



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**UNIVERSITY EXAMINATIONS**

**2019/2020 ACADEMIC YEAR**

**MAIN EXAMINATIONS  
MAIN CAMPUS**

**THIRD YEAR FIRST SEMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
BACHELOR OF SCIENCE IN MEDICAL BIOTECHNOLOGY**

**COURSE CODE: BMB 315**

**COURSE TITLE: MEDICINAL PLANT BIOTECHNOLOGY**

**DATE:**

**TIME:**

---

**INSTRUCTIONS TO CANDIDATES**

SECTION A: ANSWER ALL QUESTIONS (MCQs)	20 MARKS
SECTION B: ANSWER ALL QUESTIONS	40 MARKS
SECTION C: ANSWER ALL QUESTIONS	60 MARKS

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

1 | Page

**SECTION A: MULTIPLE CHOICE QUESTIONS (MCQs) [20 MARKS]**

1. Name the term given to the ability of single cells to divide and produce all the differentiated cell in the organism?
  - A. Unipotent
  - B. Pluripotent
  - C. Multipotent
  - D. Totipotency
2. Up to \_\_\_\_\_ percent of all medicine comes from chemicals found in plant
  - A. 25%
  - B. 50%
  - C. 75%
  - D. 100%
3. Botany is the branch of biology that studies \_\_\_\_\_.
  - A. Plants
  - B. Zoology
  - C. Herbs
  - D. All the above
4. Plants with medicinal value are called
  - A. Pulses
  - B. Scented plants
  - C. Medicinal plants
  - D. Barks
5. Which of the following statements relating to the traditional herbal medicinal products is false?
  - A. .Attributing a preventive or curative effect to these products is forbidden
  - B. They contain one or more herbal substances, preparations or their combination as active agents.
  - C. The products may also contain vitamins and minerals
  - D. Their authorization is possible via abridged registration
  - E. They can be distributed in pharmacies
6. True alkaloids are always present in plants as
  - A. Salts of organic acid
  - B. Salts of inorganic acid
  - C. Salts of meconic acid
  - D. Salts of benzoic acid
7. Drug is not under the class of organized drug :
  - A. Leaves
  - B. flowers
  - C. Fruits
  - D. Gums
8. Which of the following factors does not influence the effectiveness of extraction?

- A. Temperature
  - B. The polarity of the solvent
  - C. The particle size of the grounded drug
  - D. The refractive index of the compounds to be extracted
9. Pharmacognosy means:
- A. study of physical and chemical of drug
  - B. study of drug substance or drug substances of natural origins
  - C. the search for new drug from natural sources
  - D. All of the above
10. Which of the following is not a cause for loss of biodiversity?
- A. Destruction of habitat
  - B. Invasion by alien species
  - C. Keeping plants in botanical parks
  - D. Over-exploitation of natural resource
11. Explants used for tissue culture can be taken from:
- A. Bud
  - B. Root tip
  - C. Nodal Stem Segments
  - D. All the above
12. Indole-3-acetic acid is:
- A. A gibberellin
  - B. Cytokinin
  - C. An auxin
  - D. None of the above
13. Hair root cultures are used by using:
- A. *Agrobacterium tumefaciens*
  - B. *Agrobacterium rhizogens*
  - C. *Agrobacterium vitis*
  - D. *Agrobacterium rubi*
14. Cinchona, feverbark, was nearly made extinct from over-collection of it in the Andes jungles. What disease was it used to cure?
- A. Mumps
  - B. Leprosy
  - C. Malaria
  - D. Plaque
15. Secondary metabolites are the essential component of the plant growth.
- A. True
  - B. False
16. How does plant biotechnology differ from plant biology?
- A. A very modern science

- B. Used to make food
  - C. Used to make products that benefits mankind
  - D. Dangerous to man and environment
17. Which one of the following expanded forms of the followings acronyms is correct?
- A. IUCN = International Union for Conservation of Nature and Natural Resources
  - B. IPCC = International Panel for Climate Change
  - C. UNEP = United Nations Environmental Policy
  - D. EPA = Environmental Pollution Agency
18. Transgenic plants are produced by:
- A. Introducing foreign genes
  - B. Introducing mutations
  - C. Deleting certain chromosomal parts
  - D. Stopping spindle formation
19. Wild life conservation aims at :
- A. Maintaining the ecological process
  - B. To enrich the wildlife diversity with exotic species
  - C. Preventing migration of species
  - D. Maintaining the diversity of life
20. Which is related to genetic engineering?
- A. Plastid
  - B. Plasmid
  - C. Heterosis
  - D. Mutation

### SECTION B: SHORT ANSWER QUESTIONS [40 MARKS]

21. Write short notes on the following [2x2.5 Marks]
- i. Indigenous system of medicine
  - ii. Storage of crude drugs
22. Outline the factors influence the cultivation of medicinal plants [5 Marks]
23. With specific examples, differentiate between organized and unorganised drugs[5 Marks]
24. Briefly describe different methods of Micropropagation [5 Marks]
25. State the culture media components and culture conditions required for plant tissue culture. [5 Marks]
26. Briefly describe the chemo-taxonomic classification of medicinal plants [5 Marks]
27. Explain how pharmacopeia assists in the understanding the role of medicinal plants in ethnomedicine [5 Marks]
28. Write short notes on secondary metabolite production in Tissue Culture [5 Marks]

### SECTION C: ESSAY QUESTIONS [60 MARKS]

29. Discuss the role of biotechnology in medicinal plants [20 Marks]
30. Write an essay on the conservation strategies of medicinal plants in Kenya[20 Marks]
31. Describe in details the extraction methods of phytochemicals in medicinal plants[20 Marks]