	<b>1) Methylation</b> 2) Acetylation 3) Phosphorylation 4) Ubiquitination
50 : Which of the following techniques is commonly used to separate proteins based on their charge using a gel matrix?	1) Size-exclusion chromatography <b>2) Ion-exchange chromatography</b> 3) Affinity chromatography 4) Reverse-phase chromatography

*Best of luck for the future!*