Register Number:……..

KUMARAGURU
college of technology
character is life

GENERAL INSTRUCTIONS TO THE CANDIDATES

1. Candidates are instructed to answer the questions as per Bloom's Taxonomy knowledge level (K_1 to K_6)
2. Candidates are strictly instructed not to write anything in the question paper other than their roll number.
3. Candidates should search their pockets, desks and benches and handover to the Hall Superintendent/ Invigilator if any paper, book or note which they may find therein as soon as they enter the examination hall.
4. Candidates are not permitted to bring electronic watches with memory, laptop computers, personal systems, walkie-talkie sets, paging devices, mobile phones, cameras, recording systems or any other gadget / device /object that would be of unfair assistance to him / her.
5. Corrective measures as per KCT examination policies will be imposed for malpractice in the hall like copying from any papers, books or notes and attempting to elicit the answer from neighbours.

B.TECH DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

BIOTECHNOLOGY

U14BTT303**:** Concepts of Industrial Biotechnology

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 1 = 10 Marks)

1. Consider the following steps taking place in bioprocess industries. CO1 [K_2]

   1. Isolation of product(s)
   2. Purification of product(s)
   3. Media sterilization
   4. Fermentation

   The correct sequence of process is

   a) 3-1-2-4 b) 4-3-2-1
   c) 1-2-3-4 d) 3-4-1-2

2. _____ metabolites are produced near the onset of idiophase of microbial growth CO2 [K_2]

   a) Primary b) Secondary
   c) Tertiary d) Primary and secondary

3. As the fermentation for the ethanol production is over, the cells are separated to get the biomass of yeast cells that is used CO2 [K_3]

a) For next fermentation
b) As single cell protein for animal feed
c) As manure
d) As surfactant

4. Even though many bioproducts are produced through microbial transformations, some of the products are synthesized only through synthetic methods. Which of the following products are produced through chemical methods? CO4 [K_3]

i. 6-aminopenicillinic acid
ii. D-fructose
iii. Lactic acid
iv. Citric acid

a) iii,iv
b) ii,iii
c) i,iii
d) i,ii

5. Antibiotics are produced by _____ fermentation. CO2 [K_2]

a) Submerged
b) Solid state
c) Continuous
d) Fed-batch

6. The following items consist of two statements, one labeled as the "Assertion (A)" and the other as "Reason (R). You are to examine those two statements carefully and select the answers to these items using the codes given below: CO4 [K_4]

Assertion (A): Riboflavin is commercially important metabolite.

Reason (R) : Riboflavin is used as animal feed supplements, drug and fine food uses.

Codes:

a) Both A and R are individually true but R is the correct explanation of A
b) Both A and R are individually true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

7. The optimum pH for producing bacterial amylases is CO3 [K_3]

a) 6
b) 7
c) 8
d) 9

8. _____ spp. utilizes methane or methanol as a carbon source. CO1 [K_3]

a) Xanthomonas
b) Trichoderma
c) Pseudomonas
d) Candida

9. _____ is not a synthetic biopolymer CO1 [K_1]

a) Polylactic acid
b) Polyglyconic acid
c) Polyethylene
d) Polysaccharide

10. Match the following: CO4 [K_3]

Biosurfactant	**Application**
A. Rhamnolipids	1. Emulsifier
B. Sophorolipids	2. Biocontrol agent
C.Mannosylerythritol lipids	3. Hemolytic and chelating agent
D. Lichenysin	4. Biomedical application

	A	B	C	D
a)	1	2	3	4
b)	4	3	2	1
c)	2	1	4	3
d)	3	4	2	1

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. Compare and contrast succinylation and phosphorylation. CO2 [K_3]
12. What is the role of process engineer in industries? CO1 [K_3]
13. Draw the structure of vitamin B_{12}. CO2 [K_2]
14. Corn steep liquor is the best integrated media component for penicillin-G production. Justify. CO4 [K_3]
15. What is biochemistry behind itaconic acid fermentation? CO2 [K_3]
16. How can citric acid be recovered from its broth? CO3 [K_3]
17. List the merits and demerits of enzyme production using submerged culture. CO3 [K_2]
18. Write short notes on yeast proteins. CO1 [K_2]
19. Differentiate biodiesel and bioethanol. CO1 [K_3]
20. Draw the structure of an antibody molecule. CO2 [K_2]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21. Bio-entrepreneurs Mr. X and Mr. Y are planning to produce acetone-butanol and lactic acid respectively on an industrial scale. They rely on India's most abundant substrate, molasses. Suggest your promising methods to produce any one of the products. CO4 [K_4]

22.	Explain the basic concepts of upstream and downstream processing in industrial biotechnology.	CO1	[K_3]
23.	Elaborate with a neat sketch, discuss about Frings generators used for the production of acetic acid.	CO2	[K_3]
24.	Describe the commercial production process for intracellular enzymes with a neat flow sheet.	CO3	[K_3]
25.	Elucidate the detailed production process for streptomycin with a neat process flowsheeting.	CO2	[K_3]
26.	With a neat diagram, Explain the production of monoclonal antibodies.	CO4	[K_3]

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