



(University of Choice)
**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY**

(MMUST)

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
THIRD YEAR FIRST TRIMESTER EXAMINATIONS
FOR THE DEGREE
OF**

CLINICAL MEDICINE, SURGERY AND COMMUNITY HEALTH

COURSE CODE: HCM 400

COURSE TITLE: TELEMEDICINE

DATE: TUESDAY 19TH APRIL 2022

TIME: 2:00-5:00 PM

INSTRUCTIONS TO CANDIDATES

Answer all questions

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 6 Printed Pages. Please Turn Over.

MULTIPLE CHOICE QUESTIONS (20 MARKS)

Section A. Answer all the questions in this section

1. Which of the following situations is not considered part of telemedicine?
 - a) Transmission of Still images
 - b) Remote ,monitoring of Vital signs
 - c) Word processing
 - d) Videoconferencing
2. Telemedicine allows hospitals to optimize the use of their personnel by
 - a) Cross training, Doctors, Nurses and maintenance workers
 - b) Outsourcing all possible work
 - c) Allowing outside specialists to view patient x-rays
 - d) Allowing them to take more vacation days
3. Medical related images and simulations available to educate patients is an example of
 - a) Nursing call center
 - b) Remote monitoring of Vital signs
 - c) Video conferencing
 - d) Continuing medical education
4. Health workers in remote areas of the world can communicate with specialists using webcams and
 - a) Network security systems
 - b) Satellite
 - c) Fiber optics
 - d) Electrocardiogram
5. _____ is the use of medical information exchanged from one site to another via electronic communications to improve patients' health status
 - a) Videoconferencing
 - b) Emergency room
 - c) Telemedicine
 - d) Skype
6. Which of the following is NOT an example of Telemedicine

- a) The monitoring of health data such as cholesterol levels in a data base for access by Doctors
 - b) People in remote areas using communication systems including webcams to speak to Doctors
 - c) A doctor performing surgery in the operation room via holography
 - d) Doctors sending out x-rays to be reviewed by specialists outside the hospital
7. The following are examples of telemedicine technologies except
- a) DC motor
 - b) Data base
 - c) Wireles and broadband internet
 - d) satellite
8. In telemedicine, the recommended file formats suitable for transmission of medical images (e.g. CT scan) from a remote end to the specialist end is
- a) Power point
 - b) DICOM
 - c) JPEG
 - d) MPEG
9. A form of telehealth technology in which clinical data or images are captured at one point in time and used at a later time is:
- a) Batch
 - b) Real time
 - c) Store and forward
 - d) Synchronous
10. A device that converts audio and video signals into digital form is a:
- a) CODEC
 - b) Digital image acquisition device
 - c) MODEM
 - d) Telephone
11. Which of the following provides a protocol for exchange of data between a medical device and a health information system:
- a) Advanced Medical Technology Association (AdvaMed)
 - b) Health Level Seven (HL7)
 - c) International Telecommunications Union (ITU)

d) Office for the Advancement of Telehealth (OAT)

12. What service may commonly provide communication across the “last mile” in a telehealth encounter:

- a) Bluetooth
- b) Plain old telephone service (POTS)
- c) Ultra wide band (UWB)
- d) Wi-Fi

13. Which of the following is a significant benefit of telehealth:

- a) Avoidance of transportation costs
- b) Documentation requirements
- c) Food and Drug Administration approval of devices
- d) Privacy of home visits

14. Telemedicine also referred to as remote patient monitoring, is:

- a) Only a small part of telehealth
- b) Completely unrelated to telehealth
- c) Includes telehealth
- d) The branch of medicine focusing on acute and traumatic health issues

15. Before a tele-health program can be successful, _____ must be in place to support it.

- a) A group of physicians
- b) Appropriate technological infrastructure
- c) Executive management
- d) The latest technological gadgets

16. The measure of range of frequency components present in the signal is

- a) Bundles
- b) Bandwidth
- c) MBPS
- d) GBs

17. The process of translating signal's bandwidth into a channel's bandwidth is.

- a) Modulation
- b) Signalling
- c) Transmission

d) Transducer

18. The remote communication of information to facilitate clinical care is

- a) Computerized charting system
- b) Electronic medical records
- c) Tele-medicine
- d) Tele-health

19. A new clinician is being oriented to the intensive care unit and is startled when, during intra disciplinary patient rounds, a person "joins" the conversation on a computer screen in the patient's room. How does the clinician's mentor best explain the benefits of this procedure?

- a) "It's another set of eyes and ears for good patient care."
- b) "The remote person can help assess, treat, or educate patients."
- c) "This ensures we are compliant with all our policies."
- d) "We are short physicians here, so this fills the gaps."

20. A director of nursing (DON) of a small, remote hospital wants to use telehealth technology, because the facility just updated all of its computers. What action by the DON is best?

- a) Assess the capability of the hospital's LAN (local area network).
- b) Check on the facility's WAN (wide area network) access.
- c) Determine if nurses are interested in telehealth capability.
- d) Write network protocols for telehealth activity.

Section B. Short Answer Questions. Answer all the questions in this section

- 21. Demonstrate the difference between analog and digital data in the context of Telemedicine (8mks)
- 22. Using ideal figures of your choice illustrate the key measurements of a video data size used for decision making process in Telemedicine (8mks)
- 23. Using a two dimensional diagram present an equation for signal transmission and its relevant paths as applied in telemedicine (8mks)
- 24. Highlight two technical issues over low bandwidth and provide relevant solution them (8mks)
- 25. Evaluate four different video and data conferencing facilities available for use in Kenya and can support telemedicine (8mks)

Section C. Long Answer Questions. Answer all the questions in this section

26. Illustrate the compression standards useful for data handling and transmission in telemedicine (20mks)
27. Analyze the three groups of technologies involved in enhancing efficiency and effectiveness of health care service delivery in Telemedicine (20Mks)