

Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Science
BMS 3253 Human Nutrition
3rd Year 2nd Semester
Mid Assignment Examination

Date : 17th July 2026
Time : 11.30 a.m. –12.30 p.m. (One hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions in **ONE** page.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 1 (100 marks)

- 1.1 Critically analyze how the interaction between internal (constitutional) and external (environmental) factors determines an individual's nutritional status. (50 marks)
- 1.2 Discuss the importance of "Diet Therapy". (50 marks)

Question 2 (100 marks)

- 2.1 Critically discuss the role of antioxidant vitamins in protecting human cells against oxidative stress and age-related changes. (50 marks)
- 2.2 Critically evaluate the suitability of food frequency questionnaires for assessing dietary intake in large population-based nutritional surveys. (50 marks)



Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Science
BMS 3253 Human Nutrition
3rd Year 2nd Semester
End Semester SEQ Examination
7th Batch

Date	: 17 th July 2026
Time	: 9.00 a.m. – 11.00 a.m. (Two hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **Four** questions in **TWO** pages.
- Answer **ALL** questions.
- You are allowed to bring scientific calculator.
- You should write legibly in black or blue ink.

Question 1 **(100 marks)**

- 1.1 Define following terms.
- 1.1.1 Food (15 marks)
 - 1.1.2 Nutrient (15 marks)
- 1.2 Compare and contrast macronutrients and micronutrients. (20 marks)
- 1.3 Explain the consequences of poor nutritional status on following factors.
- 1.3.1 Effects on growth and physical development (25 marks)
 - 1.3.2 Effects on cognitive function and academic performance (25 marks)

Question 2 **(100 marks)**

- 2.1 Analyze the nitrogen balance of human body. (30 marks)
- 2.2 List **four (04)** purposes of nutritional assessment. (20 marks)
- 2.3 Write short notes on followings.
- 2.3.1 Twenty-four hours (24 hours) dietary recall (25 marks)
 - 2.3.2 Anthropometric measurements (25 marks)

Question 3 **(100 marks)**

- 3.1 Describe how age, gender, and body composition affect Basal Metabolic Rate (BMR). (20 marks)
- 3.2 Justify the increased nutrient requirements during the period of pregnancy and lactation. (30 marks)
- 3.3 Describe **four (04)** key roles and responsibilities that are common to both nutritionists and dietitians. (20 marks)
- 3.4 Compare and contrast the education, professional qualifications, and scope of practice of dietitians and nutritionists. (30 marks)

Question 4**(100 marks)**

- 4.1 Identify the minerals that should be reduced or restricted for patients with chronic kidney disease. (20 marks)
- 4.2 Formulate **five (05)** dietary advice for a patient with hypertension. (30 marks)
- 4.3 State the main goals of nutritional therapy in patients with liver disease. (30 marks)
- 4.4 Justify the importance of glycaemic index during meal planning for patients with diabetes mellitus. (20 marks)



Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Science
BMS 3253 Human Nutrition
3rd Year 2nd Semester
Mid-Semester SEQ Examination
7th Batch

Date : 8th May 2026
Time : 9.00 a.m. – 10.00 a.m. (One hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **Two** questions.
- Answer **ALL** questions.
- You are allowed to bring scientific calculator.
- You should write legibly in black or blue ink.

Question 1

(100 marks)

Perera is a labour who is living in a rural area and he has bone fracture in his right femur due to an accident since last week. Doctor asked him to bed rest. Hence he sleeps for 12 hours per day and rest of the day he stays on chair with helping his wife who is making some handcrafts. Following shows a detail of him. Answer all the questions using the given equation. Give all answers to two decimal places.

Details:

Patient Name : Mr. Kamal Perera
 Age of the patient : 60 years old
 Height : 5 feet and 2 inches
 Weight : 60 kg

Male Basal Energy Expenditure (BEE) cal/day = $66.47 + 13.7 (\text{weight in kg}) + 5 (\text{height in cm}) - 6.76 (\text{age in years})$

Female BEE cal/day = $655.09 + 9.56 (\text{weight in kg}) + 1.85 (\text{height in cm}) - 4.68 (\text{age in years})$

1 foot = 30 cm
 1 inch = 2.54 cm

Activity Factor	Activity Level	Activity Level Definition
1.2	Sedentary	Little or no exercise
1.375	Lightly active	Light exercise or sports 1-3 days per week

1.55	Moderately active	Moderate exercise or sports 3-5 days a week
1.725	Very active	Hard exercise or sports 6-7 days a week
1.9	Extremely active	Hard daily exercise or sports and physical job

- 1.1 Define the term “Body Mass Index’ (BMI). (15 marks)
- 1.2 Find the body mass index (BMI) of the Mr. Sunil (20 marks)
- 1.3 Name the nutrition state of him depending on BMI value. (10 marks)
- 1.4 Define the term “Basal Energy Expenditure”. (15 marks)
- 1.5 Calculate the basal energy expenditure (BEE) by using a Harris Benedict Equation. (20 marks)
- 1.6 Calculate the total energy expenditure by considering activity factors. (20 marks)

Question 2 (100 marks)

- 2.1 List **five (05)** factors that increase Basal Metabolic Rate (BMR). (10 marks)
- 2.2 Compare the nutritional requirements of infants and older adults. (20 marks)
- 2.3 Discuss the importance of nutrient supplementation during pregnancy and explain the commonly recommended supplements. (30 marks)
- 2.4 Prepare **five (05)** dietary advice points for a patient with Diabetes Mellitus and justify why each advice is important. (40 marks)



Faculty of Health Sciences
BSc (Hons) in Biomedical Sciences
BMS 3233 – Transfusion Science
Batch 07
3rd Year 2nd Semester
Mid Semester Examination- SEQ

Date : 07.05.2026
Time : 9.00- 10.00 am (One Hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions.
- Answer **ALL** questions.
- Final answer should be written legibly in black or blue ink.

QUESTION 01

(100 marks)

- 1.1 Name the **four (04)** different blood groups in ABO classification. (10 marks)
- 1.2 Name the inheritance pattern of ABO blood group system. (20 marks)
- 1.3 Explain the biochemical nature of H substance on red blood cells. (30 marks)
- 1.4 Discuss the clinical significance of the ABO blood group system in blood transfusion practice. (40 marks)

QUESTION 02

(100 marks)

- 2.1 List **four (04)** different types of blood donors. (10 marks)
- 2.2 Outline the characteristics of blood donation centers. (30 marks)
- 2.3 State the purpose of donor screening prior blood transfusion. (30 marks)
- 2.4 Define the term temporary deferrals in transfusion medicine, giving examples. (30 marks)



Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Science
BMS 3253 Human Nutrition
3rd Year 2nd Semester
End Semester SEQ Examination
6th Batch

Date : 17th November 2025
Time : 9.00 a.m. – 11.00 a.m. (Two hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **Four** questions.
- Answer **ALL** questions.
- You are allowed to bring scientific calculator.
- You should write legibly in black or blue ink.

Question 1 (100 marks)

- 1.1 Relate **three (03)** biological factors that affect the basal metabolic rate (BMR). (25 marks)
- 1.2 Outline the importance of glycemic index. (25 marks)
- 1.3 Outline **four (04)** main goals to consider when planning a diet for a renal failure patient. (20 marks)
- 1.4 Evaluating the fat composition that needs to be considered in the diet of diabetic patients. (30 marks)

Question 2 (100 marks)

- 2.1 List **two (02)** types of texture-modified diets suitable for dysphagia patients. (10 marks)
- 2.2 Applying **three (03)** responsibilities of a nutritionist. (15 marks)
- 2.3 Compare **two (02)** differences between a dietitian and a nutritionist. (20 marks)
- 2.4 Outline the Recommended Dietary Allowances (RDA) for the three macronutrients (carbohydrates, proteins, fats) of a healthy diet. (15 marks)
- 2.5 Evaluate the nutritional requirements of pregnant mothers. (40 marks)

Question 3 (100 marks)

Following shows a detail of a man living in an urban area. Answer all the questions using the given equation. Give all answers to two decimal places.

Details:

Patient Name : Mr. Rama Selvaraj
Age of the patient : 48 years old
Height : 5 feet and 6 inches
Weight : 72 kg

Daily activity:

Sleeping : 8 hours

Light home activities : 8 hours

Moderate home activities: 6 hours

Active exercises at Gym : 2 hours

Male Basal Energy Expenditure (BEE) cal/day = $66.47 + 13.7 (\text{weight in kg}) + 5 (\text{height in cm}) - 6.76 (\text{age in years})$

Female BEE cal/day = $655.09 + 9.56 (\text{weight in kg}) + 1.85 (\text{height in cm}) - 4.68 (\text{age in years})$

1 foot = 30 cm

1 inch = 2.54 cm

Activity Factor	Activity Level	Activity Level Definition
1.2	Sedentary	Little or no exercise
1.375	Lightly active	Light exercise or sports 1-3 days per week
1.55	Moderately active	Moderate exercise or sports 3-5 days a week
1.725	Very active	Hard exercise or sports 6-7 days a week
1.9	Extremely active	Hard daily exercise or sports and physical job

- 3.1 Define the term "Body Mass Index" (BMI). (15 marks)
- 3.2 Find the body mass index (BMI) of the Mr. Rama (20 marks)
- 3.3 Name the nutrition state of Mr. Rama. (10 marks)
- 3.4 Define the term "Basal Energy Expenditure". (15 marks)
- 3.5 Calculate the basal energy expenditure (BEE) by using a Harris Benedict Equation. (20 marks)
- 3.6 Calculate the total energy expenditure by considering activity factors. (20 marks)

Question 4**(100 marks)**

- 4.1 Compare and contrast followings
- 4.1.1 Stunting & Wasting (25 marks)
- 4.1.2 Kwashiorkor & Marasmus (25 marks)
- 4.1.3 Complete proteins & Complementary proteins (25 marks)
- 4.2 Review **five (05)** importance of Dietary fibres. (25 marks)

Faculty of Health Sciences
BSc (Hons) in Biomedical Sciences
BMS 3233 – Transfusion Science

Batch – 06

3rd Year 2nd Semester End Examination - SEQ

Date : 10.11.2025
Time : 9.00- 11.00 am (Two Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **FOUR** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

QUESTION 01

(100 marks)

- 1.1 What are blood group antigens. (10 marks)
- 1.2 Differentiate ABO and Rh systems in terms of antigen structure and antibody type. (30 marks)
- 1.3 Compare **three (03)** different laboratory techniques used for blood grouping. (30 marks)
- 1.4 Outline the causes for discrepancies in ABO/D grouping. (30 marks)

QUESTION 02

(100 marks)

- 2.1 Following repeated platelet transfusions a multiparous woman fails to increase the platelet count. Identify the possible condition. (10 marks)
- 2.2 What is the cause for above condition? (15 marks)
- 2.3 What is Human Leukocyte Antigen (HLA) system? (15 marks)
- 2.4 Describe the role of HLA system in post transfusion reactions (give examples). (30 marks)
- 2.5 Discuss the precautions that can be taken on blood products to prevent above mentioned reactions. (30 marks)

QUESTION 03

(100 marks)

Antibody screening is performed as a part of pre-transfusion testing at the blood bank using reagent red cells

- 3.1 What are unexpected antibodies? (10 marks)
- 3.2 Mention the characteristics of reagent red cells used in antibody screening. (20 marks)
- 3.3 Explain the clinical importance of performing antibody screening as a part of pre-transfusion testing. (20 marks)
- 3.4 Describe the laboratory test principle used in detecting an unexpected antibody in patient serum during antibody screening (30 marks)
- 3.5 Compare and contrast between major and minor cross matching (20 marks)

QUESTION 04**(100 marks)**

- 4.1 Who are temporary deferrals? give examples. (10 marks)
- 4.2 List the different blood products that can be separated using quadruple blood collection system. (20 marks)
- 4.3 Outline the process of separating cryoprecipitate from a whole blood in a blood collection system. (20 marks)
- 4.4 Describe the clinical indications of cryoprecipitate. (20 marks)
- 4.5 Discuss the precautions of preventing transfusion transmitted infections (TTI). (30 marks)

$$\begin{array}{r} 26 \\ 24 \\ \hline 50 \end{array}$$

Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Sciences
BMS 3224 – Human Genetics

3rd year 2nd semester – Batch 06

End Semester SEQ Examination

Date : 6th November 2025
Time : 9.00 a.m. to 12.00 noon

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
 - Answer **ALL** questions.
 - You should write answers on lined paper legibly in black or blue ink.
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QUESTION 1

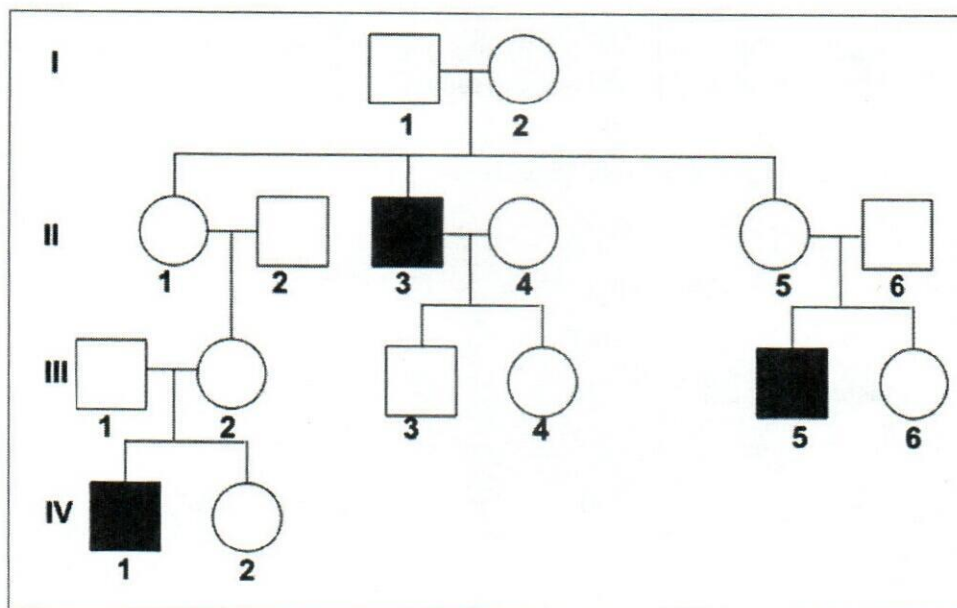
(100 marks)

- 1.1. Define the term “Allele” in the context of genetics. (20 marks)
- 1.2. List four (04) common model organisms used in genetic studies. (20 marks)
- 1.3. Explain the structural features of a human chromosome. (30 marks)
- 1.4. Differentiate the polytene chromosome with Lamp brush chromosome. (15 marks)
- 1.5. Justify the use of ideogram in disease identification. (15 marks)

QUESTION 2

(100 marks)

Answer the following questions referring to the pedigree chart given below.



- 2.1. Identify the inheritance pattern shown in the above pedigree diagram. (20 marks)
- 2.2. Mention the genotypes of the affected individuals in the II and III generations. (30 marks)

2.3. The mating occurred between individuals III4 and III5 in the above pedigree. Answer the following questions. 00056

2.3.1. Write the genotypes of the offspring. (25 marks)

2.3.2. What is the percentage of affected individuals? (25 marks)

QUESTION 3

(100 marks)

In humans, earlobe shape is influenced by multiple alleles:

LE = allele for free earlobes (dominant)

La = allele for attached earlobes (recessive)

Ld = allele for detached earlobes (co-dominant with LE, dominant over La)

3.1. Calculate the expected genotype and phenotype frequencies in the offspring from the following crosses.

3.1.1. $LE Ld \times La La$ (20 marks)

3.1.2. $LE La \times Ld La$ (20 marks)

3.1.3. $LE LE \times Ld La$ (20 marks)

3.2. Explain three (03) principles of Mendelian inheritance using a dihybrid cross. (20 marks)

3.3. Compare and contrast incomplete dominance and codominance. (20 marks)

QUESTION 4

(100 marks)

On a remote island, a population of tropical birds displays two feather colors controlled by a single gene with two alleles:

B = blue feathers (dominant)

b = green feathers (recessive)

A team of researchers records that 36% of the birds have green feathers. Assuming the population is in Hardy-Weinberg equilibrium, answer the following:

4.1. Calculate the frequency of the recessive allele (b). (20 marks)

4.2. Calculate the frequency of the dominant allele (B). (20 marks)

4.3. Determine the expected genotype frequencies for:

4.3.1. BB (homozygous dominant)

4.3.2. Bb (heterozygous)

4.3.3. bb (homozygous recessive) (30 marks)

4.4. If the total bird population is 1,000, estimate the number of birds for each genotype. (30 marks)

QUESTION 5

(100 marks)
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- 5.1. Relate the role of pharmacogenomic testing in selecting the right drug and dosage for individual patients. (10 marks)
- 5.2. Analyze how genetic variation in drug-metabolizing enzymes could influence the rate of drug metabolism and the patient's response to therapy. Use an example related to CYP3A4 enzyme activity. (30 marks)
- 5.3. Give two (02) examples of drugs that can reduce or inhibit the action of CYP3A4 enzyme in the liver. (30 marks)
- 5.4. Outline the significance of genetic counselling in the diagnosis, management, or prevention of genetic disorders. (30 marks)

QUESTION 6

(100 marks)

- 6.1. Mention the genetic mechanism associated with Oncogene activation. (10 marks)
- 6.2. Evaluate the functions of tumor suppressor genes and their role in cancer. (20 marks)
- 6.3. Compare and contrast the types of invasive and non-invasive screening methods. (30 marks)
- 6.4. Explain the genetic basis of Chronic Myeloid Leukemia. (20 marks)
- 6.5. Compare the non-invasive prenatal testing with invasive prenatal testing. (20 marks)



Faculty of Health Sciences
B. Sc. (Hons) in Biomedical Science
BMS 3253
Human Nutrition
3rd Year 2nd Semester
Mid-Semester SEQ Examination
6th Batch

Date : 21st August 2025
Time : 1.30 p.m. – 2.30 p.m. (One hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are allowed to use scientific calculators.

Question 1

(100 marks)

- 1.1 List four (04) main types of direct nutritional assessment method. (20 marks)
- 1.2 Compare stunting and wasting. (20 marks)
- 1.3 Name five (05) main types of dietary evaluation methods. (20 marks)
- 1.4 What are the factors influencing nutrient requirements? (20 marks)
- 1.5 Define Basal Metabolic Rate (BMR). (20 marks)

Question 2

(100 marks)

Following shows a detail of a woman living in an urban area. Answer all the questions using the given equation. Give all answers to two decimal places.

Details:

Patient Name : Mrs. Kamala Perera

Age of the patient : 65 years old

Height : 5 feet and 4 inches

Weight : 56 kg

Daily activity:

Sleeping : 10 hours

Light home activities : 6 hours

Moderate home activities: 6 hours

Active exercises at Gym : 2 hours

Male Basal Energy Expenditure (BEE) cal/day = $66.47 + 13.7 (\text{weight in kg}) + 5 (\text{height in cm}) - 6.76 (\text{age in years})$

Female BEE cal/day = $655.09 + 9.56 (\text{weight in kg}) + 1.85 (\text{height in cm}) - 4.68 (\text{age in years})$

1 foot= 30 cm
1 inch = 2.5 cm

Activity Factor	Activity Level	Activity Level Definition
1.2	Sedentary	Little or no exercise
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1.55	Moderately active	Moderate exercise or sports 3-5 days a week
1.725	Very active	Hard exercise or sports 6-7 days a week
1.9	Extremely active	Hard daily exercise or sports and physical job

- 2.1 Define the term "Body Mass Index" (BMI). (15 marks)
- 2.2 Find the body mass index (BMI) of the Mrs. Kamala (20 marks)
- 2.3 Name the nutrition state of her. (15 marks)
- 2.4 Calculate the basal energy expenditure (BEE) by using a Harris Benedict Equation. (25 marks)
- 2.5 Calculate the total energy expenditure by considering activity factors. (25 marks)