

2023

PHYSIOLOGY — HONOURS

Paper : DSE-B-1 and DSE-B-2

*The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words
as far as practicable.*

Paper : DSE-B-1

(Work, Exercise and Sports Physiology)

Full Marks : 50

Group - A

1. Answer *any five* questions :

2×5

- (a) Define positive work with an example.
- (b) What is blood doping?
- (c) What will be the diet of an endurance athlete prior to competition?
- (d) How does $\dot{V}O_2$ max vary with gender?
- (e) What is acceptable work load?
- (f) Define isometric work with example.
- (g) Define OBLA.
- (h) What is ATP-CP system?

Group - B

2. Answer *any two* questions :

5×2

- (a) Compare the physiological responses to static and dynamic work.
- (b) Classify workload in a tabular form based on heart rate and oxygen consumption.
- (c) Write a short note on Detraining.
- (d) Significance of work-rest cycle in industrial work.

Group - C

3. Answer *any three* questions :

- (a) (i) What do you mean by physical fitness?
- (ii) How can you assess the physical fitness of an individual by modified Harvard Step Test?

2+8

Please Turn Over

- (b) Discuss any four methods of physical training. 2½×4
- (c) (i) What do you mean by work-rest cycle?
(ii) How can you determine energy cost by indirect methods? 2+8
- (d) (i) Describe the basic concept and usefulness of lactate threshold and lactate tolerance.
(ii) What are warm-up and cool-down activities in sports? 5+(2½+2½)
- (e) (i) What are the different sources of energy within a myocyte? .
(ii) How can you determine $\dot{V}O_2$ max by Queen's College Test? 2+8

(3)

Z(5th Sm.)-Physiology-H/DSE-B-1 & DSE-B-2/CBCS

Paper : DSE-B-2

(Advanced Molecular Biology and Nanotechnology)

Full Marks : 50

1. Answer *any five* questions : 2×5
- (a) What is operon?
 - (b) What do you mean by transposons?
 - (c) Write the full forms of AFLP and FISH.
 - (d) What is meant by gene family?
 - (e) How nanoparticles can be used in cancer treatment?
 - (f) What is genetic counselling?
 - (g) What is genomic medicine?
 - (h) What are biological nanomotors?
 - (i) Define a Nano system.
 - (j) What is repetitive DNA?
2. Write short notes on *any two* questions : 5×2
- (a) Post-translational modifications
 - (b) Molecular basis of apoptosis
 - (c) State the merits of CPG island
 - (d) What is alternative splicing? Why it is important?
- Answer *any three* questions.
3. (a) Discuss the role of chromatin in gene expression and gene silencing.
(b) What are interrupted genes?
(c) What is regenerative medicine? 6+2+2
4. Discuss the protein sequencing methods. 10
5. (a) What are antitermination and attenuation?
(b) Briefly discuss the concept of operon in gene expression with the example of tryptophan operon. 3+7
6. (a) Briefly discuss the steps of GISH *in situ* localization of genes.
(b) How does FISH differ from GISH? 6+4

Please Turn Over

Z(5th Sm.)-Physiology-H/DSE-B-1 & DSE-B-2/CBCS (4)

7. (a) Give an outline of ChIP technique.

5+5

(b) Discuss the method of DNA sequencing.

8. (a) Write a note with an example of self-assembly in bionanostructures.

4+(3+3)

(b) How silk and bone nanomaterials can be used in medical science?
