GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)

(Deemed to be University)
(Estd. u/s 3 of the UGC Act, 1956), NAAC Accredited with `A+' Grade
Visakhapatnam | Hyderabad | Bengaluru

GITAM Institute of Technology

Department of Biotechnology
PhD Entrance Test 2020-21
Model-Question paper

Duration: 2 hours   Max Marks 140

Note : This is a sample paper. The main examination paper will be online and consists of 35 questions each in section A and section B

Section A: Research Methodology

1. Essence of both basic and applied research lies in
   a. market orientation
   b. scientific method
   c. performance monitoring research
   d. costing methods

2. Which of the following is the first step in starting the research process?
   a. Searching sources of information to locate problem
   b. Survey of related literature
   c. Identification of problem
   d. Searching for solutions to the problem

3. Before searching you should define the timeframe of your search. Why?
   a. So, you don't find the library busy
   b. So, you find the most articles
   c. So, you work when you are most efficient
   d. So, you do not incur unnecessary costs

4. Why is it important for a researcher to review the literature?
   a. Because it is traditional
   b. Because it will find if anyone has done the work before
   c. Because it identifies like-minded researchers
   d. Because it shows time has been spent on the subject

5. The literature review will examine:
   a. all aspects of a topic
   b. only facts
   c. only one side of the main argument
   d. only opinions

6. What do you think might happen if you started a research project, but hadn't written any clear research objectives?
   a. Confusion about the limits of study
   b. Collection of data is unlimited
   c. Identify barriers and concerns
   d. Only a is correct
   e. Both a & b is correct

7. Surveying the literature involves
    a. narrow the problem itself
    b. identify the gaps
    c. limited information about the existing theories
    d. b is correct
    e. both a & b is correct

8.The purpose of attribution is
    a. similar to citation
    b. not similar to citation
    c. used to quote (or paraphrase all or a portion of an openly licensed work)
    d. both a & c
    e. none of the above

9. Who is responsible for plagiarism?
    a. Lecturers and supervisors
    b. The participant
    c. Institution
    d. The researcher
    e. All of the above

10. How do you prepare for presentation?
    a. Writing main argument or conclusion
    b. Writing the main points as headings
    c. Timing the presentation & discuss the main issue by clear opening and closing line remarks
    d. All of the above
    e. Only a & b

Section B: Biotechnology

1. Process Optimization is a mathematical discipline that focuses on finding:
    a. Maxima points of a process
    b. Maxima and minima points of a process
    c. Minima points of a process
    d. None of the above

2. The design of a drier is not affected by:
    a. Temperature
    b. Diffusion
    c. Air velocity
    d. Pressure

3. To produce genetically engineered bacteria that make a human protein, which of the following steps does a scientist have to take first?
    a. Insert the human gene for the protein into a plasmid
    b. Extract the protein from the bacterial culture
    c. Use a restriction enzyme to cut out the gene from human DNA
    d. Transform bacteria with the recombinant plasmid

4. DNA finger printing was developed by
   a. Francis crick
   b. Khorana
   c. Alec Jeffrey
   d. James Watson

5. The term 'endonuclease' refers to cutting the DNA sequence from:
   a. only within the polynucleotide chain, not at the ends
   b. the ends of the chain
   c. anywhere in the chain
   d. exactly in the middle of the chain

6. The heat of combustion of ammonia and hydrogen are 9.06 and 68.9 Kcal, respectively. The heat of formation of ammonia is
   a. -74.29
   b. -84.29
   c. -94.29
   d. -104.29

7. Mention the steps that are involved in the PCR amplification of DNA
   a. Initial Denaturation, Melting, Annealing, regulation
   b. Denaturation, Degradation, Extension, ligation
   c. Initial Denaturation, Denaturation, Annealing, Extension, Final Extension
   d. Denaturation, Degradation, Melting, Extension

8. Calculate the kinetic energy of 100 kg of liquid flowing through a pipe at a speed of $15ms^{-1}$
   a. 75000 kg ms-2
   b. 11,250 kg ms-2
   c. 37,500 kg ms-2
   d. 5625 kg ms-2

9. A solution contains 40 wt% water 35wt% ethanol 15wt% glycerol and 10 wt% acetic acid. What is the mole fraction of each component? (MW: 18, 46, 92 and 60 respectively.)
   a. 0.67, 0.23, 0.05 &0.05
   b. 0.8, 0.1, 0.05 &0.05
   c. 0.7, 0.2, 0.04 &0.06
   d. 0.85, 0.1, 0.02 &0.03

10. Briefly describe the phases of a cell cycle
    a. G1, G2, G3
    b. S1, G1, S2
    c. S1, S2, G1
    d. G1, S, G2