



PAST PAPERS

<i>Faculty</i>	<i>Department / Section/Division</i>
<i>Not Applicable</i>	<i>Learning Resource Centre</i>

Past Papers

Faculty of Health Sciences

General Papers

(Year 2 – Semester 2)

<i>Document Control & Approving Authority</i>	<i>Senior Director – Quality Management & Administration</i>
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<i>1st Issue Date: 2017.011.30</i>	<i>Revision No.00</i>	<i>Revision Date: 18.09.2024</i>	<i>Validated by: Librarian</i>
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Faculty of Health Sciences

BSc(Hons)Biomedical Sciences/ BSc(Hons)Industrial Pharmaceutical Sciences

BIOCHEMISTRY II – BMS 2225/IPS 2223

2ND YEAR 2ND SEMESTER

BATCH 02 & 03

END SEMESTER SPECIAL REPEAT ASSIGNMENT

Date : 18th of June 2024
Time : 3.30 P.M – 4.30P.M (ONE HOUR)

INSTRUCTIONS TO CANDIDATES

- This assignment paper consists of TWO questions.
- Answer ALL questions.
- You should write legibly in black or blue ink

QUESTION 01

(100 marks)

1.1 Discuss the importance of the following structures,

- i. Double helix structure of DNA. (50 marks)
- ii. Structure of transfer RNA. (50 marks)

QUESTION 02

(100 marks)

- 2.1. Draw a flow chart to represent the protein digestion process in the human body. (50 marks)
- 2.2. Outline the reaction steps involved in the urea cycle. (50 marks)

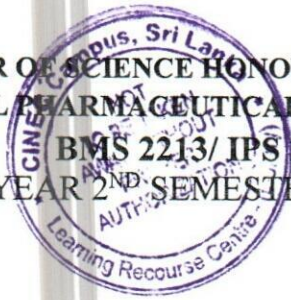
Library.

FACULTY OF HEALTH SCIENCES

BACHELOR OF SCIENCE HONOURS IN BIOMEDICAL SCIENCE/ BACHELOR OF SCIENCE HONOURS IN INDUSTRIAL PHARMACEUTICAL SCIENCE/ BACHELOR OF SCIENCE HONOURS IN COSMETIC SCIENCE

BMS 2213/ IPS 2213/ BCS 2213-ANATOMY AND PHYSIOLOGY II

2ND YEAR 2ND SEMESTER-END SEMESTER BRQ/MCQ EXAMINATION-5TH BATCH



INDEX NUMBER:

Date : 10th May 2023
Time : 11.15 a.m. – 12.15 p.m. (One Hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **Twenty** questions.
- Answer **ALL** questions.
- **Question No. 01- 08 contains a single answer** and select most appropriate answer among give five statements.

Ex:

1	2	3	4	5
		X		

- **Question No. 09- 20, consist of Five statements** and you need to select and mark either **True (T)** or **False (F)** in each statement.

Ex:

T	T	T	T	T
F	F	F	F	F

- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

1. **Part of the eye comparatively very rich in blood vessels,**
 1. Choroid
 2. Cornea
 3. Sclera
 4. Iris
 5. Retina

2. **Most of the reabsorption from the glomerular filtrate will take place in?**
 1. Proximal convoluted tubule
 2. Distal convoluted tubule
 3. Ascending limb of loop of Henle
 4. Descending limb of loop of Henle
 5. Collecting tubule

3. **Which one is an example for the mixed cranial nerve?**
 1. Olfactory (Sensory)
 2. Oculomotor (Motor)
 3. Glossopharyngeal
 4. Trochlear
 5. Hypoglossal

4. **Which immunity organ contains Hassal's corpuscles?**
 1. Tonsils
 2. Bone marrow
 3. Thymus
 4. Spleen
 5. Lymph nodes

5. **Which of the following hormone is secreted by the adrenal cortex?**
 1. Aldosterone
 2. Adrenalin
 3. ADH
 4. Noradrenalin
 5. Renin

6. **Which of the following best describes the function of the cerebral cortex,**
 1. Sensory perception
 2. Regulation of respiration
 3. Thermoregulation
 4. Coordination of voluntary movements
 5. Changes in heart rate

6. **Which of the hormone is not secreted by the corpus luteum?**
 1. Estrogen
 2. Progesterone
 3. Inhibin
 4. Relaxin
 5. Melatonin

7. Which one is not a pure endocrine organ?

1. Pituitary gland
2. Thyroid gland
3. Thymus
4. Parathyroid gland
5. Adrenal gland

8. True or false nervous system?

1. Ganglions are collection of neuron cell bodies.
2. Thalamus is a part of brain stem.
3. Gyri are fold in cerebral cortex.
4. There are 11 pairs of cranial nerves.
5. A bundle of axons are known as tracts.

10. True or False regarding the muscle physiology?

1. When a nerve signal reaches the muscle cell, calcium is released from the sarcoplasmic reticulum surrounding the myofibrils.
2. The myosin heads bind to the binding sites of the actin proteins, to form a cross-bridge as the inorganic phosphate is released.
3. ATP is released which causes initiation of the power stroke
4. A new ATP molecule binds to the myosin head causing the separation of the actin-myosin crossbridge.
5. Muscle relaxation is a highly passive process.

11. True or False regarding the cranial nerves,

1. Olfactory nerve is a sensory nerve which detect the smell
2. Vestibulocochlear nerve is a motor nerve
3. Vagus nerve innervates the heart, lungs and gastrointestinal system
4. Trigeminal nerve is the 5th cranial nerve which contain 3 branches
5. Optic nerve is a motor nerve

12. Hormones related with the kidney are,

1. Angiotensin II
2. Parathyroid hormone
3. Adrenaline
4. ADH
5. Thyroxin

13. True or false regarding lymphatic system?

1. Neck region contains only superficial cervical nodes.
2. Lymph nodes have an outer capsule.
3. Lymph node contains number of efferent vessels.
4. Jugular trunks receive lymph from head and neck.
5. Lymph nodes contain trabeculae.

14. Which of the followings are correct regarding the male reproductive system?

1. GnRH stimulate the secretion of FSH and LH
2. LH stimulates spermatogenesis.
3. FSH stimulates the secretion of testosterone.

4. Inhibin stimulates the secretion of FSH and LH
5. Testosterone inhibits the secretion of GnRH.

15. True or false regarding human urinary system?

1. Kidneys are intraperitoneal organs.
2. The renal cortex contains pyramids.
3. Ureters contain transitional epithelium.
4. Membranous urethra passes through the length of the penis.
5. The renal vein drains directly into the inferior vena cava.

16. True or false regarding the female reproductive system?

1. FSH stimulates the follicular phase of the ovarian cycle.
2. Estrogen stimulates the proliferative phase of the ovarian cycle.
3. Corpus luteum secretes progesterone.
4. Progesterone stimulates the secretory phase of the uterine cycle
5. Corpus luteum stimulates menstruation

17. Regarding Thyroid glands,

1. Skin is an innate defense mechanism.
2. Fever is an internal defense mechanism.
3. Inflammation is an innate defense mechanism.
4. B-lymphocytes are produced in the bone marrow and get matured in thymus.
5. T-lymphocytes are produced in thymus.

18. True or False regarding the musculoskeletal system?

1. Carpals are short bones.
2. Patella is an example for sesamoid bone.
3. Osteoclasts mature into new osteocytes.
4. External ear contains hyaline cartilage.
5. Hyoid bone does not articulate with another bones.

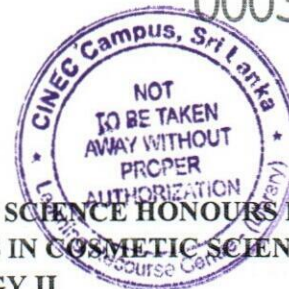
19. True or false regarding endocrine organs?

1. Anterior pituitary gland is a downgrowth of nervous tissue.
2. Thyroid gland is a highly vascular gland.
3. Follicles are the functional unit of the thyroid gland.
4. Pineal gland contains astrocytes.
5. Thyroid follicles are filled with colloid.

20. True or False regarding the human ear?

1. The auricle is the visible part of the ear.
2. The tympanic membrane separates the middle ear from the inner ear.
3. Incus is a lateral hammer-shaped bone.
4. Membranous labyrinth is filled with endolymph.
5. Cochlea resembles a snail's shell.

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Faculty of Health Sciences

BACHELOR OF SCIENCE HONOURS IN BIOMEDICAL SCIENCE/ BACHELOR OF SCIENCE HONOURS IN INDUSTRIAL PHARMACEUTICAL SCIENCE/ BACHELOR OF SCIENCE HONOURS IN COSMETIC SCIENCE

BMS 2213/ IPS 2213/ BCS 2213 -ANATOMY AND PHYSIOLOGY II
2ND YEAR 2ND SEMESTER-END SEMESTER SEQ EXAMINATION- 5TH BATCH.

Date : 10th May 2023
Time : 09.00 a.m. – 11.00 a.m. (Two Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **FOUR** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 1

(100 marks)

- 1.1 List the difference between cortical and juxtamedullary nephrons. (15 marks)
- 1.2 Write a short note on followings.
- 1.2.1 Renal Corpuscle (10 marks)
- 1.2.2 Trigone of Urinary bladder (10 marks)
- 1.3 Write three differences between male and female urethra. (15 marks)
- 1.4 List the three main processes of urine formation. (15 marks)
- 1.5 Briefly describe the three (3) main steps of the uterine cycle of the of females. (35 marks)

Question 2

(100 marks)

- 2.1 Describe the microscopic view of thyroid tissues. (25 marks)
- 2.2 "Pancreas belongs to both exocrine and endocrine glands." Comment on this statement. (25 marks)
- 2.3 State the endocrine hormones of the pancreas and state the main action of each. (20 marks)
- 2.4 Draw and briefly describe the HPT axis (Hypothalamic-Pituitary-Thyroid axis). (30 marks)

Question 3

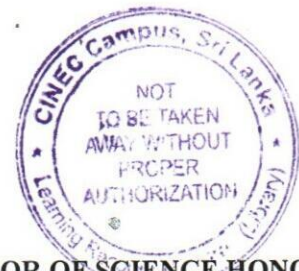
(100 marks)

- 3.1 Name two examples for each of the followings.
- 3.1.1 Primary immune organs (10 marks)
- 3.1.2 Secondary immune organs (10 marks)
- 3.2 Describe the anatomical features of synovial joints. (30 marks)
- 3.3 Briefly describe the main step of phagocytosis (30 marks)
- 3.4 Draw the flow chart to represent the Calcium Metabolism of the body of a patient diagnosed with increased calcium ions in the body. (20 marks)

Question 4

(100 marks)

- 4.1 Describe the structure of a neuron. (25 marks)
- 4.2 Name the main 4 parts of the human limbic system. (20 marks)
- 4.3 Describe the structure of auditory ossicles. (25 marks)
- 4.4 Describe the stepwise process of communication of neurons at 'Synapses'. (30 marks)



Faculty of Health Sciences

BACHELOR OF SCIENCE HONOURS IN BIOMEDICAL SCIENCE/ BACHELOR OF SCIENCE HONOURS IN INDUSTRIAL PHARMACEUTICAL SCIENCE/ BACHELOR OF SCIENCE HONOURS IN COSMETIC SCIENCE

BMS 2213/ IPS 2213/ BCS 2213 -ANATOMY AND PHYSIOLOGY II
2ND YEAR 2ND SEMESTER-END SEMESTER SEQ EXAMINATION- 5TH BATCH.

Date : 10th May 2023
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Question 4 **(100 marks)**

4.1 Describe the structure of a neuron. (25 marks)

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4.4 Describe the stepwise process of communication of neurons at 'Synapses'. (30 marks)



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Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Sciences/ Industrial Pharmaceutical
Science/ Cosmetic Science
BMS 2225 / IPS 2223/ BCS 2223– Biochemistry II
Batch – 06
2nd Year 2nd Semester
Mid semester MCQ/BRQ Examination

Date : 01st of August 2024
Time : 9.0 a.m. – 10.00 a.m. (One Hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **Twenty** main questions.
 - Answer **ALL** questions.
 - Select the single best response for the questions from 01 to 05.
 - Mark 'True' or 'False' for each response from question number 06 to 20.
-
1. Select the best amino acid combination containing Sulphur.
 - a. Cysteine and Glycine
 - b. Methionine and Leucine
 - c. Proline and Cysteine
 - d. Serine and Aniline
 - e. Cysteine and Methionine

 2. Select the amino acid derived from Oxaloacetate,
 - a. Glutamine
 - b. Proline
 - c. Cysteine
 - d. Threonine
 - e. Histidine

 3. Select the best description regarding the tertiary structure of a protein,
 - a. based on the order of amino acids
 - b. there are ionic bonds between R groups
 - c. considered based on the location of disulphide bonds
 - d. there are loop regions of proteins
 - e. based on the ways of protein folding

 4. A person with phenylketonuria will convert
 - a. phenylalanine to isoleucine
 - b. phenylalanine to phenylpyruvate
 - c. tyrosine to phenylalanine
 - d. phenylpyruvate to tyrosine
 - e. tyrosine to dopamine

5. What is the best response regarding Serine and Lysine ?
 - a. Both are keto-gluco amino acids
 - b. They are ketogenic and glucogenic amino acids respectively
 - c. Both are ketogenic amino acids
 - d. Both are glucogenic amino acids
 - e. They are glucogenic and ketogenic amino acids respectively
6. "True" or "False" regarding guanosine and deoxycytidine?
 - a. Both contain a pyranose
 - b. Both contain a 1,1'-N-glycosidic bond
 - c. Both contain a pyrimidine base
 - d. Both contain a 3'-OH group
 - e. Both contain an ester bond
7. "True" or "False" regarding alpha helix structure of protein ?
 - a. It consists of a tightly packed coiled polypeptide backbone core.
 - b. It is a secondary structure of protein.
 - c. The side chains of the component amino acids extending inward from the central axis.
 - d. It is stabilized by hydrogen bonds.
 - e. Each turn of a helix contains 3-4 amino acids.
8. Amino acids are derived from,
 - a. ammonia
 - b. oxaloacetate
 - c. citrate
 - d. pyruvate
 - e. glucose-6-phosphate
9. Which of the characteristic/s is/are common to both myoglobin and hemoglobin?
 - a. Both are saturated with oxygen at low oxygen concentrations
 - b. Both display cooperative binding when transporting oxygen
 - c. Both contain strands of β -pleated sheet with a zig-zag shape
 - d. Both contain segments of α -helix with a spiral shape
 - e. Both contain heme as a prosthetic group
10. "True" or "False" regarding purine biosynthesis ?
 - a. It can be synthesized from both de novo and salvage pathways.
 - b. Synthesis of 5-Phosphoribosylamine is the rate limiting step.
 - c. Excess Purines activates the first step.
 - d. Inorganic phosphate activates the rate limiting step.
 - e. PRPP synthetase is involved in the conversion of 5-Phosphoribosylamine to PRPP.
11. "True" or "False" regarding the special products derived from amino acids ?
 - a. Glycine and Arginine are required for the synthesis of Creatinine.
 - b. Melanine is derived from amino acids.
 - c. Histamine is derived from Cysteine.
 - d. Catecholamines are derived from Tyrosine.
 - e. Tyrosine is involved for the synthesis of Melanin.

12. "True" or "False" regarding the first step of the Urea cycle ?
- The reaction is catalyzed by a rate-limiting enzyme carbamoyl phosphate synthase-I
 - The presence N-acetyl glutamate inhibits the activity of CPS I enzyme
 - A molecule of ATP is required for this reaction
 - The reaction occurs in mitochondria
 - Arginine positively regulates this reaction step
13. "True" or "False" regarding fibrous proteins ?
- Consists of a polypeptide chain parallel to the single axis
 - Highly soluble in water
 - They are very tough and strong
 - Elastin is the most abundant protein in human body
 - Quaternary structure is held by covalent bridges
14. Denaturation of proteins results in,
- disruption of primary structure
 - breakdown of peptide bonds
 - destruction of hydrogen bonds
 - irreversible changes in the molecule
 - loss of biological activity
15. True or false?
- Creatine is synthesized in liver
 - Histamine is a biogenic amine
 - Dopaquinone is a precursor for melanin
 - Catecholamines are synthesized in kidney
 - Dopamine synthesis is impaired in Parkinson's
16. True or false?
- Deamination liberates amine group of amino acids
 - Transamination mainly involves in the breakdown of excess protein
 - Amine group of amino acids are finally funneled to glutamic acid
 - Pyridoxal phosphate is a co-factor of deaminases
 - Glutamate dehydrogenases transfer the amine group of glutamic acid to α ketoglutarate
17. Which of the following is/are "True" or "False" regarding protein digestion ?
- Initial protein denaturation is facilitated by HCl.
 - Carboxy-terminal of amino acids are removed by the action of carboxy peptidase.
 - Protein digestion takes place in the intestine by trypsinogen and pepsinogen.
 - Exopeptidase cleaves amino acids at N-terminal.
 - Pepsin is the common activator of all pancreatic zymogens.
18. Which of the following is/are "True" or "False" about the structure of RNA?
- Anticodon arm of t-RNA serve as side of attachment for amino acid.
 - RNA nucleotides are joined by glycosidic and phosphodiester bonds.
 - All RNAs can increase the rate of a reaction.
 - Poly-A tail of m-RNA contains both Adenine and Guanine Nitrogenous bases.
 - m-RNA carries the genetic message from DNA.

19. Which of the statements is/are true regarding Urea cycle ?
- It provides intermediates for HMP shunt.
 - It can be stimulated by a protein rich diet.
 - It is regulated by N-acetylglutamate synthase.
 - It occurs in the mitochondria of kidney and liver.
 - Removes toxic ammonia from body.
20. Which of the following is/are "True" or "False" regarding phenylketonuria?
- It is an autosomal dominant disorder.
 - Metabolic disorder of phenyl alanine and tyrosine.
 - Mental retardation is observed in these patients.
 - Biuret test used for the laboratory diagnosis of this disease.
 - Hypopigmentation is observed in these patients.



Faculty of Health Sciences
Bachelor of Science Honours in Biomedical Sciences/ Bachelor of Science Honours in
Industrial Pharmaceutical Sciences/ Bachelor of Science Honours in Cosmetic Sciences
BMS 2213/ IPS 2213/BCS 2213
Anatomy and Physiology II
2nd Year 2nd Semester
Mid Semester BRQ/MCQ Examination
6th Batch

Date : 30th July 2024
Time : 9.00 a.m. – 10.00 a.m. (One Hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **Twenty** questions.
- Answer **ALL** questions.
- **Question No. 01- 08 contains a single answer** and select most appropriate answer among give five statements.

Ex:

1	2	3	4	5
		X		

- **Question No. 09- 20, consist of Five statements** and you need to select and mark either **True (T)** or **False (F)** in each statement.

Ex:

T	T	T	T	T
F	F	F	F	F

- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

1. Which one is the part of the nephron with podocytes?

1. Distal convoluted tubule
2. Proximal convoluted tubule
3. Ascending limb of loop of Henle
4. Descending limb of loop of Henle
5. Glomerulus

2. Which of the following hormones reacts to the body's' stress?

1. Aldosterone
2. Cortisol
3. Melatonin
4. Androgens
5. Calcitonin

3. **What is the endocrine organ comparatively small in adulthood?**
 1. Thymus
 2. Pancreas
 3. Thyroid gland
 4. Pituitary
 5. Adrenal gland

4. **Which of the following blood constituent remains inside the glomerular capillaries after glomerular filtration?**
 1. Creatinine
 2. Platelets
 3. Urea
 4. Amino acids
 5. Mineral salts

5. **What is the endocrine organ with additional exocrine function?**
 1. Pancreas
 2. Pituitary gland
 3. Thyroid gland
 4. Adrenal gland
 5. Parathyroid gland

6. **What is the part of the male reproductive system, act as a reservoir of spermatozoa?**
 1. Seminal vesicles
 2. Cowper gland
 3. Prostate gland
 4. Bulbourethral gland
 5. Epididymis

7. **What is the stage of follicle with two layers of follicular cells present in ovarian cortex?**
 1. Primordial follicle
 2. Primary follicle
 3. Secondary follicle
 4. Tertiary follicle
 5. Graafian follicle

8. **Which of the following hormone is secreted/produced by the hypothalamus?**
 1. TSH
 2. LH
 3. GH
 4. GnRH
 5. FSH

9. **True or false regarding human urinary system?**
 1. The 85% nephrons are juxtamedullary nephrons.
 2. There are rugae in walls of empty bladder.
 3. Internal urethral sphincter is mainly made by voluntary muscles.
 4. Kidneys are covered by a fibrous capsule.
 5. Urine formed in the kidney passes through a papilla at the apex of a pyramid.

10. True or false regarding testis?

1. It contains seminiferous tubules.
2. During early fetal life, the testis develops in the abdominal cavity.
3. It is suspended in the scrotum.
4. Right testis is slightly lower than left testis.
5. Tunica vaginalis is the outermost cover.

11. True or False regarding ovarian cycle?

1. Body temperature slightly decrease immediately following ovulation.
2. After ovulation empty follicles becomes a corpus luteum.
3. Cervical mucus becomes thin during ovulation.
4. Some women experience abdominal discomfort.
5. Corpus albicans is a white scar tissue.

12. True or false regarding female reproductive system?

1. Bartholin's glands secrete mucus.
2. Clitoris is responsible for feelings of sexual pleasure.
3. Labia major absence with sebaceous glands.
4. Vagina acts as the receptacle for the penis.
5. Vestibule surrounds the opening of the vagina.

13. Regarding thymus,

1. It is located in superior mediastinum.
2. It contains cortex and medulla.
3. Thymus will increase in size when aging.
4. Thymus shows rapid autolysis after death.
5. Thymus is enclosed by a fibrous capsule.

14. Regarding pituitary gland,

1. Adenohypophysis mainly consists nervous tissues.
2. It is regulating the activity of most of the other endocrine glands.
3. Posterior pituitary secretes follicle stimulating hormone.
4. Anterior pituitary secretes oxytocin hormone.
5. Anterior pituitary secretes luteinizing hormone.

15. True or false?

1. Right testicular vein empties into right renal vein.
2. Epididymis stores the sperm cells.
3. Cowper glands secrete mucus like secretion.
4. High concentration of testosterone inhibits the hypothalamus.
5. Spermatozoa transforms into spermatids in spermatogenesis.

16. True or false regarding hormones?

1. Gastrin hormone stimulate secretion of gastric juice.
2. Erythropoietin stimulates red blood cell production.
3. Leptin makes satiety.
4. Secretin accelerates emptying of the stomach.
5. Melatonin regulates circadian and diurnal rhythms.

17. Lymph nodes,

1. are immune organ.
2. are only at the deep region.
3. contain afferent and efferent vessels.
4. have a non-fibrous capsule.
5. contains trabeculae.

18. Regarding Thyroid gland and its hormones,

1. It is butterfly in shape.
2. Thyroid gland consists two capsules.
3. Thyroxine accelerates body growth.
4. The pyramidal lobe is an essential component in thyroid gland.
5. High blood calcium level stimulates calcitonin secretion.

19. True or false regarding urine formation?

1. Na^+/K^+ ATPase pump in proximal convoluted tubules reabsorbs 70% of sodium ions.
2. Glomerular filtration is a non-selective passive process.
3. Reabsorption starts from the Bowman's capsule.
4. An increase in blood volume can increase the GFR.
5. Water reabsorption occurs passively.

20. True or false regarding adrenal glands,

1. Adrenal cortex produces norepinephrine.
2. Adrenal medulla secretes glucocorticoids.
3. Left adrenal gland is pyramidal in shape.
4. Bulk of adrenal cortex is made by zona fasciculata layer.
5. Adrenal medulla consists chromaffin cells.

Faculty of Health Sciences
BACHELOR OF SCIENCE HONOURS IN INDUSTRIAL PHARMACEUTICAL SCIENCES / BACHELOR OF SCIENCE HONOURS IN COSMETIC SCIENCES
IPS 2243/ BCS 2243 INORGANIC CHEMISTRY
BATCH 05- 2ND YEAR 2ND SEMESTER-END SEMESTER SEQ EXAMINATION
Date: 11th of May 2023
Time: 09.00 am – 12.00 pm - Three Hours
INSTRUCTIONS TO CANDIDATES Page

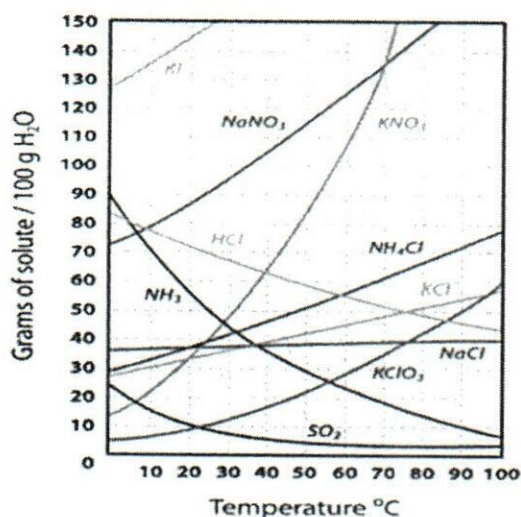
- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01
(100 marks)

- 1.1 Co, Pt, Mn are commonly used as catalysts. Explain this statement. (20 marks)
- 1.2 Explain why many d-block elements are colored. (20 marks)
- 1.3 Explain why the size of the alkali metals increase when moving down the group. (20 marks)
- 1.4 Group 16 elements have the valence electron shell structure ns^2np^4 . Explain the trends in atomic properties such as Atomic radii, Ionization enthalpy, Electronegativity, Melting and boiling point trends in Group 16. (40 marks)

Question 02
(100 marks)

- 2.1 Define Metallic bonds, Ionic bonds & Covalent bonds. (30 marks)
- 2.2 Explain the difference between homogeneous mixtures and heterogeneous mixtures. (20 marks)
- 2.3 Following figure shows how solubility of the compounds change with temperature.



The following solutions saturated, unsaturated, or supersaturated.

(Assume all are dissolved in 100 grams of water.)

(10 marks)

2.3.1.1 Amount of 50 grams of KNO_3 at 50°C

2.3.1.2 Amount of 100 grams of NaNO_3 at 80°C

2.3.2 Which solid has the highest solubility at 30°C ?

(10 marks)

2.3.3 A mass of 90 grams of KNO_3 is placed in 100ml of water at 40°C .

2.3.3.1 Will the solution be saturated?

If the answer is yes, how much KNO_3 will remain undissolved at the bottom of the container?

If the answer is no, how much more KNO_3 could be dissolved?

(10 marks)

2.3.3.2 If the solution is heated to 70°C will it be saturated? If the answer is yes, how much KNO_3 will be undissolved at the bottom of the container? If the answer is no, how much more KNO_3 could be dissolved?

(10 marks)

2.3.3.3 If the solution is cooled to 20°C will it be saturated? If the answer is yes, how much KNO_3 will be undissolved at the bottom of the container? If the answer is no, how much more KNO_3 could be dissolved?

(10 marks)

Question 03

(100 marks)

3.1 Explain why noble gases are generally unreactive and do not form chemical bonds with other elements.

(20 marks)

3.2 Briefly explain the process of isolating noble gases from air. Include the properties of the noble gases that make this process possible.

(25 marks)

3.3 State four direct applications of noble gases in medicine.

(20 marks)

3.4 Briefly explain how XeF_4 is prepared including the chemical reactions and conditions?

(20 marks)

3.5 Give three examples of how noble gases are used to create an inert atmosphere?

(15 marks)

Question 04

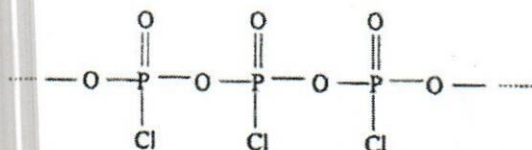
(100 marks)

4.1 What types of reactions are involved in the formation of polymers?

(10 marks)

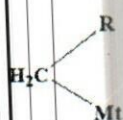
4.2 Starting from PCl_5 , using relevant reactions and conditions, illustrate the formation of the following linear long chain polymer.

(20 marks)

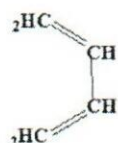


4.3 What is the resulting monomer catalyst complex when an organometallic catalyst is combined with following diene monomer?

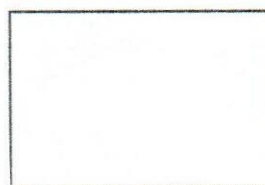
(10 marks)



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4.4 Mention four properties of silicones?

(20 marks)

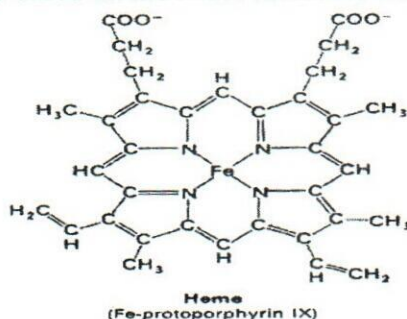
4.5 Briefly explain how do the mentioned properties of silicones make them useful in various applications?

(40 marks)

Question 05

(100 marks)

5.1 Answer the following questions based on the heme molecule which is a subunit of the hemoglobin molecule.



5.1.1 Write the metal ion present in this molecule and state whether it's bulk or a trace metal. (10 marks)

5.1.2 Write the oxidation state of the metal ion. (10 marks)

5.1.3 Oxygen transport of the haemoglobin molecule ceased due to the presence of oxidants. Briefly explain the reason. (20 marks)

5.1.4 Explain the structural difference between the haemoglobin and myoglobin molecule. (30 marks)

5.2 Briefly explain the properties of water and how it's beneficial to the biological systems (30 marks)

Question 06

(100 marks)

6.1 The questions are based on the following metals.

Na, Mg, Ca, K, Fe, Co, Ni, Zn, Cu, Cd, Hg, Mo, Pb

6.1.1 State the metal which is needed for blood clotting mechanism. (5 marks)

6.1.2 State two metals that are important to maintaining the osmotic pressure in cells. (5 marks)

6.1.3 Name the metal that is present in chlorophyll a. (5 marks)

6.1.4 Name the metal ion that is responsible for the active site of the urease enzyme. (5 marks)

6.1.5 Name the metal that is transported by ceruloplasmin protein. (5 marks)

6.1.6 Write the metal that is responsible for inhibiting heme synthase enzyme in red blood cells. (5 marks)

6.1.7 Name the metal that is responsible for forming the amalgam used to fill teeth. (5 marks)

6.1.8 State the metal that is present in vitamin B₁₂ (5 marks)

6.1.9 Name the metal that is present in the nitrogenase enzyme. (5 marks)

6.1.10 State the metal present in the porphyrin ring of heme. (5 marks)

6.2 Mercury is classified as a toxic metal for biological systems, and it can inhibit enzymes by binding to the donor atoms in the enzyme.

6.2.1 Draw the dose response curve for the mercury. (Tolerance range for Hg is 5µg/L) (20 marks)

6.2.2 State two exposure routes for mercury. (10 marks)

6.2.3 Briefly explain the toxicity of ionic mercury and alkyl mercury based on their solubility. (20 marks)

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Faculty of Health Sciences

**Bachelor of Science Honours in Industrial Pharmaceutics Science/
Bachelor of Science Honours in Cosmetic Science**

**IPS 2253/ BCS 2253 Pathology of Diseases/ Pathology for Cosmetic Science
2nd Year 2nd Semester**

End Semester SEQ Examination

4th Batch

INDEX NUMBER:

Date : 30th August 2022
Time : 09.00 a.m. – 12.00 p.m. (Three Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 1**(100 marks)**

1.1 Define following terms.

1.1.1. Hypertrophy

(15 marks)

1.1.2. Hyperplasia

(15 marks)

1.1.3. Atrophy

(15 marks)

1.1.4. Metaplasia

(15 marks)

1.2 Compare followings.

1.2.1 Acute inflammation and Chronic inflammation

(20 marks)

1.2.2 Benign tumors and Malignant tumours

(20 marks)

Question 2**(100 marks)**

2.1 Describe different types of necrosis including examples.

(40 marks)

2.2 Compare primary union and secondary union.

(25 marks)

2.3 Describe the importance of inflammation.

(35 marks)

Question 3**(100 marks)**

3.1 Describe the pathological changes in following stages of lobar pneumonia.

3.1.1 Congestion

(15 marks)

3.1.2 Red Hepatisation

(15 marks)

3.1.3 Gray Hepatisation.

(15 marks)

3.1.4 Stage of Resolution

(15 marks)

3.2 Write short note on followings.

3.2.1 Emphysema

(20 marks)

3.2.2 Components in atherosclerotic plaques

(20 marks)

Question 4**(100 marks)**

4.1 List three diseases associate with the oesophagus.

(15 marks)

4.2 Write the major differences between Ulcerative colitis and Crohn's disease.

(25 marks)

4.3 What is villous adenoma?

(25 marks)

4.4 List three factors for hyperpituitarism

(15 marks)

4.5 Write a short note on goiter.

(20 marks)

Question 5**(100 marks)**

5.1 Complete following table.

	Site		Causes	
Epidural haemorrhages	5.1.1	(10 marks)	5.1.2	(10 marks)
Subdural haemorrhages	5.1.2	(10 marks)	5.1.4	(10 marks)

5.2 Write a short note on hydrocephalus.

(25 marks)

5.3 Describe pathological changes in different stages of cerebral infarction

(35 marks)

Question 6

- 6.1 Name 3 types of Cystic Diseases of the Kidneys (15 marks)
- 6.2 Name 4 clinical signs and symptoms of renal stones (20 marks)
- 6.3 Briefly describe the condition cryptorchidism in males (15 marks)
- 6.4 Describe the disease named Myasthenia Gravis (20 marks)
- 6.5 Name 3 tests per analysis method mentioned below
- 6.3.1 Urinalysis
- 6.3.2 Blood chemistry (30 marks)



Faculty of Health Sciences

**Bachelor of Science Honours in Biomedical Science/ Bachelor of Science
Honours in Industrial Pharmaceutical Science/ Bachelor of Science
Honours in Cosmetic Science**

**BMS 2213/ IPS 2213/ BCS 2213
Anatomy and Physiology II**

2nd Year 2nd Semester

End Semester SEQ Examination

4th Batch

INDEX NUMBER:

Date : 22nd August 2022
Time : 09.00 a.m. – 11.00 a.m. (Two Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **FOUR** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 1**(100 marks)**

- 1.1 Describe the microscopic structure of the functional unit of kidneys. (30 marks)
- 1.2 Write the differences between male and female urethra. (20 marks)
- 1.3 Describe the process of urine formation. (25 marks)
- 1.4 Outline the functions of following structures of male reproductive system. (15 marks)
- 1.5 Outline the functions of male sex hormones (10 marks)

Question 2**(100 marks)**

- 2.1 "Pancreas belongs to both exocrine and endocrine glands." Comment on this statement. (25 marks)
- 2.2 Describe the microscopic view of cortex of human ovary. (25 marks)
- 2.3 Fill the table given below with the hormones secreted by anterior pituitary, target cells/organs and the function of hormone. (20 marks)

HORMONE	TARGET	FUNCTION
Eg. Thyroid (TSH) Stimulating Hormone	Thyroid gland	TH synthesis & release
a.		
b.		
c.		
d.		
e.		

- 2.4 Describe the process of oogenesis and the follicular development. (30 marks)

Question 3**(100 marks)**

- 3.1 Describe the structure of a neurone. (25 marks)
- 3.2 Describe the structure of auditory ossicles. (25 marks)
- 3.3 Outline the functions of the skin. (25 marks)
- 3.4 Describe the stages of action potential of a neurone. (25 marks)

Question 4**(100 marks)**

- 4.1 List the main types of joints based on their structural differences giving example for each type. (20 marks)
- 4.2 Describe the structure of a synovial joint. (30 marks)
- 4.3 Outline the functions of bones in human skeletal system. (20 marks)
- 4.4 Describe the process of skeletal muscle contraction. (30 marks)