READING TEST 5

PART A

TIME: 15 minutes

- Look at the four texts, A-D, in the separate Text Booklet.
- For each question, 1-20, look through the texts, A-D, to find the relevant information.
- Write your answers on the spaces provided in this Question Paper.
- Answer all the questions within the 15-minute time limit.
- Your answers should be correctly spelt.

Text A

Branched-Chain Amino Acid Supplements

The concept that the BCAAs may have a unique capacity to stimulate muscle protein synthesis has been put forward for more than 35 years. In 1981, Buse reported that in rats the BCAAs may be rate limiting for muscle protein synthesis. Additional studies supported the concept of a unique effect of BCAAs on muscle protein synthesis in rats, although few have studied the response to oral consumption of only BCAAs. Garlick and Grant showed that infusion of a mixture of BCAAs into rats increased the rate of muscle protein synthesis in response to insulin, but they did not measure the effects of BCAAs alone. The infusion of BCAAs alone into rats by Kobayashi et al. was shown to induce an increase in muscle protein synthesis, but the response was only transient. Presumably the rate of synthesis quickly became constrained by the availability of the other EAAs.

Text B

Muscle protein is in a constant state of turnover, meaning that new protein is continuously being produced while older proteins are being degraded. The anabolic state has no specific definition, but generally refers to the circumstance in which the rate of muscle protein synthesis exceeds the rate of muscle protein breakdown. The results in a gain of muscle mass. Conventionally the anabolic state is considered to be driven by a stimulation of muscle protein synthesis, but theoretically could also result from an inhibition of muscle protein breakdown. The overriding metabolic goal of consuming BCAA supplements is to maximize the anabolic state. It is widely asserted that BCAAs induce an anabolic state by stimulating muscle protein synthesis. An abundant availability of all EAAs is a requisite for a significant stimulation of muscle protein synthesis. Muscle protein synthesis will be limited by the lack of availability of any of the EAAs, whereas a shortage of NEAAs can be compensated for by increased de novo production of the deficient NEAAs. In the post-prandial state following a meal containing protein, all of the EAA precursors required for new muscle protein synthesis can be derived from either the elevated plasma concentrations resulting from digestion of the consumed protein or from recycling from protein breakdown. In this circumstance of abundant availability of EAAs the rate of muscle protein synthesis exceeds the rate of breakdown, thereby producing an anabolic state.

Text C

Since EAAs cannot be produced in the body and there is a net release of EAAs from muscle, in the post-absorptive state the only source of EAA precursors for muscle protein synthesis is intracellular EAAs derived from muscle protein breakdown. In addition to being reincorporated into muscle protein via synthesis, some EAAs released from muscle protein breakdown may be partially oxidized within muscle, thereby making them unavailable for reincorporation into muscle protein. EAAs released from muscle protein breakdown that are not reincorporated into muscle protein or oxidized within muscle tissue are released into plasma, whereupon they can either be taken up by other tissues as precursors for protein synthesis or irreversibly oxidized. Thus, the rate of muscle protein synthesis will

always be lower than the rate of muscle protein breakdown in the postabsorptive state, owing to the net flux of EAAs from protein breakdown into plasma and to oxidative pathways. Expressed differently, it is impossible for muscle protein synthesis to exceed the rate of muscle protein breakdown when the precursors are derived entirely from protein breakdown, and thus an anabolic state cannot occur in the absence of exogenous amino acid intake.

Text D

All EAA precursors for muscle protein synthesis in the post-absorptive state are derived from muscle protein breakdown. It has been consistently reported that in normal post-absorptive humans the rate of muscle protein breakdown exceeds the rate of muscle protein synthesis by approximately 30%. Consumption of BCAAs alone (i.e., without the other EAAs) can only increase muscle protein synthesis in the post-absorptive state by increasing the efficiency of recycling of EAAs from protein breakdown back into protein synthesis, as opposed to either being released in to plasma or oxidized. This is because all 9 EAAs (as well as 11 NEAAs) are required to produce muscle protein, and EAAs cannot be produced in the body. If only 3 EAAs are consumed, as is the case with consumption of BCAAs, then protein breakdown is the only source of the remaining EAAs required as precursors for muscle protein synthesis. It is therefore theoretically impossible for consumption of only BCAAs to create an anabolic state in which muscle protein synthesis exceeds muscle protein breakdown. If the generous assumption is made that BCAA consumption improves the efficiency of recycling of EAAs from muscle protein breakdown to muscle protein synthesis by 50%, then this would translate to a 15% increase in the rate of muscle protein synthesis (30% recycled in basal state X 50% improvement in recycling = 15% increase in synthesis). Further, a 50% reduction in the release of EAAs into plasma from muscle would also reduce the plasma and intracellular pools of free EAAs.

Questions 1-7

For each question, 1-7, decide which text (A, B, C or D), the information comes from. You may use any letter more than once.

In which text can you find information about;

1 .EAAs obtained from muscle protein will undergo oxidation.

Answer_____

2 .Are BCAAs anabolic in the postabsorptive state?

Answer_____

3 .Muscle protein turnover and dietary protein

intake. Answer_____

4 .The rate of muscle protein synthesis will always be lesser than rate of muscle protein breakdown.

Answer_____

5 .Addition of BCAAs can enhance protein

synthesis. Answer _____

6 .Synthesis of protein could have been curbed by presence of

EAA. Answer _____

7 .When EAAs are in large quantity protein synthesis

enhances. Answer _____

Questions 8-14

Answer each of the questions, 8-14, with a word or short phrase from one of the texts. Each answer may include words, numbers or both.

8 .What happens with the consumption of BCAA supplements? Answer _____

9 .What will drive anabolic state more theoretically? Answer_____

10 .What are the limitations of Kobayashi? Answer _____

11 .What can lead to 15% increase in the rate of muscle protein synthesis? Answer_____

12 Muscle protein synthesis often get limited by the lack of availability of? Answer_____

13 What gets stimulated with induction of BCAAs?

Answer _____

14 What is requisite for the production of muscle protein?

Answer _____

Questions 15-20

Complete each of the sentences, 15-20, with a word or short phrase from one of the texts. Each answer may include words, numbers or both.

15. _____ were failed to measure the effects of BCAAs alone.

16 .EAA which is needed for muscle protein synthesis can be obtained from increased _____

17. EAAs derived from_____ which are not added to the muscle protein will be released into plasma.

18. Body doesn`t have the capability to produce _____

19. When there is curtailment of the amount of EAAs into plasma by 50% and more, there will be reduction

In _____

20. When rate of muscle protein synthesis increases or goes above the levels of muscle protein

Breakdown, _____ may get enhanced.

PART B

In this part of the test, there are six short extracts relating to the work of health professionals. For questions 1-6, choose the answer (A, B or C) which you think fits best according to the text.

Questions 1-6

1 .What is correct about the heartbeat sensor?

A This signal in form of DC signal is related to the total amount of blood

B The signal in form of AC will conjoin with the DC signal

C The detector output is in form of electrical signal and is proportional to the heartbeat rate.

Heartbeat Sensor

The basic heartbeat sensor consists of a light emitting diode and a detector like a light detecting resistor or a photodiode. The heartbeat pulses cause a variation in the flow of blood to different regions of the body. When a tissue is illuminated by the light source, i.e., light emitted by the led, it either reflects (a finger tissue) or transmits the light (earlobe). Some of the light is absorbed by the blood and the transmitted or the reflected light is received by the light detector. The amount of light absorbed depends on the blood volume in that tissue. The result as shown by detector based on the electrical signal will be as per the changes in the heartbeat rate.

This signal is actually a DC signal relating to the tissues and the blood volume and the AC component synchronous with the heartbeat and caused by pulsatile changes in arterial blood volume is superimposed on the DC signal. Thus the major requirement is to isolate that AC component as it is of prime importance.

2 .The notice talks about;

- A How BIS technology works?
- B BIS and Sedatives used.
- C Relation between Sedatives and BIS calculations.

BIS Technology

Raw EEG data are obtained through a sensor placed on the patient's forehead.

The BI system processes the EEG information, and calculates a number between 0 and 100 that provides a direct measure of the patient's level of consciousness and response to sedation

A BIS value of 100 indicates the patient is fully awake.

A BIS value of 0 indicates the absence of brain activity.

Using BIS technology to Guide ICU Sedation Care.

Sedatives may be titrated to a variety of BIS values, depending on the goals for each patient. Publications demonstrate that BIS values may be used as a measure of hypnotic drug effect in the ICU. The movement may occur regardless of BIS values. Natural sleep cycles may affect the hypnotic level.

3 .The word analogue may mean;

- A Similar in functioning.
- B Similar in structure.
- C Something that is similar to or can be used instead of something else.

Amino Acid Analogues

In recent years, it has been possible to introduce amino acid analogues into proteins by supplying the analogue under circumstances in which the amino acid itself is not easily available. For example in Escherichia co fluorophenylalanine has been incorporated in place of phenylalanine and tyrosine and it has even proved possible to replace completely the sulphur-containing amino acid methionine by its selenium analogue. Of the enzymes produced by the cell in these various ways some were active and some were inactive, as might have been expected.

4 .The notice talks about;

- A Data transformation and display.
- B Data storage and display.
- C Data surveillance and display.

Data and heartbeat rate

The 24C256 serial EEPROM, which has eight kbytes capacity, is used to store up to eight ECG signals. At each variation within the number of heartbeats in a minute, three bytes representing the new number and time corresponding are stored in the EEPROM. The output unit consists of a set of LED to indicate some diseases such as bradycardia and tachycardia. It also contains a buzzer to prevent the patient from detected problem and time to transfer data by email.

5 .Patient affected with CKD;

- A will show reduced GFR.
- B Albumin excretion in large quantity.
- C Both.

Chronic Kidney Disease

CKD is a serious health condition and a worldwide public health problem. The incidence and prevalence of CKD are increasing in the United States and are associated with poor outcomes and a high cost to the US healthcare system.

CKD is usually defined as a curtailment of the Glomerular filtration rate (<60 mL·min−1·1 73 m−2), excess urinary albumin excretion (≥30 mg/d or mg/gCr), or to be more precise, it can be a combination of both. In 2002, the National Kidney Foundation Kidney Disease Outcome Quality Initiative defined stages of CKD according to the level of eGFR and whether there was other evidence of kidney damage (eg, presence of albuminuria) The KDIGO working group released a 2012 update recommending classification of CKD by cause, GFR, and albuminuria category. The CKD-EPI Collaboration has developed equations to more accurately estimate GFR from serum creatinine compared with the previously established MDRD Study equation.

6 .What is correct about ICU Sedation?

A Fear and anxiety are common.

B Necessitate neurological examination.

C More than 69% of patients in an ICU were found to be inappropriately sedated.

ICU Sedation

Complications of over-sedation	**Complications of under-sedation**
Increased time on mechanical ventilation. Increased length of stay in ICU and/or hospital. An additional cost of care. Need for additional diagnostic testing. Increased risk of delirium. Decreased wound healing and GI motility. Impaired reliability of neurological examinations	Fear, anxiety and agitation. Unpleasant recall. Medical device removal. An additional costs. Increased nursing time

PART C

In this part of the test, there are two texts about different aspects of healthcare. For questions 7-22, choose the answer (A, B, C or D) which you think fits best according to the text.

Text 1: Auricular hematoma

An auricular hematoma is an injury to the outer ear. This injury can occur when the outer ear is either hit directly or receives repetitive blows. Athletes involved in any contact sport can suffer a contusion to the ear which may result in a "cauliflower" ear (also called an auricular hematoma). It is a deformity of the outer ear most commonly seen in wrestling, rugby, boxing, football and judo. Cauliflower ear occurs after someone gets a blow or repeated blows to the ear, enough for a large blood clot (lump of blood) to develop under the skin or for the ear's skin to be stripped away from the cartilage (the flexible material that gives the ear its shape). The body normally absorbs excess fluid or blood at an injury site over time, but not always in the ear because of its special structure. The cartilage of the ear has no blood supply except that supplied by the ear's skin. When the cartilage receives little or no blood flow because of tearing of the skin, bruising or a blood clot, it eventually dies and is replaced by scar tissue. An acute cauliflower ear is often painful and causes swelling. If left untreated, it results in deformation of the ear which may last a lifetime.

Unfortunately, most athletes do not seek care until the bleeding and swelling have stabilized and resulted in deformity. By not seeking medical care immediately, they increase their risk of infection, recurrence, scarring and deformity. After a cauliflower ear has formed and hardened, it will not recover its normal shape without surgery. But if it is caught and treated early enough, a person usually will not get a lifelong deformity. In high school and college wrestling, the rules require

the use of protective headgear, but problems still occur. Not wearing headgear or wearing poorly fitting headgear is a big factor in causing cauliflower ear.

At first, the swelling will be soft and there will be mushy fluid. It is at this early stage that immediate treatment can help decrease or avoid permanent scarring. If the fluid is allowed to solidify, it will cause significant permanent disfiguration. The use of ice on the affected area is suggestive of great pain management. A head wrap should also be applied and elastic gauze with packing material in front and behind the ear, applying moderate pressure, can be used. This wrapping should not cause a headache, block vision, or cover the other ear. After that, the next step is one of the following: drainage (aspiration) and compression; drainage and splinting with various materials; or incision and drainage with clot removal. Sometimes stitches are needed if there is a tear in the skin. Your doctor may prescribe antibiotics to prevent an infection.

A doctor can drain the blood from the ear either with a syringe or through a cut and then help the skin reconnect to the cartilage by applying the pressure with a tight bandage. Splinting is a medical procedure that keeps pressure on the area of hematoma formation. Sometimes sutures through the ear keep the special gauze in place, or sometimes special materials (pediplast or silicone) are molded to the ear. After a splint is in place, the ear should be rechecked by your doctor after seven days. Sutures typically stay in for 14 days, but may be removed if redness or tenderness occurs. The risk of recurrence decreases the longer the splint stays in place. Wrestlers may be able to return to wrestling 24 hours after splint application. This is a surgical procedure for more serious cauliflower ears, and should only be done by an Ear, Nose and Throat surgeon (also called an ENT or otolaryngologist) or a plastic surgeon.

Wearing sturdy headgear when you are participating in a contact sport or other sports, such as baseball, hockey or biking, in which you might experience head trauma, is always requisite. Athletes should take the time to make certain that their headgear is not too tight or too loose. The Nano Hospital Sports Medicine doctors in the US emphasize that athletes can easily prevent cauliflower ear by using

effective head protection and seeking medical help at the first sign of an ear problem.

Text 1: Questions 7-14

7 According to paragraph 1, what is true about cauliflower ear?

- A Cauliflower ear results from repetitive blows to the ear
- B Cauliflower ear occurs due to clotting of the blood on the bruised area
- C Cauliflower ear occurs because the ear skin is stripped and is not able to supply oxygen to the cartilage and surrounding area that is badly hit
- D Cauliflower ear may often lead to distortion of the shape of the ear.

8 In paragraph 1, what does the word â€œcontusionâ€• imply?

- A Being hit by the opponent
- B A bruise
- C A serious injury
- D A very painful blow

9 According to paragraph 2, which one of the following statements is not true?

- A Once infection grows, it can bring changes in the shape of the ear.
- B Athletes often do not pay attention to injuries to their ear which may later develop into cauliflower ear.
- C The occurrence of this cauliflower ear among athletes is very common.
- D It is suggested that sports should be played using all necessary safety equipment.

10 What is â€œheadgearâ€• in passage 2?

- A Covering of the head
- B Soft helmet
- C Boxing helmet
- D A metal hat used for protection in games like rugby

11 According to paragraph 3, what is the first step towards injury treatment and management?

- A Ice should be applied on the bruised ear
- B Ice and a head wrap should be applied
- C Drainage and compression
- D Splinting

12 According to paragraph 4, in the drainage and compression method, the doctor would;

- A Remove blood from the ear.
- B Try to connect the skin with the cartilage.
- C Apply pressure on the affected area.
- D Stitch the ruptured parts.

13 Paragraph 4 talks about;

- A Three types of treatment procedures for cauliflower ear.
- B Three immediate actions are taken to prevent cauliflower ear.
- C How easy it is to treat cauliflower ear.
- D None of the above.

14 What does paragraph 5 indicate?

- A Preventive measures for cauliflower ear.
- B What experts suggest athletes should do.
- C The importance of wearing headgear for sports.
- D Advice from experts at Nano Hospital Sports Medicine in the US.

Text 2: Rosacea

Rosacea is a chronic facial skin condition characterized by marked involvement of the central face with interim or persistent erythema, inflammatory papules or pustules, telangiectasia, or hyperplasia of the connective tissue. Erythema, or flushing, usually lasts less than five minutes and may spread to the neck and chest, often accompanied by a feeling of warmth. Less common findings include erythematous plaques, scaling, edema, phymatous changes (thickening of skin due to hyperplasia of sebaceous glands), and ocular symptoms. Rosacea can be associated with low self-esteem, embarrassment, and diminished quality of life. In a national survey, 65% of patients with rosacea reported symptoms of depression. The exact prevalence of rosacea in the United States is unknown; however, it is probably between 1.3% and 2.1%, and may be as high as 5%. Women are affected more often than men, but men are more likely to have phymatous changes, especially rhinophyma.

The National Rosacea Society Expert Committee defined four subtypes and one variant. Granulomatous rosacea is the sole variant with firm, indurated papules or nodules. Many dermatologists consider rosacea fulminans and perioral dermatitis as rosacea variants. Patients may experience fluctuation in symptoms and overlap of symptoms between subtypes. The etiology of rosacea is unknown but is likely multifactorial. Factors involved in the pathophysiology include the dense presence of sebaceous glands on the face, the physiology of the nerve innervation, and the vascular composition of the skin. Numerous triggers initiate or aggravate the clinical manifestations of rosacea, including ultraviolet light, heat, spicy foods, and alcohol. A predilection for fair-skinned individuals of Celtic or northern European descent suggests a genetic component to rosacea; however, no specific gene has been identified. Patients with the genetic predisposition have a receptor that mediates neo-vascular regulation. When exposed to triggers, neuropeptide release (flushing, edema) occurs, resulting in the recruitment of proinflammatory cells to the skin.

Frequent redness (flushing) of the face is common. Most redness is at the center of the face (forehead, nose, cheeks, and chin). There may also be a burning feeling

and slight swelling. Small red lines under the skin show up when blood vessels under the skin get larger. This area of the skin may be somewhat swollen, warm, and red. There can be constant redness along with bumps on the skin. Sometimes the bumps have pus inside (pimples), but not always. Solid bumps on the skin may later become painful. In some people (mostly men), the nose becomes red, larger, and bumpy. The skin on the forehead, chin, cheeks, or other areas can become heavier with the usual compactness because of rosacea.

The genesis of rosacea is more confusing. As there are various symptoms and conditions associated with it, it is difficult to track how it comes into being. Doctors surmise rosacea happens when blood vessels expand too easily, causing flushing. People who blush a lot may be more likely to get rosacea. It is also thought that people inherit the likelihood of getting the disease. Though not well-researched, some people say that one or more of these factors make their rosacea worse: heat (including hot baths); vigorous exercise; sunlight; winds; very cold temperatures; hot or spicy foods and drinks; drinking alcohol; menopause; emotional stress; and long-term use of steroids on the face. People with rosacea and pimples may think the pimples are caused by bacteria; but no one has found a clear link between rosacea and bacteria. Unfortunately, there is no cure for rosacea, but it can be treated and controlled. In time, the skin may look better. A dermatologist (a doctor who works with diseases of the skin) often treats rosacea.

Text 2: Questions 15-22

15 In paragraph 1, the word â€œinterimâ€• may mean;

- A Severe
- B Transient
- C May last for a longer time
- D Often permanent

16 According to paragraph 1, what is not true about rosacea?

- A Rosacea is a condition in which the redness of skin may last only for a short period of time.
- B Rosacea is a condition where the patient can feel the warmth around the affected skin.
- C Rosacea is common among women living in the US.
- D Scaling is a feature that is often connected with rosacea.

17 The phrase â€œthe clinical manifestations of rosaceaâ€• in paragraph 2 may suggest;

- A Subtypes of rosacea.
- B How rosacea changes itself into various other forms.
- C Features of rosacea.
- D The potentiality of rosacea to appear in multiple ways.

18 According to paragraph 2, what is true about rosacea?

- A The symptoms of rosacea vary depending on the subtypes.
- B Each and every type of rosacea shows a specific set of features.
- C It is possible that one type of rosacea may show features of other advanced types of rosacea.
- D None of the above

19 What is the central idea presented in paragraph 3?

- A How the skin reacts to rosacea
- B What does rosacea look like?

- C Symptoms of rosacea
- D A & B

20 .According to paragraph 3, in rosacea;

- A Skin becomes redder
- B Skin becomes thicker
- C Skin becomes bumpy
- D All of the above

21 The word â€œgenesisâ€• in paragraph 4 may mean;

- A The beginning
- B The truth
- C The reason
- D Basis

22 Pick the correct statement as per information is given in paragraph 4;

- A Rosacea is a bacterial disease.
- B Doctors do not know how it occurs.
- C Drinking alcohol leads to rosacea.
- D Exposure to heat causes rosacea.