Marks scored:

KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

Level : B. Tech.
Year : IV
Course : BIOT 401
Semester : I
Exam Roll No. :
Time: 30 mins.
F. M. : 20

Registration No. :
Date JUL 0 9 2017

SECTION "A"
[20 Q. × 0.75 = 15 marks]

Choose and tick (√) the most appropriate answer.

1. Which of the followings is not an aminoglycoside?
   a. Tobramycin b. Gentamycin c. Amikacin d. Vancomycin

2. β-lactamases is an enzyme that ---------- β-lactam ring in penicillin classes of antibiotics.
   a. Activates b. Dehydrates c. Hydrolyzes d. Ring expands

3. The activity of megestrol acetate (oral contraceptive) is prolonged by introducing methyl group in position ----------.
   a. Two b. Four c. Six d. Ten

4. Antibacterial drugs targated for protein biosynthesis are ----------
   a. Aminoglycosides b. Quinolones c. choloramphenicol d. vancomycin

5. Tylosin, a ----------macrolide, targets the 23S rRNA at essentially the same site as erythromycin.
   a. 16-membered b. 19-membered c. 12-membered d. 18-membered

6. Which of the---------- molecules blocks a step in folic acid metabolism?
   a. Aminoglycoside b. Sulfa drug c. Spectinomycin d. Vancomycin

7. The molecules that most likely serve as equivalent quorum sensors in gram-positive *streptomycete* bacteria are ----------
   a. β-lactam b. γ-butyrolactones c. Cumarin d. Quinolones

8. ----------is used to minimize the tissue damage and pain on injection of Insulin.
   a. Phenol b. Glycerol c. NaCl d. Physiologic buffer

9. Sulfamethoxazole, used in combination with ----------for the treatment patients with urinary tract infections.
   a. Penicillin b. Cephalosporin c. Trimethoprim d. Gentamicin

10. The small subunit (30S) of ribosome contains about 20 proteins and ---------- ribosomal rRNA of about 1,500 ribonucleotides.
    a. 16S b. 23S c. 25S d. 5S

11. 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

12. 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

13. An antibiotic targeted to interrupt 30S subunit is ----------
a. Clindamycin b. Azithromycin c. Chloramphenicol d. Tetracycline

14. Oxytetracyclines are generated from the bacteria ----------.
a. *S. aureofaciens* b. *S. rimosus* c. *S. erythraea* d. *S. aureus*

15. Which yeast strain plays role on Saysauce fermentation?
a. *S. soyae* b. *Candida*
c. *Endomyces fibulojera* d. *Aspargillus*

16. ----------has recently been approved by FDA for killing *Bacillus anthracis* in anthrax infections.
a. Levofloxacin b. Ciprofloxacin c. Gatifloxacin d.Norfloxacin

17. ----------is more selective for DNA gyrase (topo II) blockade than topo IV in bacterial cell system.
a. Norfloxacin b. Ciprofloxacin c. Levofloxacin d. Nadifloxacin

18. Sauerkarut fermentation is initiated by the following LAB
a. Heterofermentative b. Homofermentative
c. Thermophilic d. Osmophilic

19. Aminoglycosides target accessible regions of polyanionic 16S rRNA on the 30S ribosome notably at -------
a. A site b. P site c. E site d. fmet-site

20. Bacterial cell wall biosynthesis is inhibited by ---------- class of antibiotics.
a. Aminoglycosides b. ciprofloxacin c. trimethoprin d. vancomycin

SECTION "B"

[10 Q. × 0.5 = 5 marks]

Fill in the blanks.

21. Aspirin is a painkiller drug that is generated by masking the ----------group of salicyclic acid with an ester.

22. Lidocaine is more effective than procaine due to its extra --------- group in its structure.

23. Conversion of pargylene to propionaldehyde takes place in----------

24. Cromakalim has useful anti-asthmatic properties but has ----------side-effects if it gets into the blood supply.

25. Carbidopa is a drug used to antagonize ----------that converts L-dopa to dopamine.

26. Pargylene is the prodrug of ----------

27. Expression of the macrolide exporting transport proteins, powered by ATP hydrolysis is known as ----------protein.

28. The sequence of *S. coelicolor* genome includes at least ---------- two-component pairs of regulators for gene transcript ion in response to external signals.

29. For the virginiamycin biosynthesis, ---------- acts as a transcriptional repressor for the antibiotic pathway-specific transcription factors.

30. ----------is the competitive inhibitors of PABA in the dihydropteroate synthase.

KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

JUL 0 9 2017

Level : B. Tech.
Year : IV
Time : 2 hrs. 30 mins.

Course : BIOT 401
Semester : I
F. M. : 55

SECTION "C"

Attempt *ANY SIX* questions.

1. Penicillin is given via injection and not orally, why? How do you defend that it is serious to take terfenadine with grapefruit juice? [2+3=5]

2. What is atracurium? How it functions? [1+4=5]

3. What are prodrugs? Explain the nature of "search and destroy drugs" in tumor cells. [1+4=5]

4. How is vitamin B_{12} produced in Tempeh fermentation? [5]

5. Why Pargylene and Aspirin are used as prodrug against their respective drugs? How they help to overcome the problems. [2.5+2.5=5]

6. What are the sequential patterns of lactic acid bacteria in Sauerkraut fermentation? [5]

7. How do antibiotic producers escape of their own destruction? [5]

8. Describe the functioning of Hexamine to treat urinary tract infection and porphyrin in treatment of cancer. [2.5+2.5=5]

SECTION "D"

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

9. Where is the target of Coumermycin in bacterial cell system? Explain the mechanism of action of quinolone antibacterials. [6]

10. What are β-lactam antibiotics? Describe the PG cross-linking inactivation mechanism of Penicillin. [2+4=6]

11. Explain the underlying principle and application of biotechnology in Soysauce manufacturing. [6]

12. What is synercid? Show the mechanism of sulfa drugs in folic acid metabolism [2+4=6]

13. Write short notes on- [3.5 × 2=7]
    a. Prodrugs of prodrug
    b. Pinocytosis