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**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

# University Examinations 2012/2013

**SPECIAL/SUPPLEMENTARY EXAMINATION FOR THE DIPLOMA IN CLINICAL MEDICINE**

# TDM 1307: COMPUTER APPLICATIONS IN MEDICINE

**DATE: AUGUST, 2012**  **TIME: 2 HOURS**

**INSTRUCTIONS: Answer ALL the Questions in Section A and B.**

**SECTION A: ANSWER ALL QUESTIONS.**

1. Which is TRUE about conventional radiology?

1. It use comzing radiation
2. Radiographic films are not necessary
3. Images obtained are digital
4. Phosphorus films are used
5. Has less exposure to radiation that computerized tomography

2. Which is TRUE about magnetic resonance imaging?

1. Patients are placed in an intensive magnetic field
2. Magenetic field oricats nuclei of atoms
3. Radio frequencies are applied to make atoms resonate
4. After resonation atoms emit electromagnetic signals
5. Ionizing radiation is used

3. Which is true about virtual reality?

1. Images are based on description of objects
2. Objects are set in one-dimension
3. Objects cannot have colours or texture
4. Lighting, orientation and motion phenomena cannot be depictual
5. Users in the virtual world are not able to interact with objects

4. Which statement is true about digitizing images?

1. Uses square matrices corresponding to powers of 8
2. Coding intensity ranges between 8 – 24 bits
3. Two dimensional images over true require a two-dimensional table
4. A those dimensional sequence of mages requires a 4-dimension table
5. Images recorded over time do not normally require compression

5. Which of the following statements is true?

1. Computer applications in medicine are stand alone
2. Information technology interfaces with only communication applications in health care
3. Technological innovations applicable in medicine develop slowly.
4. Internet is not a useful tool in health informatics practice in resource poor settings
5. Without high speed computers, computer applications medicine is impossible

6. Which is not true about digital processing of images

1. Achievers compensation for images imperfection
2. It is possible to quantify clinical parameters
3. Pattern recognition can be achieved
4. Feedback loops may be set up
5. There is exposure to ionizing radiation

7. Which of the following statement in true about clinical decision support systems?

1. They are only useful in diagnosis and prescription
2. Do not require the input of physicians
3. Not know to result in fatal clinical mistakes
4. Are not ideal in emergency and ambulatory medicine
5. Only patient data is needed for a decision to be made

8. Which statement is true regarding computerized physician order entry?

1. Decreases delay in order completion
2. May be associated with slower order entry
3. Orders cannot be filled offsite
4. Error-checking is not associated with fatigue
5. Simplifies inventory and posting charges

9. Which is true about portability of a computerized physician order entry?

1. Accepts and manages orders for all departments
2. Can only work at the point of care
3. Should never work from a physicians home
4. Uses only PCs to issue and process orders
5. Connected wireless tablet computers can be physically carried

10. Which is true about telemedicine?

1. Can involve two health workers discussing a case over a phone
2. It is not possible without videoconferencing
3. Medical examination cannot be conducted
4. High speed computers find very little use
5. It is not associated with medial medical errors

11. Which statement about computerized physician order entry is NOT TRUE

1. Fatal errors can never occur
2. Physician orders are never shared
3. Often do not display patient’s medical history
4. Main role is to check drug orders
5. Creates temporary records

12. Which of the following is NOT a primary function of clinical decision support system?

1. Knowledge support
2. Medical calculators
3. Reminders
4. Medication ordering support
5. Synchoxine saveilance

13. The following is not true about the contemporary clinician:

1. Has achieved optimum efficiency at work
2. Is overburdened by paper based records
3. Faces frequent medication errors
4. Does not need to provide educational and information to patient
5. Lacks appropriate information technology tools to aid clinical work

14. Regarding computer tools and applications at the disposal of health workers:

1. High speed computers are not essential
2. Voice recognition is always needed
3. Mobile phone technology is only useful for telemedicine
4. Internet should never be used for transmitting confidential information
5. Health professionals assimilate applications faster than they become available

15. Which is NOT a recognized driver of health informatics?

1. Reduction of healthcare costs
2. Patient safety
3. Standardization of medical care
4. High enthusiasm among clinical managers
5. Large unmet need for health information technology application

16. Which of the following statements on uHealth is true/

1. It involves use of only mobile phones
2. It is a subsegment of eHealth
3. mHealth applications are used in direct provision of healthcare
4. it is a sub-segment of telemedicine
5. it is the same as telehealth

17. Which is TRUE about modern clinical decision support systems?

1. They provide interactive assistance to clinicians at the point of care
2. They produce right decisions that a clinician should act on without review
3. The knowledge of a clinician is not needed
4. Machine knowledge is superior
5. They are not associated with fatal medical errors

18. Which of the following statements is TRUE?

1. Bioinformatics encompasses biomedical informatics
2. eHealth refers to the direct application of computers in clinical care
3. Veterinary informatics is not part of biomedical information
4. Nursing and dental informatics cannot be practiced together
5. Biomedical informatics is the suitable term for the disciplines of computer applications in health and biology

19. Which statement regarded the internet is NOT TRUE?

1. Internet was developed in 1969
2. The world wide web was conceirved in 1990
3. Internet is the backbone of digital medical libraries
4. Health information exchanges do not need internet
5. Web based medical applications are insecure

20. Which is true about knowledge based clinical decision support system?

1. Contains the rules and associations of computed data
2. Advanced users can edit the knowledge base
3. Use machine learning
4. Allows users to learn from past experiences
5. Often focuses on a narrow list of symptoms

21. Which is true regarding artificial neural networks?

1. Are made of interconnecting biological reunions
2. Use nodes and weighted connections between neurons
3. Can derive associations between the symptoms and a diagnosis from patient data
4. Require expert input and writing of rules to the knowledge base
5. Are used commonly in decision support systems

22. Which is true about genetic algorithms used in machine learning?

1. Rearrange to form re-combinations better than previous solutions
2. Derive their information from patient data
3. Interatively use a fitness function to determine an optimal solutions
4. Are logically transparent in decision support systems
5. Are commonly used in clinical decision support systems

23. Which is true regarding the effectiveness of clinical decision support systems?

1. Improve practitioner performance
2. Automatic electronic prompts are an important feature in improving practitioner performance
3. Improve patient outcomes
4. Decision support systems do not significantly improve clinical practice
5. Significantly increase mortality among patients

24. Regarding the evaluation of clinical decision support systems (CDSS), which of the following statements is untrue?

1. Involves the demonstration of the value of CDSS within a system and its effectiveness
2. Good generic tools to evaluate all CDSS exist
3. Evaluation benchmark depends on the goals of the system
4. Improvement of the clinical workflow must be demonstrated
5. Patient outcomes are not possible to evaluate

25. Which is TRUE about telemedicine?

1. The terminology is used interchangeably with telehealth since it means the same thing
2. Cannot benefit isolated communities and remote regions
3. Used by experienced medical staff to instruct others in remote locations
4. Entively eliminates the need for travel
5. Patients can perform some basic healthcare work for themselves

26. Which of the following are NOT essential components of teleradiology?

1. Station to send images
2. Cellular telephone
3. Station to receive and review images
4. Synchrones presence of patient and doctor
5. Transmission network

27. What is NOT TRUE about the ordering feature of a computerized physician order entry?

1. Physician orders are standardized
2. Orders cannot be tailored to individual doctor
3. Only specially ordering can be made using order sets
4. Orders are communicated to departments and involved caregivers
5. Slows response time to orders

28. Which of the following is true about telepsychiatry?

1. Very rarely use videoconferencing to reach underserved patients
2. It is a tool of consultation among psychiatrists
3. Not useful in educational clinical programs
4. Diagnosis and assessment are not possible
5. Can be used to manage medication therapy

29. In medical imaging, photography is used in which of the following areas?

1. Cytology
2. Conventional radiography
3. Pathology
4. Magnetic resonance imaging
5. Chromosomal mapping

30. Which of the following are digital images?

1. Computerized Axial tomography (CAT scans)
2. Positron Emission tomography (PET scans)
3. Magnetic Resonance imaging
4. Conventional x-rays
5. Endoscopy

**SECTION B: ANSWER ALL QUESTIONS**

1. Briefly describe how computerized physician order entries can improve practice performance and patient outcomes. [5 marks]

2. Explain the risks associated with use of computerized physician order entry.

[5 marks]

3. Outline the features associated with the success of a clinical decision support system.

[5 marks]

4. Outline the challenges to adopting clinical decision support systems. [5 marks]

5. Write short notes on remote monitoring telemedicine. [5 marks]

6. State the key components of a picture archiving and communication systems.

[5 marks]

7. Outline the difference between computed and digital radiography. [5 marks]

8. State the key components of electronic health records. [5 marks]