

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Marks Scored:

Level : B. Tech.
Year : IV

Course : BIOT 401
Semester: I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date

FEB 25 2019

SECTION "A"

[20Q. × 0.5 = 10 marks]

Choose the most appropriate answer.

- Organisms involved in kioji fermentation is -----
a. *A. niger* b. *A. flavus* c. *A. oryzae* d. *A. clavatus*
- One of the antibiotics that is targeted to 30S subunit interruption in bacterial protein synthesis is -----
a. Spectinomycin b. Clindamycin c. Erythromycin d. Tylosin
- Which one of the glycopeptide antibiotics in the vancomycin family have been approved for human clinical use?
a. Teicoplanin b. Spectinomycin c. Tetracycline d. Erythromycin
- Penicillin inactivate the PG cross linking by forming -----isopeptide bond
a. Ala-D-Ala b. Lys-D-Lys c. Lys-D-Ala d. Lys-D-Val
- Oxytetracycline are generated from the bacteria -----
a. *S. aureofaciens* b. *S. rimosus* c. *S. erythraea* d. *S. aureus*
- has recently been approved by FDA for killing *Bacillus anthracis* in anthrax infections.
a. Levofloxacin b. Ciprofloxacin c. Gatifloxacin d. Norfloxacin
- The process used for avoiding catabolite repression during substrate conversion is
a. Chemostat b. Plug flow c. Batch d. Fed batch
- Which of the followings is not an aminoglycoside?
a. Tobramycin b. Gentamycin c. Amikacin d. Vancomycin
- Conversion of Azathioprine to 6-mercaptopurine is due to the presence of -----group
a. Halogen b. -OH c. -NO₂ d. -SO₂
- During isolation of industrial microbes, which of the following does not have selective advantage?
a. Antibiotic b. Amylase c. Organic acids d. Cellulase
- Warafin is an ----- drug.
a. Anti-ulcer b. Antihistamine c. Anticoagulant d. Anti-diabetic

12. Palmitate ester is used as prodrug of chloramphenicol to avoid -----
 a. Drowsiness b. Toxicity c. Bitter taste d. Solubility
13. Typical elemental formula of industrial microbial cells is approximately
 a. $C_5H_{14}O_2N$ b. $C_3H_4O_2N$ c. $C_2H_7O_2N$ d. $C_6H_7O_2N$
14. Which is not the property of wine yeast
 a. Osmotolerance b. Thermo tolerance
 c. SO_2 Tolerance d. Fast sedimentation
15. Famvir is metabolized to penciclovir in -----
 a. Urine b. Liver c. Kidney d. Blood
16. Levodopa is converted to Dopamine in brain cells due to the effect of ----- enzyme
 a. Esterase b. Decarboxylase c. Transferase d. Reductase
17. Most useful drugs have a molecular weight less than -----
 a. 200 b. 300 c. 400 d. 500
18. Valium is a prodrug of -----
 a. Dopamine b. Azathioprine c. Nordazepam d. Fluphenazine
19. By ----- the polarity of a drug used in PNS, the side effect in CNS can be reduced.
 a. Increasing b. Equilibrating c. Decreasing d. Removing
20. Each of the----- molecules blocks a step in folic acid metabolism.
 a. Aminoglycoside b. Sulfa drug c. Spectinomycin d. Vancomycin

SECTION "B"

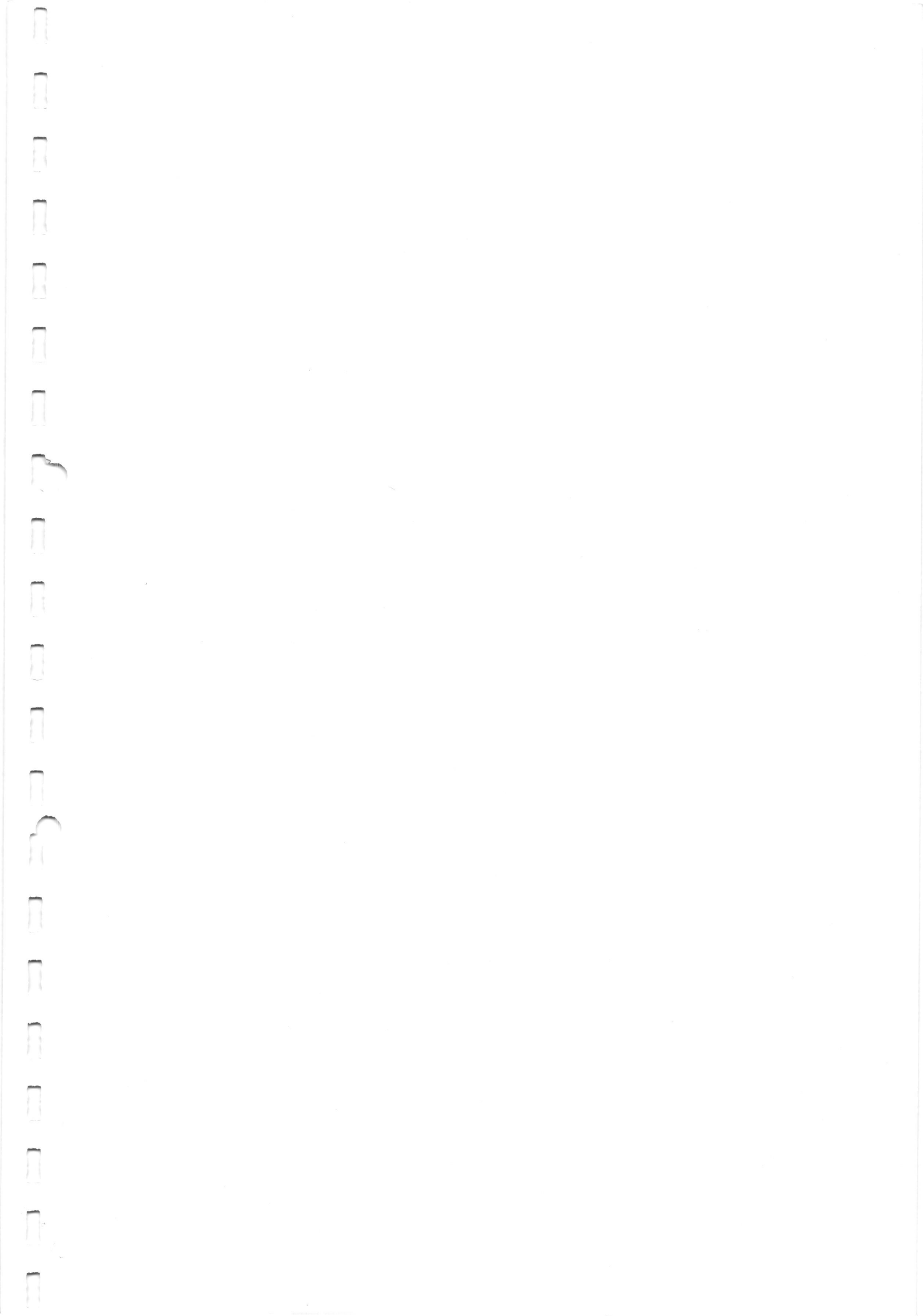
[20Q. \times 0.5 = 10 marks]

Fill in the blanks.

21. Cephalosporins is the secondary metabolite of the fungus named -----
22. -----are the therapeutic pair recently approved as synergicid.
23. Aminoglycosides, also called -----, has been widely used for decades in many clinical settings for antibacterial infections.
24. Aspirin is a painkiller drug that is generated by masking the -----group of salicylic acid with an ester.
25. Penciclovir, a non-toxic prodrug show selective toxicity towards virally infected cells by converting to toxic ----- by viral enzymes present in the infected cells.
26. -----is given intravenously as prodrug of candoxatrials since it's too polar to be absorbed from GI tract.
27. Cromakalim has useful anti-asthmatic properties but has -----side-effects if it gets into the blood supply.

FEB 25 2019

28. Carbidopa is a drug used to antagonize -----that converts L-dopa to dopamine.
29. Pargylene is the prodrug of -----
30. -----is an example of self-destruct drug.
31. Cyclosporin is successfully absorbed through cell membrane by a process called-----
-----.
32. Phenzazine -----the metabolism of amines and should not be taken with the
drugs such as pethidine.
33. The seed mash produced during sake production is called -----.
34. Methyl group on aromatic rings are often oxidized to -----.
35. The standard Lactic acid percentage in saukraut is -----.
36. Fermentation carried out in low water activity is called -----.
37. During soya sauce fermentation the optimum temperature for protease production is -----
-----.
38. Expression of the macrolide exporting transport proteins, powered by ATP hydrolysis is
known as -----protein.
39. The molecules that most likely serve as equivalent quorum sensors in gram-positive
streptomyces bacteria are -----
40. -----is the competitive inhibitors of PABA in the dihydropteroate synthase.



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SECTION "C"

[6Q × 5 = 30 marks]

Attempt ANY SIX questions.

1. How do antibiotic producers escape of their own destruction? How do you defend that it is serious to take terfenadine with grapefruit juice? [3+2=5]
2. How does the PG cross linking of bacterial cell wall biosynthesis is inactivated by Penicillin? Why Aspirin and Insulin is not taken together? [3+2=5]
3. What are quinolones? Explain the mechanism of action of quinolone antibacterials. [1+4=5]
4. What are prodrugs? Explain the nature of "search and destroy drugs" in tumor cells. [1+4=5]
5. How liquefaction and saccharification of starch is performed for bioethanol production? [5]
6. Why Pargylene and Aspirin are used as prodrug against their respective drugs? How they help to overcome the problems. [2.5+2.5=5]
7. Explain the microbiology of sauerkraut fermentation. [5]
8. Sulfa drugs are competitive inhibitors and alternate substrate for dihydropteroate synthase. Explain. [5]

SECTION "D"

Attempt ANY FOUR questions. Q. No. 13 is compulsory.

9. Explain the process involved in sake fermentation. [6]
10. How do the two component system of regulation in antibiotic production functions in *S. coelicolor*. Explain [6]
11. List out the economical source of carbon and nitrogen as industrial medium for fermentation. Explain with example. [6]
12. What is synergid? Explain the regulation of exoenzyme and carbapenem antibiotic production in *Erwinia carotovora* by acylhomoserine lactone (OHHL). [2+4=6]
13. Write short notes on- [3.5 × 2 =7]
 - a. PABA
 - b. Quorum sensing molecules

