S–5064

Sub. Code
22BPEA1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Physical Education

Allied – YOGA AND FITNESS EDUCATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Yoga.

2. What is Astanga Yoga?

3. Define asanas.

4. Explain suryanamaskar.

5. What is Pranayama?

6. Define Kriya

7. Define Jala Neti

8. Define Physical Fitness.

9. List down the health related physical fitness variables.

10. Define Exercise.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write importance of yoga.

Or

(b) Explain about eight limbs of yoga.

12. (a) List down the steps of suryanamaskar in detail.

Or

(b) Explain the relaxation technique.

13. (a) Write importance of pranayama.

Or

(b) Explain about different types of the dhauthi.

14. (a) Explain basic physical fitness qualities.

Or

(b) Explain the types of warm up.

15. (a) Explain the types of strength.

Or

(b) Explain importance of physical fitness.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain about the history of yoga in detail.

17. Brief types of asanas with examples.

18. Explain about the importance of meditation.

19. Explain difference between yoga and exercises.

20. Enumerate future challenges and strategies for increasing physical fitness.

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S–5065

Sub. Code
22BPE2C1

B.SC. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Physical Education

ORGANIZATION, ADMINISTRATION AND METHODS IN PHYSICAL EDUCATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **ALL** questions

1. What are the aims of organisation?
2. Define sports meet.
3. What is Round Robin tournament?
4. How many sitting block Men Kabaddi court with Length and Breadth?
5. List out any two Audio Visual Aids.
6. Types of Gymnastics.
7. Write Track and Field events.
8. Types of command.
9. Formulas for Pythagoras theorem.
10. Find out total number of matches for 29 in Knock-Out tournaments using formula.

Part B $(5 \times 5 = 25)$

Answer **ALL** questions, choosing either (a) or (b).

11. (a) Explain procures of organisation

Or

(b) Explain the schemes of health and physical education in school

12. (a) Describe the standard facilities and need in physical education. Dr. J.P. Thomas as follows

Or

(b) Write a suggestion for planning and lay-out the play ground

13. (a) Explain presentation technique

Or

(b) Explain about adopted to teaching aids.

14. (a) Write need and importance of Yoga in current scenorio.

Or

(b) Layout Women Kadaddi court with all measurements.

15. (a) Types of Knock-Out tournaments and their Merits and Demerits.

Or

(b) Prepare a League fixture for 6 teams by using stair case method.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Briefly explain Guiding principles of Organisation and Administration.

17. List down the standard facilities in physical education. Explain the procedure of construction and maintenance of Gymnasium.

18. Explain methods of teaching physical activities in the field of physical education.

19. Describe the minor game and major game with suitable example.

20. Prepare 4 team special seeding fixtures for 32 teams' using in Knock-Out method.

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S–5066

Sub. Code
22BPEA2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Physical Education

Allied: FITNESS AND WELLNESS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the question.

1. Meaning of physical fitness
2. What is health and wellness?
3. Define aerobic and anaerobic?
4. What are the cardio respiratory activities?
5. Explain the aerobic fitness?
6. Define cardiovascular exercise?
7. Mention any two concept of wellness?
8. List down any two cardio vascular risk factors?
9. Short note on proper nutrition.
10. Short note on alcohol and drugs

Part B (5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) What the factors influencing fitness?

Or

(b) Explain the future challenges in physical fitness

12. (a) Write short note on types of exercise used in fitness

Or

(b) Briefly about flexibility and body composition

13. (a) Brief about prescription for aerobic exercise

Or

(b) Elaborate the types of aerobic fitness programme

14. (a) Explain the importance of health and wellness

Or

(b) Explain the cardio vascular risk factors

15. (a) Write short notes on cancer prevention

Or

(b) Explain the alcohol and drugs

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain components of health related physical fitness and athletic related physical fitness.

17. List down the health benefits of physical activity

18. Write an essay on treadmill running, stationary bicycling?

19. Explain the components on health fitness in lifelong wellness

20. Elaborate the physical fitness and wellness challenge

S–5067

Sub. Code
22BPE3C2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Physical Education

SCIENTIFIC PRINCIPLES OF SPORTS TRAINING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define sports training.
2. Mention any two importance of sports training.
3. Define training load.
4. List down the components of load.
5. Define speed.
6. What do you mean by flexibility?
7. What is planning?
8. Define periodization.
9. State the meaning of tactical training.
10. Write any two importance of strategy.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Briefly explain the system of sports training?

Or

(b) Write the importance of warming-up and cooling down exercise.

12. (a) Explain the concept of intensity and volume in sports training?

Or

(b) Write short notes on recovery process.

13. (a) Elaborate the mean and methods of speed development.

Or

(b) Briefly explain the types of flexibility.

14. (a) Write a note on training plan.

Or

(b) Narrate the types of periodization and explain it.

15. (a) Describe the aim of tactics.

Or

(b) Write short notes on methods of techniques development.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the principles of sports training.

17. Discuss the load and adaptation process in detail.

18. Discuss the mean and methods for development of explosive strength.

19. Explain the concept of tactical preparation during competition period.

20. Explain the annual techniques preparation in your game of specialization.

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S–5068

Sub. Code
22BPE3C3

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Physical Education

TEST AND MEASUREMENT OF EVALUATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define measurement and evaluation.

2. List down any two need and measurement evaluation in physical education.

3. Short note on classification of test.

4. Write the meaning of skill test.

5. Define Validity.

6. State the meaning of norms.

7. Write the expansion of JCR Test.

8. Short note on AAHPERD Youth fitness test.

9. Short note on French short serve test.

10. Mention any two procedure for Helmen volleyball test.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write about the measurement and evaluation.

Or

(b) Explain the importance of measurement and evaluation in physical education.

12. (a) What are the duties after testing?

Or

(b) Narrate the objectives of administrative feasibility.

13. (a) Write test procedure of bend knee sit ups test.

Or

(b) Explain the purpose and administration process of cooper's 12 minutes run and walk Test.

14. (a) Write in detailed barrow motor test.

Or

(b) Elaborate AAHPERD youth fitness test

15. (a) Elaborate (i) Johnson basketball ability test (ii) Miller tennis test.

Or

(b) Explain French short serve test.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on history of test, measurement and evaluation.

17. Describe the construction of knowledge's test and skill test.

18. Elaborate the validity, reliability, objectivity and norms.

19. Elaborate Magaia — Kalamen power test.

20. Explain the Mc Donald volleying Test.

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S–5069

Sub. Code
22BPEA3

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Physical Education

Allied – HEALTH EDUCATION AND FIRST AID

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Health Education.
2. Explain community health.
3. Mention any four communicable diseases.
4. Symptoms of thyroid.
5. Explain scope of health education.
6. Define safety education.
7. Differentiate sprain and strain.
8. What is peptic ulcer?
9. Define bums.
10. Define hypertension.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write briefly about the characteristics and principles of Safety education.

Or

(b) Write short notes on Diabetic mellitus.

12. (a) Describe the causative organism, signs and symptoms of Tuberculosis.

Or

(b) Briefly explain the causes for cramps.

13. (a) Illustrate in detail about the components of Health.

Or

(b) Explain Artificial respiration.

14. (a) Define sprain and its grading.

Or

(b) Short notes on Environmental Health.

15. (a) Explain the personal hygiene in school health programme.

Or

(b) Define fracture and its classification in detail.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write in details about the components of Health.

17. List down the communicable disease; write in detail about the causative organism, signs and symptoms and preventive measures of cholera and malaria.

18. Identify the need and importance of safety for preventing injuries.

19. Examine the types of bleeding.

20. Point out the First – Aid for bums, drowning and poisoning.

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S–5070

Sub. Code
22BPE4C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fourth Semester

Physical Education

EXERCISE PHYSIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define exercise physiology.
2. What is energy?
3. Explain voluntary muscle.
4. Define muscle tone.
5. Explain lungs.
6. What is lung capacity?
7. Explain heart rate.
8. Explain cardiac cycle.
9. Explain temperature.
10. Define exercises.

Part B (5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) Explain unit of measuring energy.

Or

(b) Brief metabolism.

12. (a) Explain voluntary muscles.

Or

(b) Explain the types of muscle contraction.

13. (a) Explain parts of respiratory system.

Or

(b) Explain the pulmonary ventilation.

14. (a) Explain the champers of heart.

Or

(b) Discuss heart rate.

15. (a) Examine importance of exercises.

Or

(b) Explain high altitude training.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Illustrate the types of metabolism.

17. Explain three types of muscles.

18. Explain the lungs function and its structure

19. Brief the heart and its structure with diagram.

20. Enumerate the effect of exercise on various system.

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S–5071

Sub. Code
22BPE4C2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fourth Semester

Physical Education

THEORIES OF MAJOR GAMES — I AND TRACK AND FIELD — II

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Specification of a Football.
2. Libro in Volleyball.
3. Distance for Marathon race in Meters.
4. Define "Throw in' in Football.
5. How many Laws in Football?
6. What is "Lona' in Kabaddi?
7. Define Non-Standard Track.
8. Write the specification of the Volleyball.
9. What is the distance for Cross-Country race (men)?
10. List any two fouls in Throwing Event.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss the duties of Officials in Football.

Or

(b) Describe the types of Finish Techniques.

12. (a) Explain the Tie-Breaking System in High Jump.

Or

(b) Draw a sector for Shot-put.

13. (a) State any three rules related to Libro.

Or

(b) Give a detailed account of Middle distance race.

14. (a) Explain team tactics in Volleyball.

Or

(b) Explain Individual attacks and Group attacks in Kabaddi.

15. (a) Draw a score sheet for Volleyball.

Or

(b) How many events are in Heptathlon?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Draw a neat diagram of the field of play in Football with the necessary measurement.

17. Explain the history and development of Volleyball.

18. Discuss the general rules of Track and list down the events in the Track and Field.

19. Explain the history and development of Football.

20. Draw a 400 mtr track with 80 mtr straight and mark the 400 mtr, start and 1,500 mtr start and finishes.

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S–5072

Sub. Code
22BPE5C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Physical Education

SPORTS BIOMECHANICS AND KINESIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Angular motion.
2. Compare displacement and distance.
3. Define speed and velocity.
4. Define power and energy.
5. What are the types of Forces?
6. Define Air resistance.
7. What is Projectile Motion?
8. What is the difference between Mass and Weight?
9. What is momentum?
10. Define Elasticity.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write short notes on transformation of energy with examples.

Or

(b) Explain the role of air and water resistance and how to reduce them.

12. (a) Discuss about the influence of Centrifugal and Centripetal Forces in Sports.

Or

(b) Explain the classes of lever with suitable sports examples.

13. (a) Explain angular distance and displacement.

Or

(b) Describe the factors affecting motion.

14. (a) Write short notes on factors influencing projectile.

Or

(b) Discuss about Inertia, Mass, Momentum and Friction.

15. (a) Explain the concept of Newton's Law of Motion and its relevance in Sports.

Or

(b) Explain the different classes of lever with examples.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the concept of Biomechanics, its aim, and importance in Physical Education and Sports.

17. Discuss in detail about Newton's law of motion with suitable example.

18. Illustrate the bio mechanical analysis of skills in volleyball.

19. Discuss about the bio mechanical analysis of long jump and high jump.

20. Summarize the classes and importance of equilibrium in sports.

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S–5073

Sub. Code
22BPE5C2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Physical Education

SPORTS PSYCHOLOGY AND SOCIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Why is sports psychology important in physical education?

2. Write the primary focus of sports psychology.

3. Which factor is associated with the ability to maintain a position or posture?

4. What does "reaction time" refer to in the context of physical education and sports?

5. Write an emotional effect that impacts sports performance.

6. Write the major cause of anxiety in athletes.

7. Which theory of aggression suggests that aggression is an innate biological drive?

8. Explain how psycho-regulative procedures reduce stress in sports.

9. What is the main function of social integration in sports?

10. What are the roles of a leader in a sports team?

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the importance of sports psychology for athletes in improving performance.

Or

(b) Discuss the role of sports psychology in managing stress and anxiety in sports.

12. (a) Explain the significance of body build, height and weight in sports performance.

Or

(b) Discuss the relationship between motor learning and the cognitive- affective-psychomotor domains.

13. (a) Explain the emotional effects of tension, anxiety, and stress on sports performance.

Or

(b) Compare and contrast Witkin's theory and the Pairor theory of perception in sports.

14. (a) Explain the concept of autogenic training and its benefits for athletes.

Or

(b) Discuss the importance of music and yoga as psycho-regulative procedures in sports.

15. (a) Explain the role of leadership in team sports and its importance.

Or

(b) Discuss the concept of group cohesion and its influence on team performance in sports.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the need and importance of sports psychology in physical education, providing relevant examples.

17. Discuss the interrelationship between cognitive, affective, and psychomotor domains in the learning of motor skills.

18. Discuss the emotional effects of tension, anxiety and stress on athletes and explain strategies to manage them.

19. Explain the process of autogenic training and how it contributes to reducing stress and improving focus in athletes.

20. Explain the concept of leadership in sports and discuss the different leadership styles that enhance team performance.

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S–5074

Sub. Code
22BPE5C3

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Physical Education

COMPUTER APPLICATION IN PHYSICAL EDUCATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write any two functions of Computer?
2. Define Napier Bones.
3. What are the components of CPU?
4. What is Floppy Disk?
5. Define Dbase.
6. What is Interpreter?
7. Name any two Windows components.
8. What is MS DOS?
9. Define Memory.
10. What is PowerPoint?

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the various Input Devices in detail.

Or

(b) Explain the Output Devices in detail.

12. (a) Explain the Characteristics of Computer.

Or

(b) Write a detail note on Hard Disk.

13. (a) What is Machine Language? And explain its disadvantages.

Or

(b) Illustrate the advantages of High Level Language

14. (a) Explain the various elements of Windows.

Or

(b) Write a short note on.

(i) Paint

(ii) Calculator

15. (a) Explain the features of Word Processor.

Or

(b) Explain the features of Spreadsheet.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Draw the block diagram of Computer and explain its functions.

17. Describe the various types of Computer Memory in detail.

18. Differentiate between Software and Hardware

19. Illustrate the functions of Operating System.

20. Narrate the uses of Computer in Physical Education.

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S–5075

Sub. Code
22BPE5C4

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Physical Education

RESEARCH AND ELEMENTARY STATISTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is the main purpose of research in Physical Education?

2. Which type of research is primarily concerned with solving specific.

3. Write the key criterion in selecting a research problem.

4. Defined hypothesis in research.

5. What is historical research primarily concerned with?

6. Write some primary sources of historical data.

7. Write the types of measurement scale

8. What is a population in research?

9. What is a percentile?

10. Explain how deciles divide data into many equal parts.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Define research in Physical Education and discuss its need and importance in modern physical education practices.

Or

(b) Differentiate between basic research and applied research, providing examples relevant to physical education.

12. (a) Explain the key criteria for selecting a research problem in physical education.

Or

(b) Define a hypothesis and describe its importance in the research process.

13. (a) Define historical research and discuss its relevance in physical education.

Or

(b) Explain the steps involved in conducting historical research.

14. (a) Define and differentiate between variables, constants, population, sample and parameter in research.

Or

(b) Explain the four scales of measurement (Nominal, Ordinal, Interval, and Ratio) with examples from physical education.

15. (a) Explain the concept of percentiles and their importance in analyzing ungrouped and grouped data in physical education research.

Or

(b) Discuss the process of computing percentiles, deciles, and quartiles from grouped data.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Define research in Physical Education and critically discuss its role in advancing the field of sports and exercise science.

17. Explain the criteria for selecting a research problem in physical education and discuss the factors that influence the formulation of a research problem.

18. Define historical research and discuss its importance in understanding the evolution of physical education and sports across different cultures and time periods.

19. Define variables, constants, population, sample, and parameter in research. Discuss the role each plays in conducting reliable research in physical education.

20. Explain the concept of percentiles and their importance in evaluating athletes' performance. Discuss how percentiles can be used in physical education research to assess various physical attributes.

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S–5076

Sub. Code
22BPE5C5

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Physical Education

SPORTS MEDICINE AND PHYSIOTHERAPY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define short-wave diathermy and its purpose in physiotherapy.

2. Name two common types of fractures seen in sports injuries.

3. What is the primary difference between a sprain and a strain?

4. List two common causes of puncture wounds in athletes.

5. What is Diapulse diathermy used for?

6. Define effleurage in massage therapy and its effect on muscles.

7. What are two types of manipulative techniques used in massage therapy?

8. What is osteoarthritis, and how does it affect athletes?

9. List the main symptoms of rheumatoid arthritis.

10. Name two types of wounds commonly encountered in sports medicine.

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Explain how a sprain differs from a dislocation.

Or

(b) Describe the signs and symptoms of a greenstick fracture.

12. (a) Summarize the common causes and treatments of muscle cramps during sports.

Or

(b) Explain the steps involved in managing a joint dislocation in athletes.

13. (a) Compare the effects of short-wave and microwave diathermy on soft tissue healing.

Or

(b) Discuss how infrared therapy is beneficial in treating sports injuries.

14. (a) Explain the role of friction in improving muscle recovery through massage therapy.

Or

(b) Describe the effects of tapotement in stimulating muscle function.

15. (a) Differentiate between osteoarthritis and rheumatoid arthritis in terms of symptoms and causes.

Or

(b) Explain the role of the immune system in the development of rheumatic diseases.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Propose an effective injury prevention strategy to reduce the occurrence of sprains in athletes.

17. Analyze the potential complications that may arise if a joint dislocation is not treated promptly.

18. Evaluate the benefits of using short-wave diathermy over microwave diathermy in sports rehabilitation.

19. Discuss the importance of massage in the rehabilitation of injured athletes and the recovery process.

20. Compare and contrast the risk factors and complications associated with rheumatoid arthritis and lupus in sports.

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S–5077

Sub. Code
22BPE5C6

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Physical Education

SPORTS NUTRITION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What percentage of the human body is made up of water?

2. Daily recommended allowances (RDA) refer to:

3. Carbohydrates act as a metabolic primer for which nutrient?

4. Which form of exercise primarily relies on carbohydrates as an energy source?

5. What is the primary function of protein in the body?

6. Which vitamin is crucial for bone health and can be synthesized by the body?

7. Which of the following is NOT a mineral?

8. Dehydration during exercise can lead to which of the following symptoms?

9. What is the primary function of electrolytes during exercise?

10. Which electrolyte is lost the most during heavy sweating?

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Describe the daily recommended allowances and how they are determined for different age groups.

Or

(b) What are the essential components of a balanced diet and why is each component important?

12. (a) How does carbohydrate intake affect muscle glycogen during moderate and prolonged exercise?

Or

(b) Describe the role of carbohydrates as a fuel for the central nervous system and its impact on athletic performance.

13. (a) Describe the role of vitamins in exercise performance and their importance in an athlete's diet.

Or

(b) Discuss the role of protein in tissue repair and how protein balance is maintained during physical activity.

14. (a) Explain the deficiency diseases associated with major minerals and how they can affect an athlete's performance.

Or

(b) Discuss the importance of maintaining water balance during exercise and its effects on performance.

15. (a) Describe the role of electrolytes in maintaining fluid balance and their importance during and after exercise.

Or

(b) Discuss the importance of pre-game meals and their impact on performance.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the daily recommended allowances (RDA) and explain how they are determined for different populations, particularly athletes.

17. Explain the role of carbohydrates in intense, moderate, and prolonged exercise. How does carbohydrate intake influence muscle glycogen levels and athletic performance?

18. Discuss the role of fat in exercise, specifically its importance in glycogen sparing and energy production during prolonged physical activities.

19. Explain the importance of water for maintaining hydration during physical activity. Discuss the effects of dehydration on an athlete's performance.

20. Describe the process of carbo-loading. How does this nutritional strategy benefit endurance athletes and what are the potential risks?