

NATIONAL BOARD OF EXAMINATIONS



Guidelines
of
Competency Based Training Programme
in
Physiology

FORMAT FOR GUIDELINES OF COMPETENCY BASED TRAINING PROGRAMME IN PHYSIOLOGY

1. Goals :

The postgraduate course in the subject of Physiology should enable a medical graduates to be

1. A competent Physiologist
2. A good medical teacher in Physiology practicing the required skills of teaching

2. Objectives :

At the end of the course a Postgraduate student in Physiology should be able to

1. Demonstrate comprehensive knowledge and understanding of general and systemic physiology
2. Comprehend and understand physiological basis of health and disease affecting various organs systems
3. Select and use appropriate teaching techniques and resources
4. Critically evaluate published journal literature and to effectively use the library facilities including computer, CD rom and satellite search
5. Carry out relevant research
6. Function as an effective member of a teaching team or research team
7. Carry out professional obligations ethically and keeping in view the national health policy.

Syllabus

1. Primary (Part-I)

Paper I be titled as "General Physiology including history of Physiology"

Final (Part II)

Paper III "Systemic Physiology (iii) including Recent Advances

Add Paper IV - "Thematic depiction"

2. Under the Head of Syllabus (Part I) against Paper I at the end add -"Hisotory of Physiology"
3. Against Paper II at the end add "Comparative Physiology"
4. Under the Caption Part II Final : against Paper II add "E. titled "Behavioral Physiology with Yoga, Meditation"

5. Practical training

Animal Experiment

(i) Amphibian

- a. Free load and after load
- b. Effect of continuous repeated stimulation (study of phenomena of Fatigue)
- c. Length of tension diagrams
- d. Properties of cardiac muscle - Long refractory period, All or None Law
- e. Extrasystole and compensatory pause, Beneficial effect
- f. Regulation of Heart, Vagus dissection and effect of vagal stimulation
- g. Actions of acetyl chlorine, adrenaline and nicotine on heart
- h. Perfusion of isolated frogs heart-role of sodium, potassium, calcium ions

(ii) Mammalian

- a. General management of Mammalian experiments
- b. Recording of Blood pressure and respiration on dogs and also the

effects of various factors

- c. Recording of effect of stimulation of vagus nerve on blood pressure and respiration in the dog
- d. Stimulation of central and peripheral end of vagus on arterial pressure after vagotomy
- e. Effect of drug-adrenaline and acetyl choline on blood pressure and respiration in the dog
- f. Intestinal movement and tone
- g. Effect of adrenaline on intestinal movement and tone
- h. Occlusion of carotid arteries on blood pressure and respiration
- i. Stimulation of splanchnic nerve (distal end) on arterial pressure

B Human Physiology

I Clinical Physiology

- a. Elementary principles of clinical examination
- b. Methods of Inspection/palpation/percussion/auscultation
- c. Plan of conduction and scheme of recording
- d. General examination
- i. Cardiovascular system
 - a. Clinical examination of circulatory system
 - b. Examination of pulse, blood vessels and measurements of blood pressure
- ii. Respiratory system
 - a. Clinical examination of respiratory system
- iii. Abdominal system
 - a. Clinical examination of Abdomen

iv. Central nervous system

- a. Clinical examination of the nervous system and its physiological basis
- b. Examination of higher mental functions
- c. Clinical examination of the special senses including cranial nerves
- d. Tests of Hearing and Deafness
- e. Motor functions
- f. Reflex functions
- g. Sensory functions

v. Ophthalmology

- a. Clinical examination of the eye and pupillary reflex
- b. Visual acuity
- c. Perimetry
- d. Accommodation
- e. Color vision and color blindness
- f. Fundoscopy

Laboratory Procedures

i. Haematology

- a. Haemocytometry
- b. Determination of reticulocyte count, platelet count WBC count, RBC count, Eosionphil count in normal and diseased state
- b. Differential count of WBC
- c. Haemoglobinometry spectroscopy.
- d. Blood grouping and Cross matching
- e. Determination of Beeding time and Clotting time
- f. Haemolysis and Fragility tests

ii. Cardiovascular system

- a. Electrocardiography - ECG and its

interpretation

iii. Respiratory system

- a. Spirometry
- b. Assessment of ventilatory functions
- c. Alveolar air, breath holding and endurance tests
- d. Recording of lung function tests by computerized or electronic spirometer
- e. Sthethography
- f. Resuscitation and artificial respiration

iii. Reproductive system

- a. Methods to determine ovulation time - by Basal body temperature chart, cervical smear, and vaginal smear.
- b. Pregnancy diagnostic tests - Immunological test
- c. Sperm count

iv. Nerve muscle physiology

- a. Ergography
- b. Recording of EMG - nerve conduction both sensory and motor

v. Others

- a. Construction of dietary chart for growing children (ii) hyper tensive patients, (iii) Diabetic mellitus patients
- b. Tests for physical fitness
 - a. Lab Harvard step test
- c. Bicycle Ergometry
 - a. Treadmill protocols leading to determination of vo 2 max
 - b. Cardio respiratory response to whole body exercise

Clinical Biochemistry

a. Estimation of normal and abnormal

constituents of urine

- b. Estimation of Blood sugar
- c. Estimation of Serum calcium
- d. Kidney function test
- e. Liver function test
- f. Gastric function tests (excluding fractional test meal)
- g. Glucose tolerance tests

Under the caption Recommending Reading the following be added :

1. Keele, Samson and Wright's Applied Physiology
2. Best and Taylor - Physiological basis for medical practice
3. Guyton - Text book of Medical Physiology
4. Ganong - Review of Medical Physiology
5. Cambeell, Clinical Physiology
6. P F Backer - Recent advances in Physiology
7. Vernon - B Mount Castle, Medical Physiology Vol I and II
8. Carl J wiggers - Physiology in Health and Disease
9. Williams Text of Endocrinology
10. West and Todd Text Book of Biochemistry and Physiology
11. Harper's Biochemistry
12. Duncon - Disease of Metabolism
13. John Field H W Magou - Hand Book of Neuro Physiology
14. Carpenter, Neurophysiology
15. Wallance O Fen Handbook of Respiraoty Physiology
16. Prosser - Experimental Physiology

17. Prosser - Comparative Animal Physiology, Manual
18. Wintrobe's - Clinical Haematology
20. Kelmen - Applied Cardiovascular Physiology
21. Brown, Cell signaling, Biology and Medicine of Signal transduction
22. Byrne - Introduction of Membrane Transport and Bioelectricity
23. Sudarasky - Patho physiology of the nervous system

Journals

By American Physiological Society - Journal of Applied Physiology, Physiological Reviews, Annual Review of Physiology, Advances in Physiological Education and Recent advances in Physiology

- b. British Publication - Journal of Physiology
- c. Association of Physiologist and Pharmacologists of India - Indian Journal of Physiologists
- d. Indian Council of Medical Research - Indian Journal of Medical Research