

B.Sc. CRITICAL CARE TECHNOLOGY
(New Syllabus 2015-2016)
FIRST YEAR
Paper II – PHYSIOLOGY AND BASIC PHYSICS

Q.P Code : 801232

Time : Three Hours

Maximum : 100 Marks

Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the regulation of blood pressure.
2. What do you mean by anaemia? Classify anaemias based on etiology and morphology.
3. Describe the formation of dilute and concentrated urine.

II. Write Notes on:

(8 x 5 = 40)

1. Describe the oxygen haemoglobin dissociation curve.
2. What do you mean by the terms physiology and pathology?
3. Describe the distribution and regulation of medical gases in the hospital.
4. Describe the functions of thyroxine.
5. What are the characteristics of medical gases?
6. Describe the ovarian changes during menstrual cycle.
7. Describe the functioning of oxygen concentrator.
8. How is blood pressure affected by radius of the blood vessel and by the viscosity of blood?

III. Short Answers on:

(10 x 3 = 30)

1. What are Landsteiner's laws? Mention the antigens and antibodies present in O positive blood.
2. What is meant by respiratory acidosis? Mention some causes.
3. Mention the basic eye movements?
4. What is meant by Stroke volume? Mention two factors affecting it.
5. What are the afferent, efferent and centre for gag reflex?
6. What do you mean by blood pressure? What is the normal blood pressure in an adult?
7. Mention the functions of saliva.
8. Mention the functions of platelets.
9. Mention the muscles of inspiration and expiration.
10. Draw the structure of an animal cell and label the parts.

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Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the various factors affecting cardiac output.
2. What is meant by haemostasis? Describe the intrinsic and extrinsic clotting pathways.
3. Describe the mechanism of acid secretion in the stomach.

II. Write Notes on:

(8 x 5 = 40)

1. List the various cell organelles. Mention one function for each of them.
2. Describe any two gas laws with their clinical application.
3. List the various white blood cells and mention one function for each of them.
4. What is meant by the following terms?
a) Vital capacity. b) Residual volume. c) Dead space.
d) Tidal volume. e) Total lung capacity.
5. What is CSF? Where is it produced? What are the functions of CSF?
6. Mention the enzymes required for carbohydrate digestion, their source and their actions.
7. What are the hormones secreted by the posterior pituitary? Mention functions of each hormone.
8. What are the common medical gases used? Describe the various means of storage of medical gases.

III. Short Answers on:

(10 x 3 = 30)

1. Mention any one unit for each of the following.
a) Pressure. b) Temperature. c) Flow.
2. Describe any two renal function tests.
3. What are the different states of matter? What are the properties of these states?
4. What is pupillary light reflex? What is its clinical relevance?
5. Describe how matter can be changed from one state to another?
6. Describe any two pulmonary function tests.
7. Piped distribution of medical gases.
8. What is meant by the term ABG (arterial blood gases)? What information can be obtained from the ABG?
9. What is meant by streamlined (or laminar flow) and turbulent flow?
10. Formation of semen.

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Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the various events happening during a cardiac cycle.
2. Describe the neural regulation of respiration.
3. Describe the various uterine changes that happen during menstrual cycle.

II. Write Notes on:

(8 x 5 = 40)

1. Describe the mechanism of breathing.
2. Describe the process of endocytosis in a cell.
3. What are the factors affecting diffusion of gases across the respiratory membrane?
4. Mention the differences between first and second heart sounds.
5. Describe the properties of the three states of matter.
6. Describe the functions of plasma proteins.
7. Measurement of blood pressure.
8. Describe the process of osmosis.

III. Short Answers on:

(10 x 3 = 30)

1. What do you mean by homeostasis?
2. Mention the functions of cerebrospinal fluid.
3. Mention the steps in spermatogenesis.
4. Mention functions of insulin.
5. Mention the afferent, efferent and centre for micturition reflex.
6. Functions of bile indigestion.
7. What do you mean by vital capacity? What is the normal value?
8. Draw an ECG and mark the different waves and intervals.
9. Mention functions of blood.
10. What do you mean by metabolic acidosis? Mention some causes.

[LM 0218]

FEBRUARY 2018

Sub. Code: 1232

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Time : Three Hours

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Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Define blood pressure? What is the normal value of blood pressure? Mention and discuss in brief the various factors which influence blood pressure?
2. Describe the oxygen transport mechanism. Add a note on Hypoxia.
3. Define Erythropoiesis. Discuss the factors influencing erythropoiesis.

II. Write Notes on:

(8 x 5 = 40)

1. Fat digestion and absorption.
2. Micturition reflex.
3. Artificial Respiration.
4. Electro cardio gram.
5. Regulation of Heart rate.
6. Ovarian changes during menstrual cycle.
7. Functions of Thyroxine.
8. Gag reflex.

III. Short Answers on:

(10 x 3 = 30)

1. Acid base balance.
2. Tubular reabsorption in proximal convoluted tubules.
3. ESR.
4. Enzymes in pancreatic juice.
5. Movements of small intestine.
6. Heart sounds.
7. Type 2 Diabetes mellitus.
8. Pulmonary function Test.
9. Acromegaly.
10. Function of CSF.

[LN 0818]

AUGUST 2018

Sub. Code: 1232

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Q.P Code : 801232

Time : Three Hours

Maximum : 100 Marks

Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Define Cardiac cycle. Explain the events in different phases of cycle with illustrative diagram.
2. Describe the transport of carbon-di-oxide in the blood. Add a note on types of hypoxia.
3. Write in detail the mechanism of urine formation.

II. Write Notes on:

(8 x 5 = 40)

1. Rh factor and Erythroblastosis fetalis.
2. Digestion of Carbohydrate.
3. Glucose homeostasis.
4. Spermatogenesis.
5. Conducting system of heart.
6. Lung volumes and capacity.
7. Cerebrospinal fluid (CSF).
8. Pupillary light reflex.

III. Short Answers on:

(10 x 3 = 30)

1. Endocytosis and exocytosis.
2. Functions of plasma proteins.
3. ESR.
4. Any 3 Pulmonary function tests.
5. Respiratory acidosis.
6. ABG (arterial blood gases).
7. Functions of bile.
8. Heart rate.
9. Functions of oxytocin.
10. Cretinism.

[LO 0219]

FEBRUARY 2019

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Time : Three Hours

Maximum : 100 Marks

Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Define Cardiac output. Explain various factors regulating Cardiac output.
2. Explain the neural regulation of respiration. Add a note on artificial respiration.
3. What is menstrual cycle? Explain the ovarian changes taking place during menstrual cycle.

II. Write Notes on:

(8 x 5 = 40)

1. Functions of Leucocytes.
2. Oxygen haemoglobin dissociation curve.
3. Protein digestion.
4. Regulation of hypertension.
5. Glomerular filtration rate.
6. Neuro endocrine reflex.
7. Functions of any five cell organelles.
8. Cough reflex.

III. Short Answers on:

(10 x 3 = 30)

1. Landsteiner's laws.
2. Functions of saliva.
3. Functions of haemoglobin.
4. Emulsification of fat.
5. Functions of Calcium.
6. Alkalosis and acidosis.
7. Tidal volume and vital capacity.
8. Any 3 Renal function tests.
9. Eye movement.
10. Active transport.

[LP 0819]

AUGUST 2019

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Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail about the regulation of blood pressure and factors maintaining it.
2. Write about the chemical and neural regulation of respiration.
3. Name the hormones secreted by thyroid gland and its functions.

II. Write Notes on:

(8 x 5 = 40)

1. Functions of cerebrospinal fluid.
2. Explain the three states of matter.
3. Ovulation.
4. Maturation.
5. Functions of white blood cells.
6. Describe the principles that govern the fluid dynamics.
7. Acid base balance.
8. Electrocardiogram.

III. Short Answers on:

(10 x 3 = 30)

1. Define Hemostasis.
2. Mention the bleeding disorders.
3. Functions of kidney.
4. Glomerular filtration Rate.
5. Mention the functions of saliva.
6. Name the ocular muscles.
7. Milk ejection reflex.
8. Define ECG and write about ECG leads.
9. Define Dead space.
10. Diabetes Mellitus.

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Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the various phases of gastric secretion and mention the functions of stomach.
2. Define Erythropoiesis. List the different stages of erythropoiesis.
3. Describe the different stages of urine formation.

II. Write Notes on:

(8 x 5 = 40)

1. Name the hormones of parathyroid gland and add a note on calcitonin.
2. Composition of Blood.
3. Erythrocyte Sedimentation Rate.
4. Functions of bile.
5. Heart Sounds.
6. Mechanism of Respiration.
7. Storage of medical gases in cylinders.
8. What is piped distribution system?

III. Short Answers on:

(10 x 3 = 30)

1. Oxygen debt.
2. Properties of cardiac muscle.
3. What is meant by Arterial blood gas analysis?
4. What is respiratory acidosis and write the causes for it?
5. Mention the functions of large intestine.
6. Define cardiac cycle and mention the systolic events.
7. What is acute renal failure?
8. Functions of platelets.
9. Accommodation reflex.
10. Transport of CO₂.
