



KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI

MBBS Phase - I Degree Examination - August 2026

QP CODE: A001 Anatomy Paper - I

Anatomy Paper 1 [ANA1]

Marks: 100

Duration: 180 mins.

M.C.Q: 20 X 1 = 20

Answer all the questions.

Section Duration: 30 mins

1			Oesophageal varices are seen in which part of the oesophagus?	(1)
1) Upper end 2) Middle region 3) Lower end 4) Whole of oesophagus				
2			Auditory tube opens into	(1)
1) Nasopharynx 2) Oropharynx 3) Laryngopharynx 4) Lateral wall of the nose				
3			A patient with head trauma develops CSF rhinorrhea and anosmia. Which structure is likely damaged?	(1)
1) Sella turcica 2) Cribriform plate of Ethmoid bone 3) Temporal bone 4) Occipital condyle				
4			The most common site of fracture for ribs is the	(1)
1) Tubercle 2) Head 3) Angle 4) Neck				
5			Facial colliculus in the floor of fourth ventricle is caused due to underlying	(1)
1) Facial nucleus 2) Abducent nucleus 3) Cochlear nuclei 4) Vestibular nuclei				
6			Dentine of the teeth is a derivative of	(1)
1) Odontoblasts 2) Endoderm 3) Surface ectoderm 4) Neuroectoderm				
7			A young man visits the clinic with complaints of facial swelling, high fever and headache that began after he picked at a pimple near the nose. The doctor becomes concerned about a possible spread of infection from this region to the brain through venous connections. Infection in the dangerous area of the face usually leads to	(1)
1) Superior sagittal sinus thrombosis 2) Transverse sinus thrombosis 3) Cavernous sinus thrombosis 4) Brain abscess				
8			Taste buds are absent in which of the following papillae?	(1)
1) Circumvallate 2) Fungiform 3) Filiform 4) Foliate				
9			All of the following bones are examples of sesamoid bone EXCEPT	(1)
1) Patella 2) Fabella 3) Fibula 4) Pisiform				

10			A 55-year-old male presents to the emergency department with severe, crushing chest pain radiating to his left arm and jaw, accompanied by shortness of breath and sweating. ECG findings confirm a diagnosis of acute myocardial infarction. Considering the most common site of myocardial infarction, which coronary artery is most frequently occluded in such cases, leading to ischemia and necrosis of the ventricular myocardium?										(1)	
			1)	Posterior descending artery (PDA)		2)	Left anterior descending (LAD) artery		3)	Right Coronary Artery (RCA)		4)	Left Circumflex Artery (LCA)	
11			Duct of Rivinus is concerned with										(1)	
			1)	Sublingual gland		2)	Parotid gland		3)	Submandibular gland		4)	None of the above	
12			How many spinal nerves are there in the cervical region?										(1)	
			1)	8		2)	7		3)	6		4)	12	
13			A 55 year old female complained of abnormal sensations and intermittent attacks of pain in thumb, index finger, middle finger and part of ring finger. The pain increased in the night. There was weakness of thumb movements. She was diagnosed as a case of Carpal Tunnel syndrome. Which nerve is affected in Carpal Tunnel syndrome?										(1)	
			1)	Axillary		2)	Median		3)	Radial		4)	Ulnar	
14			Sweat glands are example for which of the following glands?										(1)	
			1)	Apocrine		2)	Merocrine		3)	Holocrine		4)	Heterocrine	
15			Which of the following muscles is derived from the third arch?										(1)	
			1)	Stylohyoid		2)	Muscles of larynx		3)	Muscles of pharynx		4)	Stylopharyngeus	
16			Lateral cutaneous nerve of forearm is a continuation of which of the following nerve?										(1)	
			1)	Radial		2)	Musculocutaneous		3)	Ulnar		4)	Median	
17			In the respiratory tract, the surfactant is secreted by which cells?										(1)	
			1)	Goblet		2)	Brush		3)	Kulchitsky		4)	Clara	
18			A 28-year-old man comes to the emergency department after getting hit in the eye with a tennis ball. He complains of pain and blurred vision. On examination, there is noticeable swelling and redness around the eye. The physician suspects damage to the structures of the eyeball. Which of the following structure of the eyeball is responsible for maintaining its shape?										(1)	
			1)	Cornea		2)	Lens		3)	Retina		4)	Vitreous body	
19			Primary center of ossification appears in										(1)	
			1)	Epiphysis		2)	Metaphysis		3)	Diaphysis		4)	Epiphyseal plate	
20			Which of the following structures prevent sticking of blastocyst to the epithelium of tube?										(1)	
			1)	Theca interna		2)	Theca externa		3)	Zona pellucida		4)	Granulosa cells	

Long Essay Questions: 10 X 1 = 10

Answer all the questions.

21			A man fell from the stairs and he was taken to the hospital. On examination it was observed that there was loss of normal rounded contour of his right shoulder along with severe pain. The patient was diagnosed as a case of dislocation of shoulder joint. Describe the shoulder joint under the following headings: a) Articular surfaces b) Ligaments c) Movements				(10)
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Short Essay Questions: 11 X 5 = 55

Answer all the questions.

22			A 35 year old male visited the hospital and complained of severe pain on the right side of his chest for the past two weeks. He also had a little difficulty in breathing. On auscultation doctor noticed the absence of breath sounds over the lower lobe of his right lung. The X-ray of the chest PA view revealed obliteration of recesses with dense homogeneous opacity on the affected area. He was diagnosed as a case of pleural effusion? (5) a) What is pleural effusion? b) Name the recesses of pleura? c) Mention the blood supply and nerve supply of pleura. (1+1+3)
23			Mention the boundaries and contents of superior mediastinum. (5)
24			Explain the microscopic structure of Pituitary gland. (5)
25			Describe the boundaries and contents of Digastric triangle. (5)
26			Describe the development of interatrial septum and its congenital anomalies. (5)
27			A patient presented to the hospital with the history of fall on outstretched hand. On examination it was observed that there was hyperextension of metacarpophalangeal joints and flexion at interphalangeal joints. The patient was diagnosed as a case of Klumpke's paralysis. (5) a) Injury to which part of brachial plexus results in Klumpke's paralysis? b) Describe the formation of brachial plexus (1+4)
28			A 20-year-old man complained of headache, progressive weakness of both lower limbs and incontinence of urine. On investigation, the MRI showed a parasagittal meningioma pressing on the superomedial border of cerebrum. (5) a) Based on the signs and symptoms, which area of the brain is affected in this patient? b) Which artery supplies that area? c) Write a note on sulci and gyri of medial surface of cerebrum. (1+1+3)
29			Describe the Circle of Willis and its branches with a neat labeled diagram. (5)
30			Describe the boundaries and contents of Cubital fossa. (5)
31			A 65 year old male patient came to emergency room with severe tightness of chest, pain in left side of chest radiating along with left side of arm and forearm. E.C.G. was done immediately. He was diagnosed with ischemic heart disease. (5) Describe origin, course and branches of coronary arteries.
32			A 65-year-old woman with diabetes develops gangrene in her foot. The doctors advise immediate amputation to save her life. However, the patient refuses surgery, saying she would rather die than lose her leg. Her family is eager to know about other treatment options. How to apply the principles of communication in this case? (5)

Short Answer Questions: 3 X 5 = 15

Answer all the questions.

33			What are the features of wrist drop? Which nerve is injured in wrist drop? (3)
34			Mention the mechanism of Capacitation. (3)

35			Draw a neat labelled diagram of cut section of medulla oblongata at the level of pyramidal decussation.	(3)
36			Draw a neat labelled diagram of microscopic structure of palatine tonsil.	(3)
37			Mention the importance of Bregma.	(3)

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI

MBBS Phase - I Degree Examination - August 2026

QP CODE: A002 Anatomy Paper - II

Anatomy Paper 2 [ANA2]

Marks: 100

Duration: 180 mins.

M.C.Q: 20 X 1 = 20

Answer all the questions.

Section Duration: 30 mins

1				Duodenal cap is a normal finding in	(1)
				1) Cholecystography	
				2) Barium meal	
				3) Pyelography	
				4) Barium enema	
2				Which of the following acts as an unlocking muscle of the knee joint?	(1)
				1) Popliteus	
				2) Flexor digitorum longus	
				3) Tibialis posterior	
				4) Flexor hallucis longus	
3				Trigone of urinary bladder is developed from absorption of	(1)
				1) Mesonephric ducts	
				2) Paramesonephric ducts	
				3) Ductus arteriosus	
				4) Ductus venosus	
4				Ureteric bud develops from	(1)
				1) Pronephros	
				2) Mesonephros	
				3) Metanephros	
				4) Mesonephric duct	
5				The phagocytic cells lining the blood sinusoids of liver are called as	(1)
				1) Kupffer cells	
				2) Stave cells	
				3) Ito cells	
				4) Lacis cells	
6				A 60-year-old male presents with jaundice and weight loss. Imaging shows a mass at the head of the pancreas. Which structure is most likely to be compressed?	(1)
				1) Portal vein	
				2) Common bile duct	
				3) Hepatic artery	
				4) Inferior vena cava	
7				Derivatives of hindgut are all the following EXCEPT	(1)
				1) Descending colon	
				2) Sigmoid colon	
				3) Left one third of transverse colon	
				4) Proctodeum below anal membrane	
8				Cri-du-chat syndrome results from deletion of the short arm of	(1)
				1) Chromosome 5	
				2) Chromosome 13	
				3) Chromosome 18	
				4) Chromosome 4	
9				Centroacinar cells are seen in	(1)
				1) Liver	
				2) Pancreas	
				3) Parotid gland	
				4) Pituitary gland	
10				A 65-year-old man with prostate cancer develops lower limb swelling. Which lymph nodes are most likely involved?	(1)
				1) External iliac	
				2) Inguinal	
				3) Para-aortic	
				4) Internal iliac	
11				Which important cardinal features of large intestine is / are absent in rectum?	(1)
				1) Sacculations	
				2) Appendices epiploicae	
				3) Tenia coli	
				4) All of the above	
12				A 26 year old male, who met with a road accident was brought to the emergency department by traffic	(1)

police with profuse bleeding distal to the right knee joint. The doctor will immediately compresses which artery to prevent bleeding by applying pressure at the point located in the upper part of the thigh?

1) Femoral artery		2) Obturator artery		3) Posterior tibial artery		4) Popliteal artery	
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13

Which muscle is called the peripheral heart?

(1)

1) Popliteus		2) Soleus		3) Gastrocnemius		4) Tibialis Posterior	
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14

A 45-year-old male presents with increased thirst, frequent urination and unexplained weight loss. His blood investigations confirm a diagnosis of Type 2 Diabetes Mellitus. Considering the primary anatomical structure involved in insulin production, which part of the pancreas is predominantly affected in this condition, leading to the destruction of beta cells?

(1)

1) Tail of the pancreas		2) Body of the pancreas		3) Pancreatic duct		4) Head of the pancreas	
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15

The karyotype 45XO is seen in

(1)

1) Edward syndrome		2) Down's syndrome		3) Turner's syndrome		4) Patau syndrome	
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16

A 23 year old primigravida presents with abdominal pain, syncope and vaginal spotting. Assessment reveals that she has an ectopic pregnancy. The most **common** site of fertilization in fallopian tube is

(1)

1) Ampulla		2) Fimbrial end		3) Isthmus		4) Infundibulum	
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17

Meissner's plexus is seen in which of the following layer of gastrointestinal tract?

(1)

1) Mucosa		2) Submucosa		3) Muscularis externa		4) Serosa	
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18

Hydrocele is caused because of persistence of

(1)

1) Mullarian ducts		2) Cryptorchidism		3) Ectopic testis		4) Processus vaginalis	
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19

Juxtaglomerular cells are the modified smooth muscle cells in tunica media of

(1)

1) Afferent arteriole		2) Glomerulus		3) Efferent arteriole		4) Loop of Henle	
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20

Crossing over in meiosis occurs in

(1)

1) Leptotene		2) Pachytene		3) Diplotene		4) Diakinesis	
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Long Essay Questions: 10 X 1 = 10

Answer all the questions.

21

A 55 year old woman complained that since past 2 months she has been feeling the sensations of something coming down into the vagina. She also complained of dribbling of urine on forceful coughing and increased frequency of micturition. On PV examination, the gynaecologist found the descent of cervix into the vagina and cystocele. A diagnosis of Uterovaginal prolapse was made.

(10)

- What is anteversion and anteflexion of Uterus?
- Describe parts and relations of Uterus.
- Describe the supports of Uterus.
- What are the causes of prolapse of Uterus? (2+3+4+1)

Short Essay Questions: 11 X 5 = 55

Answer all the questions.

22

Describe the microscopic structure of Liver.

(5)

23

A 3 year old male child was brought to the hospital with clinical features of mental retardation. After detailed history taking, physical examination and investigations, child was diagnosed with a case of Down's syndrome by the Pediatrician.

(5)

- What is the genotype in this case?
- State the causes of Down's syndrome.

c) List the clinical features of Down's syndrome. (1+2+2)

24			Describe the midgut rotation of Gut.	(5)
25			Describe the principles and different ways on improving communication skills.	(5)
26			A 57-year-old male, a chronic smoker, presented with pain behind the right knee joint. He also complained of leg pain with exercise (claudication). On clinical examination, the doctor found a pulsating lump behind the joint. He was diagnosed with popliteal aneurysm. a) Specify the boundaries of the popliteal fossa and its contents. b) Define Aneurysm. Name the arteries which are commonly affected by aneurysms. (3+2)	(5)
27			A 46-year-old female with history of chronic constipation, presented with severe pain during and after defecation and bright red blood on toilet paper after a bowel movement. On examination, the doctor found a visible crack in the skin at the anal verge. Diagnosis of Anal fissure was made. a) What is the anatomical basis of anal fissure? b) What is Hilton's line? c) Explain the interior of anal canal. (1+1+3)	(5)
28			Describe the formation, course and tributaries of Great Saphenous Vein.	(5)
29			A trauma patient presents with left upper quadrant pain in abdomen and signs of internal bleeding. Imaging reveals a ruptured spleen. Describe the anatomical relations and vascular supply of the spleen.	(5)
30			Describe the origin, insertion, nerve supply and action of hamstring muscles.	(5)
31			Describe the blood supply and lymphatic drainage of stomach.	(5)
32			A 58-year-old female, presents with persistent fatigue, increased thirst and urination, unexplained weight loss and occasional blurred vision. She has a history of gestational diabetes and a family history of Type 2 Diabetes. Initial tests suggest glucose and ketones in her urine. She is provisionally diagnosed with Diabetes Mellitus. a) Name the location and parts of Pancreas. b) Which major structure is closely associated with the head of the pancreas? c) Which are the specialized clusters of cells within the pancreas responsible for hormone production? d) Which specific cell type within these clusters produces insulin? (2+1+1+1)	(5)

Short Answer Questions: 3 X 5 = 15

Answer all the questions.

33			Describe the importance of Gastric canal.	(3)
34			Draw a neat labeled diagram of the microscopic structure of Ileum.	(3)
35			Mention the differences between direct and indirect inguinal hernia.	(3)
36			Mention the causes and symptoms of varicose veins.	(3)
37			Enumerate Derivatives of paramesonephric duct in both sexes.	(3)

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI

MBBS Phase - I Degree Examination - August 2026

QP CODE: A005 Biochemistry Paper - I

Biochemistry Paper 1 [BIO1]

Marks: 100

Duration: 180 mins.

M.C.Q: 20 X 1 = 20

Answer all the questions.

Section Duration: 30 mins

1			The all-trans retinal in liver is converted to all-trans retinol by	(1)				
1)	Lactate dehydrogenase	2)	Succinate dehydrogenase	3)	Alcohol dehydrogenase	4)	Pyruvate dehydrogenase	
2			Groundnut oil is a rich source of which of the following fatty acids?	(1)				
1)	Saturated fatty acids	2)	Mono-unsaturated fatty acids	3)	Polyunsaturated fatty acids	4)	All of the above	
3			Which of the following substances exert beneficial effects in the prevention of cancer	(1)				
1)	Vitamin E	2)	Beta -Carotene	3)	Vitamin C	4)	All of the above	
4			In erythrocyte, glucose transport is an example of	(1)				
1)	Simple diffusion	2)	Active transport	3)	Facilitated diffusion	4)	Ion driven active transport	
5			A 28 year old female from low socioeconomic background comes to the medicine department with complaints of recurrent episodes of diarrhoea & intense itching of the skin. After clinical evaluation and a few laboratory tests, the clinician makes a diagnosis of Pellagra. Pellagra is a nutritional disorder caused due to deficiency of	(1)				
1)	Thiamine	2)	Riboflavin	3)	Niacin	4)	Pantothenic acid	
6			Following is the end product in beta oxidation of odd chain fatty acids	(1)				
1)	Succinyl CoA	2)	Propionyl CoA	3)	Malonyl CoA	4)	Valeryl CoA	
7			Which of the following has the highest Glycemic index?	(1)				
1)	Table sugar	2)	Ice cream	3)	Rice	4)	Legumes	
8			A child was brought with delayed developmental mile stones, hypoglycemia, congenital cataract and jaundice. On examination hepatosplenomegaly was noted. What is the probable diagnosis?	(1)				
1)	Galactosemia	2)	Von Gierke's disease	3)	Pompe's disease	4)	Cori's disease	
9			Conversion of Acetyl-CoA to Malonyl- CoA requires which of the following enzyme?	(1)				
1)	Acetyl-CoA carboxylase	2)	Pyruvate carboxylase	3)	Acetyl trans acylase	4)	Acyl CoA-synthetase	
10			Who among the following would most likely be in a negative nitrogen balance?	(1)				
1)	Adult with uncontrolled Diabetes Mellitus	2)	Pregnant woman	3)	Growing child	4)	All of the above	
11			Sunflower oil is a rich source for which of the following type of fatty acids?	(1)				

1)	Saturated fatty acids	2)	Monosaturated fatty acids	3)	Polyunsaturated fatty acids	4)	Trans fatty acids
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12

A 62 year old male whose total cholesterol was found to be elevated, was prescribed Atorvastatin (statin). He was told that this drug will lower his blood cholesterol level. Which enzyme will this drug inhibit to bring about the said effects?

(1)

1)	Beta hydroxy beta methylglutaryl CoA synthase	2)	Beta hydroxy beta methylglutaryl CoA reductase	3)	Cholesterol esterase	4)	Cholesterol reductase
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13

Which of the following is **NOT** a substrate for Electron Transport Chain

(1)

1)	NADPH	2)	NADP	3)	FADH2	4)	None of the above
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14

Insulin dependent glucose transporter is

(1)

1)	GLUT-1	2)	GLUT-2	3)	GLUT-3	4)	GLUT-4
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15

Both glycolysis and gluconeogenesis pathways utilize all the following enzymes **EXCEPT**

(1)

1)	Phosphofructokinase	2)	Glyceraldehyde 3 phosphate dehydrogenase	3)	1, 3 bisphosphoglycerate kinase	4)	Phosphoglucomutase
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16

Aspirin at low dose of 75 mg per day was advised to a 55-year-old male, a known hypertensive with strong family history of heart diseases. Which of the following reaction is blocked by aspirin?

(1)

1)	Arachidonic acid → thromboxane	2)	Arachidonic acid → leukotrienes	3)	Arachidonic acid → phospholipids	4)	Linoleic acid → arachidonic acid
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17

Vitamin B1 coenzyme (TPP) is involved in

(1)

1)	Oxidative decarboxylation	2)	Hydroxylation	3)	Transamination	4)	Carboxylation
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18

Free fatty acids are transported in plasma in which of the following form

(1)

1)	Component of VLDL	2)	Component of chylomicron remnants	3)	Part of LDL	4)	Ligand bound to albumin
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19

A patient with type 1 diabetes mellitus takes an insulin injection before eating dinner but then gets distracted and does not eat. Approximately 3 hours later, the patient becomes shaky, sweaty and confused. These symptoms have occurred because of which of the following?

(1)

1)	Decreased blood levels of cortisol	2)	Decreased glucagon release from the pancreas	3)	High blood glucose levels	4)	Low blood glucose levels
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20

The cell organelle which receives newly formed proteins, packs and distributes them is

(1)

1)	Lysosome	2)	Ribosomes	3)	Golgi complex	4)	Mitochondria
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Long Essay Questions: 10 X 1 = 10

Answer all the questions.

21

A 40-year-old man woke up from sleep with painful swollen right toe. On previous night he had non vegetarian diet along with alcohol. On investigation his serum uric acid levels were 8mg/dL. A diagnosis of acute gouty arthritis was made.

a) Which drug is used as a competitive inhibitor for the treatment in above case? Name the enzyme it inhibits.

(10)

b) Explain competitive inhibition with a graph showing changes in Vmax and Km.

c) Give **two** other detailed examples of competitive inhibitors? (2+5+3)

Short Essay Questions: 11 X 5 = 55

Answer all the questions.

22			A 35 year old male visits the medical OPD with complaints of bleeding gums. On examination; nails were found to be brittle, gums were found to be tender, swollen and spongy. Sub conjunctival haemorrhage was seen. Peripheral smear showed microcytic hypochromic anaemia. a) Mention the deficient Vitamin in the above case. (5) b) List the biochemical functions of this vitamin. (1+4)
23			Outline the flow of electrons in the Electron Transport Chain (ETC). Enumerate any two inhibitors of ETC. (4+1) (5)
24			A 36 year male who was given Primaquine as a prophylaxis for Malaria, presented with diffuse pain in abdomen, vomiting, yellowish discoloration of sclera and skin and acute breathlessness. Laboratory investigations are as follows: Haemoglobin- 5.4 g/dL (12-14g/dL) Serum Total bilirubin- 17.08 mg/dL, Direct bilirubin- 4.2, Indirect bilirubin- 12.88 mg/dl. In the view of these results it was diagnosed as a case of Glucose-6-Phosphatase deficiency. (5) a) Discuss the mechanism of haemolysis in this case. b) Detail the importance of HMP shunt pathway. (2.5+2.5)
25			Explain the role of low-density lipoprotein in atherosclerosis with a neat labelled diagram. (5)
26			Enlist three carcinogens. Discuss the mechanism of carcinogenesis. (1.5+3.5) (5)
27			Define Phospholipids. Give examples and mention their functions. (1+2+2) (5)
28			Define Tumor Markers. Enlist the characteristics of an ideal tumor marker. Name the tumor marker for hepatocellular carcinoma. (1+3+1) (5)
29			A 7-year-old boy with enlarged abdomen was irritable, lethargic and frequently hungry. His developmental mile stones were comparatively slow. Clinical examination showed enlarged liver. Blood parameters are as follows: Fasting blood glucose 40 mg/dL, Serum uric acid 8.8 mg/dL, Serum lactic acid 15 mg/dL blood pH 7.25. There was no increase in blood glucose even after giving IV adrenaline injection. (5) a) What is the diagnosis? b) Name the enzyme deficiency in this disorder. c) Interpret and give biochemical basis for the laboratory findings in this case. (1+1+3)
30			The risk benefit analysis of a surgical procedure is mentioned to the patient by the doctor. Mention the role of the Indian Medical Graduate which is highlighted in this scenario. Enlist the other roles of the Indian Medical Graduate. (1+4) (5)
31			Compare and contrast between Marasmus and Kwashiorkor. (5)
32			A 53-year-old man met a physician with the complaints saying that he was feeling weak and getting tired more rapidly than usual. He had a small wound on his right leg which did not heal inspite of adequate treatment. His laboratory findings were: Fasting blood glucose 190 mg/dL, Glycated Hb 8.5% Urinalysis - Glucose 1+, ketones present and proteins negative. (5) a) What is the probable diagnosis? b) What is WHO criteria to diagnose the above disease? c) What is the normal level of glycated haemoglobin? (1+3+1)

Short Answer Questions 5 X 3 = 15

Answer all the questions.

33			Justify the statement Vitamin D is considered as a steroid hormone. (3)
34			Curds can be given to a patient with Lactose intolerance. Why? (3)

35			High concentration of prostaglandins are used in the treatment of postpartum haemorrhage. Why?	(3)
36			Liver can synthesize ketone bodies but cannot utilise them. Why?	(3)
37			Give reason as to why a patient with gall stones may suffer from fat soluble vitamin deficiency.	(3)

-----End-----



KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI

MBBS Phase - I Degree Examination - August 2026

QP CODE: A006 Biochemistry Paper - II

Biochemistry Paper 2 [BIO2]

Marks: 100

Duration: 180 mins.

M.C.Q: 20 X 1 = 20

Answer all the questions.

Section Duration: 30 mins

1			Which of the following enzyme has an intrinsic proof reading activity in Eukaryotic replication?	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) DNA Polymerase α</td> <td style="width: 25%;">2) DNA Polymerase β</td> <td style="width: 25%;">3) DNA Polymerase γ</td> <td style="width: 25%;">4) DNA Polymerase δ</td> </tr> </table>	1) DNA Polymerase α	2) DNA Polymerase β	3) DNA Polymerase γ	4) DNA Polymerase δ	
1) DNA Polymerase α	2) DNA Polymerase β	3) DNA Polymerase γ	4) DNA Polymerase δ					
2			Marfan's syndrome results from a mutation in the gene coding in	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Collagen</td> <td style="width: 25%;">2) Elastin</td> <td style="width: 25%;">3) Fibrillin</td> <td style="width: 25%;">4) Keratin</td> </tr> </table>	1) Collagen	2) Elastin	3) Fibrillin	4) Keratin	
1) Collagen	2) Elastin	3) Fibrillin	4) Keratin					
3			Which of the following best describes the Degeneracy of genetic code?					
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Single codon stands for multiple amino acids</td> <td style="width: 25%;">2) One amino acid is represented by multiple codons</td> <td style="width: 25%;">3) Overlapping of codons is observed at times</td> <td style="width: 25%;">4) Some codons contain 4 bases instead of 3 bases</td> </tr> </table>	1) Single codon stands for multiple amino acids	2) One amino acid is represented by multiple codons	3) Overlapping of codons is observed at times	4) Some codons contain 4 bases instead of 3 bases	(1)
1) Single codon stands for multiple amino acids	2) One amino acid is represented by multiple codons	3) Overlapping of codons is observed at times	4) Some codons contain 4 bases instead of 3 bases					
4			All of the following are phase- I detoxification reactions EXCEPT	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Conjugation</td> <td style="width: 25%;">2) Hydrolysis</td> <td style="width: 25%;">3) Reduction</td> <td style="width: 25%;">4) Hydroxylation</td> </tr> </table>	1) Conjugation	2) Hydrolysis	3) Reduction	4) Hydroxylation	
1) Conjugation	2) Hydrolysis	3) Reduction	4) Hydroxylation					
5			A 12 year old child presents with mental retardation and history of self mutilation. Which of the following tests will help in determining the diagnosis?	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Serum lead levels</td> <td style="width: 25%;">2) Serum alkaline phosphatase levels</td> <td style="width: 25%;">3) Serum lactate dehydrogenase levels</td> <td style="width: 25%;">4) Serum uric acid levels</td> </tr> </table>	1) Serum lead levels	2) Serum alkaline phosphatase levels	3) Serum lactate dehydrogenase levels	4) Serum uric acid levels	
1) Serum lead levels	2) Serum alkaline phosphatase levels	3) Serum lactate dehydrogenase levels	4) Serum uric acid levels					
6			The immunoglobulins are classified on the basis of	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Light chains</td> <td style="width: 25%;">2) Heavy chains</td> <td style="width: 25%;">3) Carbohydrate content</td> <td style="width: 25%;">4) Electrophoretic mobility</td> </tr> </table>	1) Light chains	2) Heavy chains	3) Carbohydrate content	4) Electrophoretic mobility	
1) Light chains	2) Heavy chains	3) Carbohydrate content	4) Electrophoretic mobility					
7			All of the following histones are found within superhelix formed between DNA and histone octamer EXCEPT	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) H2B</td> <td style="width: 25%;">2) H1</td> <td style="width: 25%;">3) H3</td> <td style="width: 25%;">4) H2A</td> </tr> </table>	1) H2B	2) H1	3) H3	4) H2A	
1) H2B	2) H1	3) H3	4) H2A					
8			A 45-year-old woman presents with fatigue, weight gain, constipation, dry skin and cold intolerance. Laboratory findings show elevated Thyroid Stimulating Hormone (TSH) and normal Total T4 levels. What is the most likely diagnosis?	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Primary hypothyroidism</td> <td style="width: 25%;">2) Subclinical hypothyroidism</td> <td style="width: 25%;">3) Secondary (central) hypothyroidism</td> <td style="width: 25%;">4) Euthyroid sick syndrome</td> </tr> </table>	1) Primary hypothyroidism	2) Subclinical hypothyroidism	3) Secondary (central) hypothyroidism	4) Euthyroid sick syndrome	
1) Primary hypothyroidism	2) Subclinical hypothyroidism	3) Secondary (central) hypothyroidism	4) Euthyroid sick syndrome					
9			Brain is very sensitive to Ammonia; hence, Ammonia is removed from brain mainly by formation of which of the following compound?	(1)				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Creatinine</td> <td style="width: 25%;">2) Uric acid</td> <td style="width: 25%;">3) Glutamine</td> <td style="width: 25%;">4) Aspartamine</td> </tr> </table>	1) Creatinine	2) Uric acid	3) Glutamine	4) Aspartamine	
1) Creatinine	2) Uric acid	3) Glutamine	4) Aspartamine					
10			Proteins synthesised are NOT targeted to the lysosomes in which of the following condition?	(1)				

	1)	Cystic fibrosis		2)	Zellweger syndrome		3)	Inclusion cell disease		4)	Familial hypercholesterolemia		
11			A 65 year old female presented to the clinic with complains of vomiting and diarrhoea. Her physical examination revealed dry mucous membrane, postural hypotension. The ECG findings revealed; Flattening of ECG waves, T wave inversion, lowered ST segment. What is the probable diagnosis?										(1)
	1)	Hypokalemia		2)	Hyperkalemia		3)	Hypernatremia		4)	Hyponatremia		
12			Which of the following is required for the synthesis of porphyrins?										(1)
	1)	Ammonia		2)	Glycine		3)	Carbon dioxide		4)	Methionine		
13			A 32-year-old diagnosed with stroke is given Aspirin in combination with other drugs as blood thinner. How is Aspirin metabolised in the body?										(1)
	1)	By Oxidation		2)	By Conjugation		3)	By Hydrolysis		4)	By Reduction		
14			Which of the following is non protein amino acid?										(1)
	1)	Proline		2)	Histidine		3)	Ornithine		4)	Alanine		
15			HbF has high affinity for Oxygen than HbA due to the presence of										(1)
	1)	β chain		2)	γ chain		3)	δ chain		4)	ϵ chain		
16			A 7-year-old boy from Rajasthan presents with mottling, yellowish discolouration and rough ridges on teeth. Deformity of long bones was also noticed. This condition could be due to increase in level of which mineral in the blood and tissues?										(1)
	1)	Iron		2)	Magnesium		3)	Phosphorus		4)	Fluorine		
17			Carrier proteins involved in Iron absorption include all EXCEPT										(1)
	1)	Divalent metal transporter		2)	Ferroportin		3)	Hepcidin		4)	Hephaestin		
18			Apprehensive mother ran to the paediatrician as she noticed black colour staining of her baby's diaper. What could be the probable diagnosis?										(1)
	1)	Phenylketonuria		2)	Albinism		3)	Alkaptonuria		4)	Maple syrup urine disease		
19			Hereditary Non-Polyposis Colon Cancer occurs due to defect in										(1)
	1)	Mismatch repair		2)	Base excision repair		3)	Nucleotide excision repair		4)	Double strand break repair		
20			A 40-year-old woman complains of fever, anorexia, malaise and right upper quadrant discomfort. Laboratory findings suggested hepatic jaundice. What is the most probable cause for jaundice in this case?										(1)
	1)	Acute viral hepatitis		2)	Cholestasis		3)	Cancer head of pancreas		4)	Gall bladder stones		

Long Essay Questions: 10 X 1 = 10

Answer all the questions.

21			These are the acid base parameters of a 56-year-old male, a chronic smoker who was admitted for difficulty in breathing due to Chronic Obstructive Pulmonary Disease (COPD). Blood pH - 7.2, pCO ₂ - 65 mmHg and Bicarbonate - 24 mEq/L. a) Interpret the given laboratory data. b) What is the underlying acid base disorder? c) Discuss the role of kidneys in regulation of acid base balance. (3+1+6)						(10)
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Short Essay Questions: 11 X 5 = 55

Answer all the questions.

22			A 60-year-old male with Chronic Kidney Disease (CKD) presents with uncontrolled Blood Pressure (170/105 mmHg). He was asked to get the following investigations and the report were as follows: Serum creatinine- 4mg/dl, Blood Urea- 60mg/dl, Glomerular Filtration Rate -70 mL/min. a) How does impaired renal function lead to hypertension? (5) b) What is the rationale behind assessing creatinine and urea in renal function? c) How does reduced eGFR affect electrolyte balance? (2+2+1)
23			List the functions of Sodium in the body. Describe the role of renin-angiotensin -aldosterone system to maintain Sodium levels in the body. (5)
24			A 61-year-old grossly overweight woman presented with complaints of cramps and spasms of both hands. She was depressed and had positive Trousseau's and Chvostek's signs. Past medical history revealed history of thyroidectomy for Grave's disease. The laboratory results obtained were as follows: Serum Calcium - 5.2 mg/dl, Serum phosphate - 5.9 mg% a) What is the probable condition in this case scenario? (5) b) Interpret the laboratory investigations along with their normal range. c) Discuss the regulation of serum calcium. (1+2+2)
25			Explain the different types of secondary structure of protein with suitable diagrams. (5)
26			Discuss in brief the role of Recombinant DNA technology in diagnosis and therapy. (5)
27			A 19-year-old male presents to the clinic with a history of tall stature, long limbs and joint hypermobility. He also reports experiencing chest pain and shortness of breath during physical activities. On examination, he exhibits pectus excavatum, scoliosis and a high-arched palate. Physician diagnosed it to be Marfan's syndrome due to defect in collagen (5) a) Describe the structure of collagen. b) Enumerate any two other disorders caused due to abnormalities in structure of collagen. (4+1)
28			Mention the molecular defect of Sickle cell anemia. Enlist three clinical features of it. Mention the type of Jaundice seen in Sickle cell anemia. (1+3+1) (5)
29			A 30-year-old woman complains of sneezing, watery eyes and nasal congestion every spring season. a) What is the type of hypersensitivity reaction likely to be associated with this condition? b) Which immunoglobulin is predominantly involved in this reaction? c) What is the role of mast cells and basophils in this condition? (5) d) Explain the role of histamine in allergic reactions. (1+1+2+1)
30			Outline the synthesis of Catecholamines and Melanin. (5)
31			Define Mutation. Explain types of mutations with examples. (5)
32			A male Doctor while examining a female patient makes sure that a female attendant is also there during examination. Mention the role of the Indian Medical Graduate which is highlighted in this scenario. Discuss the commitment to lifelong learning as an important part of professional growth. (5)

Short Answer Questions: 5 X 3 = 15

Answer all the questions.

33			Vitamin C deficiency leads to defective collagen formation. Justify. (3)
34			Orotic aciduria causes megaloblastic anemia that is unresponsive to vitamin B12 and folate. Justify. (3)
35			Justify why jaundice in first few days of neonatal life is called as physiological jaundice. (3)
36			Defect in phenylalanine hydroxylase leads to both neurological and dermatological symptoms in Phenylketonuria (PKU). Justify (3)

37		
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Justify the statement: Why is Calcium supplementation not always effective in osteoporosis without adequate vitamin D?

(3)

-----End-----



KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI

MBBS Phase - I Degree Examination - August 2026

QP CODE: A003 Physiology Paper - I

Physiology Paper 1 [PHY1]

Marks: 100

Duration: 180 mins.

M.C.Q: 20 X 1 = 20

Answer all the questions.

Section Duration: 30 mins

- | | | | | | | | | | |
|--|---|--|--|--|-----|--|---|--|--|
| 1 | | | | <p>A patient complains of vague abdominal pain, nausea and difficulty in swallowing meals for the past 3 years. On endoscopic guided biopsy chronic non-specific gastritis suggestive of Zollinger-Ellison syndrome is seen. The hormone that is responsible for hypersecretion of gastric acid in this case is</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Secretin</td> <td style="width: 25%;">2) Cholecystokinin</td> <td style="width: 25%;">3) Gastrin</td> <td style="width: 25%;">4) Ghrelin</td> </tr> </table> | | | | | | 1) Secretin | 2) Cholecystokinin | 3) Gastrin | 4) Ghrelin |
| 1) Secretin | 2) Cholecystokinin | 3) Gastrin | 4) Ghrelin | | | | | | |
| 2 | | | | <p>A 30-year-old complains of headaches and vertigo. The blood test reveals a hematocrit of 55% suggesting polycythemia. Which of the following would be increased?</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Radius of the resistance vessels</td> <td style="width: 25%;">2) Radius of the capacitance vessels</td> <td style="width: 25%;">3) Mean blood pressure</td> <td style="width: 25%;">4) Capillary blood flow</td> </tr> </table> | | | | | | 1) Radius of the resistance vessels | 2) Radius of the capacitance vessels | 3) Mean blood pressure | 4) Capillary blood flow |
| 1) Radius of the resistance vessels | 2) Radius of the capacitance vessels | 3) Mean blood pressure | 4) Capillary blood flow | | | | | | |
| 3 | | | | <p>A 68 year old chronic smoker presents with shortness of breath. On clinical examination and investigations the patient is diagnosed with chronic pulmonary emphysema. Compared to a healthy nonsmoker he has</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Decreased compliance, decreased TLC</td> <td style="width: 25%;">2) Increased compliance, increased TLC</td> <td style="width: 25%;">3) Decreased compliance, increased TLC</td> <td style="width: 25%;">4) Increased compliance, decreased TLC</td> </tr> </table> | | | | | | 1) Decreased compliance, decreased TLC | 2) Increased compliance, increased TLC | 3) Decreased compliance, increased TLC | 4) Increased compliance, decreased TLC |
| 1) Decreased compliance, decreased TLC | 2) Increased compliance, increased TLC | 3) Decreased compliance, increased TLC | 4) Increased compliance, decreased TLC | | | | | | |
| 4 | | | | <p>A 6 year old boy bruises easily on trivial injury and has history of bleeding gums. His maternal grandfather also has a bleeding disorder. The inherited bleeding disorder in this case is due to deficiency of</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Factor II</td> <td style="width: 25%;">2) Factor VIII</td> <td style="width: 25%;">3) Factor X</td> <td style="width: 25%;">4) Factor XIII</td> </tr> </table> | | | | | | 1) Factor II | 2) Factor VIII | 3) Factor X | 4) Factor XIII |
| 1) Factor II | 2) Factor VIII | 3) Factor X | 4) Factor XIII | | | | | | |
| 5 | | | | <p>A 9-year-old girl has nasal discharge and itching of the eyes in the spring season every year. An allergist performs a skin test using a mixture of grass pollens. Within a few minutes the girl exhibits a focal redness and swelling at the test site. This response in immediate hypersensitivity reaction is due to</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Ig E</td> <td style="width: 25%;">2) Activated T cells</td> <td style="width: 25%;">3) Ig G</td> <td style="width: 25%;">4) Cytotoxic T cells</td> </tr> </table> | | | | | | 1) Ig E | 2) Activated T cells | 3) Ig G | 4) Cytotoxic T cells |
| 1) Ig E | 2) Activated T cells | 3) Ig G | 4) Cytotoxic T cells | | | | | | |
| 6 | | | | <p>Which of the following is matched incorrectly?</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Microfilaments : actin, myosin</td> <td style="width: 25%;">2) Intermediate filaments : vimentin, keratin</td> <td style="width: 25%;">3) Microtubules: clathrin</td> <td style="width: 25%;">4) Cytoskeleton : spectrin, ankyrin</td> </tr> </table> | | | | | | 1) Microfilaments : actin, myosin | 2) Intermediate filaments : vimentin, keratin | 3) Microtubules: clathrin | 4) Cytoskeleton : spectrin, ankyrin |
| 1) Microfilaments : actin, myosin | 2) Intermediate filaments : vimentin, keratin | 3) Microtubules: clathrin | 4) Cytoskeleton : spectrin, ankyrin | | | | | | |
| 7 | | | | <p>In which stage of erythropoiesis Haemoglobin starts first appearing?</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Proerythroblast</td> <td style="width: 25%;">2) Early normoblast</td> <td style="width: 25%;">3) Intermediate normoblast</td> <td style="width: 25%;">4) Late normoblast</td> </tr> </table> | | | | | | 1) Proerythroblast | 2) Early normoblast | 3) Intermediate normoblast | 4) Late normoblast |
| 1) Proerythroblast | 2) Early normoblast | 3) Intermediate normoblast | 4) Late normoblast | | | | | | |
| 8 | | | | <p>If tissue graft of an individual is transplanted to his identical twin, it is called as</p> | (1) | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1) Autograft</td> <td style="width: 25%;">2) Allograft</td> <td style="width: 25%;">3) Isograft</td> <td style="width: 25%;">4) Xenograft</td> </tr> </table> | | | | | | 1) Autograft | 2) Allograft | 3) Isograft | 4) Xenograft |
| 1) Autograft | 2) Allograft | 3) Isograft | 4) Xenograft | | | | | | |
| 9 | | | | <p>Migrating motor complex of the gut is seen during</p> | (1) | | | | |

1) Fasting	2) Food intake	3) Deglutition	4) Sleep
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10

Post prandial alkaline tide is caused by

1) Increased breathing	2) Loss of hydrogen ions in urine	3) Fall in alveolar pCO ₂	4) Rise in bicarbonate levels after meals
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(1)

11

Stimulation of parasympathetic nerve to GIT produces

1) Contraction of sphincters	2) Inhibition of secretion from stomach	3) Inhibition of intestinal secretions	4) Increase in intestinal motility and tone
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(1)

12

At the end of ventricular isovolumic relaxation phase of cardiac cycle

1) The A-V valves close	2) The aortic valve opens	3) The aortic valve closes	4) The A-V valves open
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(1)

13

Cerebral blood flow is **most** influenced by

1) Rate of CO ₂ formation	2) Rate of cerebral O ₂ consumption	3) Sympathetic stimulation of peripheral vasculature	4) Rate of release of adenosine
--------------------------------------	--	--	---------------------------------

(1)

14

In ventricular muscle action potential, the Sodium permeability is the highest during

1) Phase 0 [depolarisation]	2) Phase 1 [repolarisation-fall from +30mV to -10mV]	3) Phase 2 [repolarisation-plateau]	4) Phase 3 [repolarisation-fall to -90mV]
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(1)

15

Reabsorption of Na⁺ in renal tubules

1) Takes place in association with HCO ₃ ⁻	2) Occurs only in proximal convoluted tubule	3) Is under control of parathormone	4) Occurs only in distal convoluted tubule
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(1)

16

Patients with Diabetes Mellitus will have

1) Water diuresis	2) No diuresis	3) Osmotic diuresis	4) Voluntary diuresis
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(1)

17

Cyanosis is **NOT** a feature of

1) Hypoxic hypoxia	2) Histotoxic hypoxia	3) Stagnant hypoxia	4) All of the above
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(1)

18

Which of the following is **TRUE** with diffusing capacity of O₂ in the lung?

1) Does not change during exercise	2) Is greater than diffusing capacity for CO ₂	3) Is greater in residents at sea level than in residents at 3000 meters altitude	4) Is directly related to alveolar capillary surface area
------------------------------------	---	---	---

(1)

19

Single breath nitrogen curve analysis is used to measure

1) Anatomical dead space	2) Physiological dead space	3) Total lung capacity	4) Functional lung capacity
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(1)

20

Marey's law denotes relationship between heart rate and

1) Blood volume	2) Blood pressure	3) Force of contraction	4) Conductivity
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(1)

Long Essay Questions: 10 X 1 = 10

Answer all the questions.

21			A 45 year old chronic smoker is brought to the casualty with symptoms of shortness of breathing, gasping for air and wheezing on expiration. Patient also complains of annoying productive cough and persistent chest tightness. He has past history of experiencing similar symptoms since last 5 years. On examination his respiratory rate is increased. Pulmonary Function tests shows VC 4.0 L and FEV 2.3 L, FRC 1.5 L, RV 700 ml a) Describe the spirogram showing different lung volumes and lung capacities. b) Explain the functional residual capacity and its physiological significance. c) Add a note on differences between obstructive and restrictive lung disorders (6+2+2)	(10)
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Short Essay Questions: 11 X 5 = 55

Answer all the questions.

22			A 40 year old female underwent ileal resection surgery following which she has developed diarrhoea and passing bulky stools which was unrelenting. a) Describe the functions of bile salts. b) Add a note on entero-hepatic circulation of bile salts. (3+2)	(5)
23			A 62 year old male presents with chest pain, shortness of breath and easy fatigability. These symptoms were coupled with abnormal heart sounds and his ECG findings suggested potential issues with the cardiac cycle events. a) Describe the cardiac cycle events with pressure volume loop diagram of left ventricle.	(5)
24			A patient was admitted with history of difficulty in breathing. On examination he had normal arterial pO₂, normal O₂ content and normal arterial O₂ saturation of Hb. The A-V PO₂ difference was 10ml % and a diagnosis of congestive cardiac failure was made. a) Identify the type of hypoxia in this case. b) Define and classify hypoxia. Explain any ONE type of hypoxia (1+4)	(5)
25			A 26 year old O -ve female presents to her Obstetrician for prenatal visit during her 2nd pregnancy. She had delivered her first child 4 years ago with no complications. Her first child is having A+ve blood group. During ANC she was advised routine prenatal testing including ABO, Rh (D) & antibody screening. a) Describe Haemolytic disease of the new born. b) Explain the measures that can be taken to prevent it. (3+2)	(5)
26			A 26-year-old construction worker is brought to the emergency room with altered mental status after working a 10-hour shift on a hot summer day. The man had been sweating profusely during the day but did not drink enough water. He has a fever of 102°F, heart rate 110 beats/min and blood pressure of 100/60 mmHg. a) Describe the role of kidneys in regulation of ECF volume.	(5)
27			Describe the movements of small intestine.	(5)
28			Define Homeostasis. Explain positive feedback mechanism with examples. (1+4)	(5)
29			Describe intrinsic mechanism of blood coagulation.	(5)
30			Describe the genesis of resting membrane potential.	(5)
31			Describe the mechanism of humoral immunity.	(5)
32			Describe the changes in patient's behaviour and expectations during illness.	(5)

Short Answer Questions: 3 X 5 = 15

Answer all the questions.

33			Explain why salivary secretion increases by sight, smell or thought of food.	(3)
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34			Explain how Bohr's effect is useful during exercise.	(3)
35			Give reasons why anemia is seen in chronic renal diseases.	(3)
36			Give reasons why plateau phase occurs in cystometrogram.	(3)
37			Give reasons why cardiac muscle cannot be tetanised.	(3)

-----End-----



KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI

MBBS Phase - I Degree Examination - August 2026

QP CODE: A004 Physiology Paper - II

Physiology Paper 2 [PHY2]

Marks: 100

Duration: 180 mins.

M.C.Q: 20 X 1 = 20

Answer all the questions.

Section Duration: 30 mins

1			A woman in her reproductive years has a regular 28-day menstrual cycle. Around day 21, her endometrium is thick, glandular and highly vascularized. Her progesterone levels are elevated. Which structure is primarily responsible for the secretion of progesterone during this phase?	(1)
			1) Developing follicle 2) Hypothalamus 3) Corpus luteum 4) Pituitary gland	
2			Acrosome in the sperm is derived mainly from	(1)
			1) Endoplasmic Reticulum 2) Nucleus 3) Golgi Apparatus 4) Cytoplasmic Vacuoles	
3			In absence of fertilization, corpus luteum begins to degenerate on which day of a normal 28 days menstrual cycle	(1)
			1) 7th day 2) 14th day 3) 24th day 4) 30th day	
4			Early growth of primary follicle upto the antral stage is stimulated mainly by	(1)
			1) Follicle Stimulating Hormone 2) Luteinizing Hormone 3) Human Chorionic Gonadotropin Hormone 4) Estrogen	
5			A person spins rapidly in a chair for 30 seconds and then suddenly stops. He feels dizzy and unsteady upon standing. Which vestibular structure is primarily responsible for detecting the spinning motion?	(1)
			1) Utricle 2) Cochlea 3) Saccule 4) Semicircular canals	
6			The potential difference between endolymph and perilymph is called as	(1)
			1) End plate potential 2) Endolymphatic potential 3) Action Potential 4) Cochlear microphonic potential	
7			The light reflex is integrated in the	(1)
			1) Midbrain 2) Frontal eye field 3) Medulla 4) Primary visual area	
8			A healthy person experiences acute stress before an exam. Their hypothalamus activates the HPA axis. Which hormone is released from the anterior pituitary in response to CRH from the hypothalamus?	(1)
			1) Cortisol 2) ACTH 3) Aldosterone 4) Epinephrine	
9			Which of the following pituitary hormones is an opioid peptide?	(1)
			1) ACTH 2) Growth hormone 3) MSH 4) β-endorphin	

21			A person reports difficulty seeing in dim light after entering a dark room from bright sunlight. After several minutes, his vision improves.	(10)
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- a) Describe the structure and function of rods and cones.
b) Explain the phototransduction process in the retina.
c) Define Dark Adaptation. Explain the physiological changes involved with it. (2+5+3)

Short Essay Questions: 11 X 5 = 55

Answer all the questions.

22			A 25-year-old male patient is diagnosed with Myasthenia Gravis, an autoimmune disorder that affects the neuromuscular junction. His doctor explains that the disease is caused by autoantibodies against the Acetylcholine receptor. a) Describe the pathophysiology of Myasthenia Gravis, including the role of autoantibodies and the effect on neuromuscular transmission. (5) b) Explain the clinical symptoms of Myasthenia Gravis and physiological basis of treatment options for Myasthenia Gravis? (3+2)
23			Explain the different phases of Nerve Action Potential and ionic basis of each phase with a neat labelled diagram. (5)
24			Explain Central Analgesia System. State its importance. (5)
25			A 25-year-old patient is experiencing symptoms of ataxia and dysarthria after a traumatic brain injury that damaged the cerebellum. Explain the physiological mechanisms underlying the cerebellum and its role in regulating posture, balance and coordination. Describe how damage to the cerebellum can lead to changes in motor function and balance. (3+2) (5)
26			A 20-year-old patient is diagnosed with Diabetes Insipidus and is experiencing symptoms of polyuria and polydipsia. Explain the physiological mechanisms underlying the hypothalamus and its role in regulating water balance and electrolyte homeostasis. (5)
27			A 25-year-old patient is experiencing a distorted sense of taste (dysgeusia) and is having difficulty distinguishing between sweet and sour tastes. Explain the physiological mechanisms underlying the sense of taste, including the role of the taste buds and the taste pathways. Describe how abnormalities in the taste system can lead to dysgeusia. (5)
28			Discuss the role and importance of family physician. (5)
29			Explain the physiological functions of Cortisol hormone. (5)
30			A 20-year-old athlete is experiencing hypoglycemia (low blood sugar) during intense exercise. Explain the physiological mechanisms underlying her condition, including the role of insulin, glucagon and epinephrine. Describe how her symptoms are related to the regulation of blood sugar levels by the endocrine pancreas. (5)
31			Explain physiological basis of female contraceptive methods. (5)
32			A 50-year-old female patient is experiencing symptoms of menopause, including hot flashes and vaginal dryness. Explain the physiological mechanisms for all the symptoms of menopause along with hormonal profile. (5)

Short Answer Questions: 3 X 5 = 15

Answer all the questions.

33			Why does one experience motion sickness? What physiological mechanisms enable this? (3)
34			Deep tendon reflex is exaggerated in spastic paralysis, explain its physiological basis. (3)

35			Ovulation occurs around the 14th day of normal menstrual cycle, explain why?	(3)
36			Hyperpigmentation is observed in Aldosteronism, why?	(3)
37			Why can't a second action potential be generated during the absolute refractory period?	(3)

-----End-----