SOLOMON ISLANDS NATIONAL UNIVERSITY
School of Nursing and Allied Health Sciences

CB 512
FOUNDATION IN HUMAN BODY FUNCTION

FINAL EXAMINATION

SEMESTER 1, 2017

SCHOOL OF NURSING & ALLIED HEALTH SCIENCES

DIPLOMA OF COMMUNITY BASED REHABILITATION (CBR)

WRITTEN EXAM

UNIT : CB 512 – Foundation in Human Body Function

TIME : 9am – 12 noon

DATE : 8th June, 2017

GROUP : 2017 Intake

NAME: …… **REG. NO.:** ……

INSTRUCTIONS:

1) The Paper Consists of Three (3) Parts:
   a) Part A: Multiple Choice Questions (MCQ) - 30 Marks.
   b) Part B: Short Answer Questions (SAQ) - 60 Marks
   c) Part C: Long Answer Questions (LAQ) - 10 Marks.

2) For Long answer question (part C) – **Answer only one (1)** case study.

5) Read the Questions Carefully and Answer Only What is Asked.

6) You have ten (10) minutes reading time and three (3) hours to complete the paper.

7) You are to write with blue or black pen only. DO NOT USE pencil, red pen and correction fluid.

GOOD LUCK

PART A: MULTIPLE CHOICE QUESTIONS (30 MARKS)

Please read all options and choose the <u>MOST</u> correct answer.

1. **The capacity to detect the correct depth or distance between objects or body parts is called;**
   a. Visual inattention
   b. Depth Perception
   c. Figure/ground discrimination
   d. Visual Object agnosia

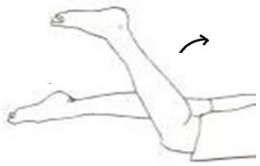
2. **A client presents to you with the following difficulties; Take statements literally, fail to "put themselves in another's shoes," and is resistant to change. What cognitive functions are they having difficulties with?**
   a. Abstraction and cognitive flexibility
   b. Insight
   c. Orientation
   d. Perception

3. **Specific mental functions of control over both motor and psychological events at the body level is called;**
   a. Perceptual functions
   b. Thought functions
   c. Emotional functions
   d. Psychomotor functions

4. **The ABC of stress management stands for;**
   a. Awareness and understanding, balance, control
   b. Awareness and understanding , be calm, control
   c. Abstain, balance, conquer
   d. Awareness and understanding, balance, conquer

5. **Humerus, radius, ulna and carpal are bones of the :**
   a. Lower limb
   b. Shoulder region
   c. Upper limb
   d. Hand

6. **What type of movement is shown in the picture below?**



   a. Flexion
   b. Supination
   c. Abduction
   d. Dorsiflexion

7. **Manual muscle testing (MMT) is a procedure used to test for;**
   a. Muscle tone
   b. Muscle endurance
   c. Muscle power
   d. Muscle reflex

8. **Active assisted movement means;**
   a. The person moves a part by himself with some help. He uses some of his own strength. The limb is supported and guided throughout the movement.
   b. the person moves a part himself using his own muscle strength.
   c. the person moves a part by himself, pushing against a weight or a force with his own muscle strength.
   d. The person's body part is moved without using his own muscle strength. The body part is pushed or pulled by another part of his body or by someone else

9. **Which is <u>NOT</u> a characteristic of muscle tone?**
   a. Dependent on integrity of the CNS and the PNS
   b. Is different from person to person
   c. Is affected by damage to the muscles
   d. Can be high or low

10. A client's tolerance for exercise is an indication of his/her

a) Muscle tone
b) Muscle endurance
c) Muscle power
d) Muscle reflex

11. The strong rope-like structure that connects a muscle to a bone is called a;

a) Nerve
b) Cartilage
c) Tendon
d) Ligament

12. What are the 3 main types of joints?

a) Synovium, cartilage and soft joints
b) Synovial, cartilage, and fibrous joints
c) Synovial, cartilage, and soft joints
d) Fibrous, cartilage, and soft joints

13. Which of the following is <u>true</u> about an agonist muscle?

a) It is a prime mover
b) Always contracts actively
c) Acts opposite to the antagonist
d) All of the above

14. A movement that occurs at a joint because of external forces applied and no muscular contractions is called:

a) Active range of motion
b) Passive range of motion
c) Active assisted range of motion
d) Gravity eliminated range of motion

15. Which of the following would you <u>NOT</u> give to Mary who has an MMT grade 2 as part of her strengthening exercise program?

a) Passive range of motion exercises
b) Active range of motion exercises
c) Active-assisted range of motion exercises
d) Resisted range of motion exercise

16. If we want to increase muscle endurance, we can:

a) Use a heavier weight and smaller number of repetitions.
b) Use a heavier weight and larger number of repetitions.
c) Use a lighter weight and larger number of repetitions.
d) Use a lighter weight and smaller number of repetitions

17. Identify 2 primary sources of force in the human body

a) Gravity
b) Joint distraction
c) Pressure on body tissue
d) Muscles
e) a, and b
f) a, and d
g) b, and d

18. The width of the body part, which is in contact with the ground or surface a person is standing on is called;

a) Base of support
b) Centre of gravity
c) Base of gravity
d) Equilibrium

19. The most common lever type found in the human body is the:

a) First class lever
b) Second class lever
c) Third class lever
d) Fourth class lever

20. Which of the following is <u>NOT</u> true about pressure sores?

a) Pressure sores can last for months
b) Pressure sores can result in movement problems
c) Pressure sores cannot be prevented
d) Pressure sores may result in death

21. Which of the following is an example of a facilitation technique?

a. Light joint weight bearing
b. Slow rolling of body
c. Deep pressure over a tendon insertion
d. Fast stroking/brushing of a muscle

22. The picture below is an example of _____.

a) Passive range of movement exercises
b) Active range of movement exercises
c) Resisted range of movement exercises
d) Active assisted range of movement exercise

23. Involuntary movement is_____

(a) A random body movement
(b) A controlled body movement
(c) A body movement produced automatically
(d) A planned body movement

24. Primitive reflexes are

(a) Automatic movements a child is born with to specific stimulation
(b) Stretch reflexes to certain stimulation
(c) Deep tendon reflexes on noxious stimuli
(d) Reflexes produced by painful stimuli

25. Biceps reflex is from the nerve root

(a) C6-C7
(b) L3-L4
(c) C5-C6
(d) C8-T1
(a)

26. Two examples of fine motor skills are;

(b) Writing and buttoning a shirt
(c) Throwing and catching a ball
(d) Folding and washing clothes
(e) Walking and running.

27. The eye-hand coordination is

(a) The ability to control hand movements only
(b) The ability to do actions with the hand guided by the eyes
(c) The ability to do actions with right and left hand together
(d) The ability to do actions with the hands and feet, guided by the eyes

28. A precision grip is when

(a) An object is hooked by the fingers
(b) An object is gripped firmly with the palm
(c) An object is gripped with both hands
(d) An object is gripped between the pads of the digits

29. Cadence is

(a) The frequency of steps with a set time
(b) The width of the step
(c) The length of a stride
(d) The length of a step

30. Normal gait cycle includes;

(a) stance and mid swing phases
(b) stance and mid stance phases
(c) stance and swing phases
(d) stance and loading response phases

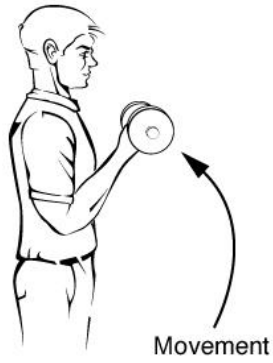
PART B: SHORT ANSWER QUESTIONS (60 MARKS)

All questions are compulsory.

1. Muscles can have different types of contractions: **isometric, eccentric** and **concentric**. What are the types of muscle contractions happening in the pictures (A, B, C) below when the elbow is moved with a weight and what is the name of the muscle working?

(3 marks)

A



Type of muscle contraction: _____

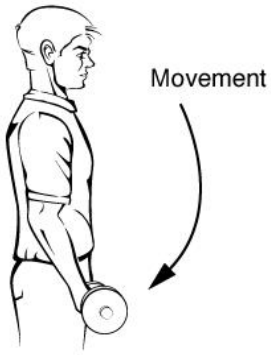
Muscle working: _____

B

Type of muscle contraction: _____

Muscle working: _____

C



Type of muscle contraction: _____

Muscle working: _____

2. Mr Lee has a knee contracture – he cannot extend to neutral (0˚) but is 30˚ off full knee extension. This happened after he had a cast on his leg for 6 weeks after a broken bone and the cast was not made in a good position.

a. On the Picture below, draw the Goniometer placement to measure the knee angle. Label the stationary arm and the moving arm of the goniometer. **(1 mark)**

b. Describe what exercises you would tell Mr Lee to do, how many repetitions, how many times a day, how many times a week. **(3 Marks)**

3. Caleb has had a stroke and has regained movement functions in both upper and lower limbs. However he has difficulties with his attention, visual-spatial (he ignores things on his right visual field) and often forgets the order or sequence to do activities. His family says that if they leave him alone, Caleb will often put clothes on his left side only or forgets to put all clothes on. Dressing can take a long time if he gets distracted.

a) List three strategies that you can utilize in your therapy session that will assist with Caleb's poor attention. **(3 Marks)**

b) List two strategies you can use in therapy to assist with Caleb's Visual Spatial difficulties. **(2 Marks)**

c) You need to teach Caleb how to dress himself (wearing a button up shirt). Complete an activity analysis. **(6 Marks)**

4. Define the following terms and give one example of each term. **(2 Marks)**

- Habits

- Routine

5. Jakes Tulip is a 40 year old man who has had a heart attack and his doctor is concerned that this was due to stress. He has asked you to teach Jakes how to complete progressive muscle relaxation training. Discuss how you will grade this activity over 5 weeks. **(4 Marks)**

6. There are three kinds of automatic thoughts, Neutral, positive (constructive) and negative (self-defeating) thoughts. Negative (self-defeating) thoughts can cause us emotional distress.

Discuss three things we need to do to change negative automatic thoughts. **(3 Marks)**

7. List the 3 fundamental laws of motion. **(3 Marks)**

8. Explain where the body's centre of gravity is located in the anatomical position. **(3 Marks)**

9. Comparing a hemiplegic client versus a non-hemiplegic person standing up, what may be noted about each individual's base of support (BOS)? **(4 Marks)**

10. What factors improve stability? **(4 Marks)**

11. In elbow flexion, which muscle works as an **agonist** and which muscle works as an **antagonist**?
(2 Marks)

_____

_____

_____

_____

_____

12. List any four (4) structures that allow the body to move. **(4 Marks)**

_____

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13. Linda had hemiplegia on the left side of her body. She has a MMT grade of 3 in her shoulder, elbow and wrist movements and a MMT grade of 2 in her digits. When you visit Linda she tells you that her muscles are getting stronger but she's not able to hold or grasp things on her left hand. Linda says she also has problems wearing clothes with buttons so she does not wear any of these clothes. She also finds it difficult to do her basket weaving.

a. What type of testing could you do to quickly make sure that Linda has regained her muscle power?
(1 Mark)

_____

_____

b. List 2 fine motor and 2 gross motor assessments you could do to screen Linda's fine motor and gross motor coordination. How will you perform them to find out if Linda will improve her abilities next time you test them. **(4 Marks)**

_____

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c. Your assessment shows that Linda has poor fine motor control in her left hand. Describe two exercises/activities to help Linda improve her **fine motor skills** of her left hand. **(2 Marks)**

_____

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_____

_____

_____

_____

d. Describe **one gross motor** exercises / activities to help Linda improve:

I. her LOWER LIMB gross motor control. **(1 Mark)**

_____

_____

_____

II. her UPPPER LIMB gross motor control. **(1 Mark)**

_____

_____

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_____

e. Design a strengthening exercise for Linda with the aim of improving the strength of her left upper limb. **(4 Marks)**

_____

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PART C: LONG ANSWER QUESTIONS (10 MARKS)

Answer <u>ONLY ONE</u> (1) of the two case studies given.

<u>Case Study 1</u>

Fat Freddy is a 50 year old man who sprained his ankle when he fell over at work. He has used crutches to help himself walk without using his left leg for the last 6 weeks. You have received a referral from the local hospital to help Fat Freddy regain his muscle strength and endurance.

i. Explain muscle endurance, its definition, how it can be assessed and the reasons for assessing it. **(4 Marks)**

ii. Describe at least four (4) body function impairments Fat Freddy might have. **(2 Marks)**

iii. Based on the body function impairments you stated in part ii, design an exercise program or activity for Fat Freddy, with the aim of improving his muscle endurance. Remember to mention the frequency, repetitions, sets and intensity of the exercise programme. His 1RM = 10kg. Also state how you will ensure that the exercise intensity increases as his endurance improves.

(4 Marks)

Case Study 2

Susan is a 45 year old lady who has had a stroke that affected her left side. She has poor balance and walks with very short steps. She becomes tired quickly. Her left lower limb has weak dorsiflexors, quadriceps and gluteus maximus muscles.

i. Discuss **balance** in relation to its definition, assessment and difficulties Susan will face in her activities of daily living (ADLs). Also detail a progressive rehabilitation program for Susan in order to improve her balance. **(5 Marks)**

ii. You decided to assess her **gait**, however, you knew that she will fall if you do not support her. **Describe** any three (3) strategies you will use to ensure that Susan does not fall during gait analysis and training.

Explain any four (4) areas you should observe during gait analysis and explain what to look for in each area. **(5 Marks)**

THE END