**Prehabilitation**

a) What is prehabilitation in perioperative medicine? (1 mark)
   - Prehabilitation is the process of enhancing an individual’s functional capacity to enable him or her to withstand a forthcoming stressor, e.g. major surgery. OR
   - Prehabilitation is the practice of enhancing a patient’s functional capacity before surgery, with the aim of improving postoperative outcomes.

b) What are the outcome benefits of a prehabilitation programme? (3 marks)

   Outcome benefits include:
   - Reduced length of stay,
   - Less postoperative pain, and
   - Fewer postoperative complications,

c) Which specific issues are addressed as part of medical optimisation in a prehabilitation programme? (6 marks)

   - Preoperative smoking cessation,
   - Reduction in alcohol intake, and
   - Weight optimization benefit the patient in the postoperative period
   - Management of anaemia,
   - Control of blood glucose,
   - Pharmacological optimization to gain optimal control of chronic conditions such as chronic obstructive pulmonary disease, heart disease, hypertension, and diabetes.

d) How will a prehabilitation exercise programme improve a patient’s cardiorespiratory physiology? (4 marks)

   - The response to exercise is an increase in cardiac output,
   - Arteriovenous oxygen difference, and thus VO2max and stroke volume.
• Skeletal muscle adaptations include increased mitochondrial content and oxygen uptake capacity.

• Overall, functional reserve increases, permitting the patient to meet the increased metabolic demands of surgery and the postoperative period.

e) What are the benefits of carbohydrate preloading and nutritional optimisation? (4 marks)

• Reduces insulin resistance and

• Promotes an anabolic state,

• Minimizing loss of protein, lean body mass, and muscle function.

• Taken a few hours before exercise, carbohydrates increase liver and muscle glycogen.

• Immunonutrition, the ingestion of amino acids (e.g. glutamine and arginine), omega-3 fatty acids, and nucleotides counteracts the hyperinflammation and immune impairment caused by the surgical stress response,

• Promoting wound healing,

• Reducing infection rates, and shortening length of stay

f) What psychologically supportive interventions may be used in prehabilitation? (2 marks)

• Cognitive interventions, e.g. development of positive attitudes, behavioural instruction

• Relaxation techniques such as hypnosis and progressive muscle relaxation

• Procedural information (i.e. details regarding all aspects of the patient journey) and

• Emotion focused interventions involving the discussion of emotions.

• Sensory information