2.5 Evaluation Process and Reforms

2.5.3 Reforms in examination procedures and processes including automation of the examination system

Competency Based Assessment

National Medical Commission (NMC) in India has introduced Competency Based Medical Education (CBME) in 2019 onwards. Competency based assessment is an approach to evaluate the knowledge, skills and attitudes of medical students and professionals. It focuses on measuring specific competencies required to effective healthcare. The various reforms introduced in SMVMCH for the implementation of Competency Bases Assessment are:

- ***Faculty Development Programs (FDPs) to Orient them to CBME***

Various FDPs like Revised Basic Course Workshop (RBCW), Mapping workshop, Blueprinting workshop, Assessment in Medical Education, Assessment of attitude, e-content development, MCQ designing, skill assessment and others.

- ***Orientation and sensitization of students to CBME***

All students are oriented to CBME during the foundation course. All competencies are labelled with a department specific competency number by NMC. The monthly and yearly schedules are prepared with the competency number and displayed in the department notice boards.

- ***Blueprint and Answer key for the question papers***

All faculty are trained to prepare question paper based on the blueprinting. Competencies are incorporated and stated in the blueprint preparation. The advantage of preparing blueprint-based

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question paper is that, it ensures all the specific competencies related to the particular topic are covered and assessed. The answer keys are prepared and threshold for each question is fixed based on the order of thinking addressed in the question (lower order or higher order thinking question).

- ***Measuring the competency attainment using the copyrighted Mapping Module***

The faculty and clerks of all departments are trained to measure the competency attainment of the addressed topic for assessments. Report regarding the unattained, attained and untested competencies is prepared and based on that future action plans are worked on.

- ***Mapping Subcommittee formed by Medical Education Unit (MEU)***

Mapping subcommittee is formed by the MEU and is required to update the mapping status of all departments periodically. Each department has a mapping in charge, who takes care that the mapping process is functional and reports are submitted to Dean Academic office.

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Blueprint Template

Department: Physiology

Semester/Year: I MBBS

Assessment type: Formative

Date of the assessment: 14.06.21

System/Module/Topics: Module III, CVS & RS

Total Marks: 70

Domain tested: Knowledge

Distribution of weightage:

Topics	Correlation Level	Weightage	Distribution of Marks
Physiological Anatomy of Heart & Blood vessels, Innervation, Hemodynamics	1	0.03	2
Properties of Cardiac Muscle & Conducting System of Heart, ECG	3	0.09	6
Cardiac Cycle	3	0.09	6
Cardiac Output	3	0.09	6
Blood Pressure & Heart rate	3	0.09	6
Shock & Heart Failure	3	0.09	6
Special Circulation	2	0.06	4
Functional anatomy, Mechanics of Respiration, Surfactant, Compliance, Work of Breathing, Dead Space, V/Q ratio	2	0.06	4
Lung Volumes & Capacities, Pulmonary Function tests (Timed Vital Capacity)	3	0.09	6
Diffusion and Transport of gases	3	0.09	6
Regulation of Respiration	3	0.09	6
High Altitude Physiology including Hypoxia, Deep Sea Physiology, Artificial Respiration	3	0.09	6
Applied: Asphyxia, Periodic Breathing, Cyanosis, Pneumothorax, COVID Pneumonia	3	0.09	6
	35	1.00	70

Type of Questions

Type of Question	Marks	Number of Questions	Total Marks
MCQs	20	20	20
LAQs	10	2	20
SAQs	5	6	30

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Level of Cognition

Level	Weightage	Marks
LOT	40%	28
HOT	60%	42

LOT – Lower order thinking – Recall, Understanding

HOT – Higher order thinking – Application, Analysis, Evaluate, Create

Table of test specifications

System	MCQ		LAQ		SAQ		Total
	LOT	HOT	LOT	HOT	LOT	HOT	
Physiological Anatomy of Heart & Blood vessels, Innervation, Hemodynamics				2			2
Properties of Cardiac Muscle & Conducting System of Heart, ECG	2	2		2			6
Cardiac Cycle			6				6
Cardiac Output		1			4	1	6
Blood Pressure & Heart rate		1			5		6
Shock & Heart Failure		1				5	6
Special Circulation	1	3					4
Functional anatomy, Mechanics of Respiration, Surfactant, Compliance, Work of Breathing, Dead Space, V/Q ratio	2	2					4
Lung Volumes & Capacities, Pulmonary Function tests (Timed Vital Capacity)		1				5	6
Diffusion and Transport of gases			6				6
Regulation of Respiration		1			2	3	6
High Altitude Physiology including Hypoxia, Deep Sea Physiology, Artificial Respiration		1				5	6
Applied: Asphyxia, Dyspnoea, Periodic Breathing, Cyanosis, Pneumothorax, COVID Pneumonia		2		4			6
Total	5	15	12	8	11	19	**70**

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Summary Table

Q.No	Question	Competency addressed with number	Bloom's Taxonomy	Maximum marks	Threshold for each question	
1	(a) With the Wigger's chart, describe the mechanical changes, pressure and volume changes in the cardiac chambers and the blood vessels during the cardiac cycle.	**PY 5.3** Discuss the events occurring during the cardiac cycle	Understanding (LOT)	6	4	6
	(b) Justify the ECG changes with the respective phases in the cardiac cycle.	**PY 5.5** Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis	Analyze (HOT)	2	1	
	(c) Why does a patient with mitral stenosis develop diastolic murmur?	**PY 5.1** Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system. **PY 5.7** Describe and discuss haemodynamics of circulatory system	(Analyze) (HOT)	2	1	
2	(a) Enlist the different modes of oxygen transport in blood. With the Oxygen dissociation curve, discuss the influence of Bohr's effect in the delivery of oxygen to the tissues	**PY 6.3** Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide	Recall & Understanding (LOT)	6	4	6
	(b) What is Oxygen saturation? What is the impact of COVID pneumonia on Oxygen saturation levels?	**PY 6.6** Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	Apply (HOT)	4	2	
3	(a) Elaborate on the factors regulating venous return to the heart.	**PY 5.9** Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	Understanding (LOT)	3	2	3
	(b) How do athletes maintain their cardiac output despite low heart rate?	**PY 5.9** Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	Analyze (HOT)	2	1	
4	With a suitable diagram, describe the Sino-aortic reflex.	**PY 5.8** Describe and discuss local and systemic cardiovascular regulatory mechanisms **PY 5.9** Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	Understanding (LOT)	5	3.5	

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5	A 45-year-old man met with a road traffic accident and had a severe blood loss. The ambulance driver shifted the injured person with foot end elevated and advised the attenders not to cover the injured person with blankets. He was brought to the casualty with thready pulse, fall in blood pressure, cold clammy skin and increased respiratory rate. He was diagnosed of Hypovolemic shock and immediately started with IV fluids. Give reasons for the following: (a) Elevating the foot end of the patient (b) Covering with blankets was not encouraged (c) Thready pulse (d) Increased respiratory rate (e) Why adrenaline is not considered the first line of management in this condition?	**PY 5.11** Describe the patho-physiology of shock, syncope and heart failure	Analyze (HOT)	5	2.5	
6	With a suitable diagram, justify the changes in the timed vital capacity in obstructive and restrictive lung diseases.	**PY 6.7** Describe and discuss lung function tests & their clinical significance	Analyze (HOT)	5	2.5	
7	(a) Describe the location and mechanism of activation of central chemoreceptors	NIL	Understanding (LOT)	2	1.5	3
	(b) A patient with carbon monoxide poisoning, developed anemic hypoxia, but his respiratory rate was not increased. What is the physiological basis behind this?	**PY 6.6** Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	Analyze (HOT)	3	1.5	
8	Give the physiological basis of the following: (a) What is the cause for joint pains in decompression sickness? (2) (b) Why "recompression" is done before slow decompression in the management of Decompression sickness? (2) (c) Polycythemia in residents of high altitude (1)	**PY 6.4** Describe and discuss the physiology of high altitude and deep-sea diving **PY 6.5** Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	Analyze (HOT)	5	2.5	

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Answer Key

Multiple Choice Question

Q.No	Question	Comp No	Competency addressed	Bloom's Tax	Answer	Feedback
1	Under basal conditions the caloric need of the heart is largely met by a. Fatty acids b. Protein c. Carbohydrates d. Ketone bodies	PY 5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions	LOT	c. Fatty acids	Under resting conditions, 60% of the total caloric needs of the heart is met by fatty acids, 35% by carbohydrates and 5% by ketones and amino acids
2	Which among the following channels are involved in phase 2 of the slow response action potential shown below: a. I_{CaT} (Transient) Calcium channels b. I_{CaL}(Long lasting) Calcium channels c. I_{to} (Transient outward) potassium channels d. I_{kr} (Inward rectifying) Potassium channels	PY 5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions	HOT	b. I_{CaL} Calcium channels	Phase 2 is the rapid depolarization of the pacemaker potential, which is also called the "Slow response Potential". $I_{CaL,}$ Long lasting calcium channels are involved in Phase 2 through which calcium influx occurs. Transient calcium channels are involved in phase 1. Potassium channels are involved in repolarization
3	Delay in the conduction of cardiac impulse maximally occurs at a. SA Node b. AV Node c. Bundle of His d. Purkinje fibers	PY 5.4	Describe generation, conduction of cardiac impulse	LOT	b. AV Node	Slower conduction velocity in AV node is due to small diameter of the fibers and presence of few gap junctions

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4	Which of the following conditions shows prolongation of the interval marked below? a. Hyperkalemia b. Heart Block c. Myocardial Infarction d. Ventricular Hypertrophy	PY 5.6	Describe abnormal ECG, arrythmias, heart block and myocardial Infarction	HOT	b. Heart Block	The interval marked in the image is PR interval, which extends from beginning of P wave to beginning of R wave. It is prolonged in Heart block. PR interval prolongation is seen in Hypokalemia. Myocardial Infarction will show predominantly changes in ST segments. Ventricular hypertrophy will show changes in the QRS complex
5	Calculate the cardiac index in a patient with cardiac output, 5 L/min and body surface area 1.7 m^2. a. 3 L/min/m^2 b. 4 L/min/ m^2 c. 5 L/min/ m^2 d. 2.5 L/min/ m^2	PY 5.9	Describe the factors affecting heart rate, regulation of cardiac output & Blood pressure	HOT	a. 3 L/min/m^2	Cardiac index is calculated as the ratio of cardiac output to body surface area.
6	A decrease in which of the following tend to increase the pulse pressure a. Systolic pressure b. Stroke volume c. Arterial compliance d. Venous return	PY 5.9	Describe the factors affecting heart rate, regulation of cardiac output & Blood pressure	HOT	c. Arterial compliance	Decrease in arterial compliance decreases the diastolic pressure, thereby widening pulse pressure
7	Which of the following might be expected to occur in a patient suffering from moderate left ventricular heart failure? a. Increased Ejection fraction b. Pulmonary edema c. Increased Systolic blood pressure d. Decreased end diastolic volume	PY 5.11	Describe the patho-physiology of shock, syncope and heart failure	HOT	b. Pulmonary edema	Left heart failure, because of a high end systolic volume, increases left atrial pressure. This raises pulmonary capillary pressure and produces pulmonary edema. The cardiac ejection fraction is reduced in the failing heart. With moderate heart failure, there is no consistent change in arterial blood pressure. End diastolic volume increases due to the large volume remaining after systole and the high left

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						atrial pressure.
8	Which of the following vessels has the greatest cross-sectional area in the circulatory system? a. Aorta b. Arterioles c. Capillaries d. Veins	PY 5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	LOT	c. Capillaries	The capillaries have the largest total cross-sectional area of all vessels of the circulatory system. The venules also have a relatively large total cross-sectional area, but not as great as the capillaries, which explains the large storage of blood in the venous system compared with that in the arterial system.
9	47-year-old man with type II diabetes reports for his 6-month checkup. His doctor prescribes a daily 30-minute routine of walking at a brisk pace. During aerobic exercise, blood flow remains relatively constant to which of the following organs? a. Brain b. Heart c. Kidneys d. Skeletal muscle	PY 5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	HOT	a. Brain	Blood flow to the brain is kept relatively constant during both rest and exercise by local autoregulatory mechanisms. During aerobic exercise, vasodilation of blood vessels in the working muscles increases skeletal muscle blood flow. Coronary blood flow increases to meet the increased metabolic needs of the heart. Blood flow to the gut, the kidneys and the non-exercising muscles is reduced by sympathetic constriction of the arterioles leading to these organs.
10	Coronary blood flow to the left ventricle is increased in a. Early systole b. Myocardial Hypoxia c. Hypothermia d. Aortic stenosis	PY 5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	HOT	b. Myocardial Hypoxia	In myocardial hypoxia, the low Po2 causes vasodilation by Berne Hypothesis and increase the coronary blood flow. In Early systole, contracting myocardium compresses the blood vessel, reducing the coronary blood flow. In Hypothermia, low metabolic rate, reduces the coronary blood flow. In aortic stenosis, reduced

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						lateral pressure decrease the coronary blood flow
11	Second rise in systemic blood pressure following the splanchnic nerve stimulation is due to a. Activation of sympathetic nerves b. Activation of parasympathetic nerves c. Release of epinephrine from adrenal medulla d. Release of cortisol from adrenal cortex	PY 5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation	HOT	c. Release of epinephrine from adrenal medulla	Splanchnic nerve stimulation leads to double rise in systemic Blood pressure. First rise is immediate (resistance effect), due to stimulation of splanchnic nerves. Second rise (capacity effect) is due to release of epinephrine from adrenal medulla.
12	All are components of Respiratory Zone of the airways, EXCEPT a. Alveoli b. Alveolar duct c. Respiratory bronchioles d. Terminal bronchioles	PY 6.1	Describe the functional anatomy of respiratory tract	LOT	Bronchioles	All are components of respiratory or exchange zone, except terminal bronchiole (16th generation) which comes under conducting zone where no exchange of gases take place
13	In health, physiological dead space is a. Double than that of anatomical dead space b. Less than that of anatomical dead space c. Triple than that of anatomical dead space d. Same as that of anatomical dead space	PY 6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs	LOT	e. Same as that of anatomical dead space	Anatomical dead space is volume of air in the conducting zone where no exchange of gases take place. Physiological dead space is volume of air in the alveoli which does not take part in exchange of gases. In healthy conditions, both are same
14	A patient has a dead space of 150 milliliters, FRC of 3 liters, Tidal volume of 650 milliliters, ERV of 1.5 liters, TLC of 8 liters, and respiratory rate of 15 breaths/min. What is the alveolar ventilation (Va)? a. 5 L/min b. 7.5 L/min	PY 6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs	HOT	b. 7.5 L/min	Alveolar ventilation = Respiratory rate x (Tidal Volume – Anatomical dead space) = 15 x (650-150) = 7.5 L/min

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	c. 6.0 L/min d. 9.0 L/min					
15	Which among the following tend to decrease the airway resistance? a. Asthma b. Stimulation by sympathetic fibres c. Treatment with acetylcholine d. Exhalation to residual volume	PY 6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs	HOT	c. Stimulation by sympathetic fibers	A decrease in airway resistance is due to an increase in the diameter of the airway. Asthma causes bronchoconstriction, which is prevented by β-agonists. Sympathetic stimulation of the airways results in a relaxation of airways, decreasing resistance. Acetylcholine is a bronchoconstrictor, increasing resistance. With low lung volumes there is a collapse of the airways, leading to decreased diameter and increased resistance
16	A patient has a dead space of 150 milliliters, FRC of 3 liters, tidal volume (VT) of 650 milliliters, expiratory reserve volume (ERV) of 1.5 liters, total lung capacity (TLC) of 8 liters, and respiratory rate of 15 breaths/min. What is the residual volume (RV)? a. 500 milliliters b. 1000 milliliters c. 1500 milliliters d. 2500 milliliters	PY 6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs	HOT	c.1500 ml	RV = FRC – ERV = 3000 – 1500 = 1500 ml
17	A stroke that destroys the respiratory area of the medulla would be expected to lead to which of the following? a. Immediate cessation of breathing b. Apneustic breathing c. Ataxic breathing d. No change in breathing	NIL		HOT	a. Immediate cessaion of breathing	The respiratory area of the medulla controls all aspects of respiration, so a destruction of this area would cause a cessation of breathing.

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18	A mountaineer ascends to 18000 ft in 2 days without supplemental oxygen. At the height of ascent, the changes are all except a. Increased $PaCO_2$ b. Decreased Barometric pressure c. Decreased PaO_2 d. Increased pH	PY 6.5	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	HOT	a. Increased $PaCO_2$	At high altitude, PaO_2 falls, barometric pressure falls, there will be respiratory alkalosis due to hyperventilation that causes CO_2 washout. Hence decreased $PaCO_2$ is seen and pH increases.
19	Central cyanosis is not seen in individual with total Hemoglobin concentration and reduced hemoglobin level (in gm%) respectively as a. 10.9 and 4.1 b. 10.9 and 5.1 c. 10.9 and 6.1 d. 8.9 and 6.1	PY 6.6	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	HOT	a. 10.9 and 4.1	For cyanosis to occur the amount of reduced hemoglobin should be greater than 5 gm%
20	All the following conditions leads to the kind of breathing pattern shown below except a. Heart failure b. Premature infants c. Diabetic ketoacidosis d. High altitude	PY 6.6	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	HOT	c. Diabetic ketoacidosis	All the conditions mentioned in the options show Cheyne-stokes pattern of breathing except diabetic ketoacidosis which causes "Kussmaul breathing"

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Q.No	Question	Competency addressed with number	Answer Key
1	(a) With the Wigger's chart, describe the mechanical changes, pressure and volume changes in the cardiac chambers and the blood vessels during the cardiac cycle. **(6 marks)**	**PY 5.3** Discuss the events occurring during the cardiac cycle	Description – 3 marks, diagram – 3 marks, correctly mentioning the valve closure and opening with proper labelling
	(b) Justify the ECG changes with the respective phases in the cardiac cycle. **(2 marks)**	**PY 5.5** Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis	Correlate the ECG changes with the phase, like atrial depolarization occurs causing P wave, which is followed by Atrial systole. Peak of R wave coincides with closure of AV valves and Ventricular systole begins, at the end of T wave, Ventricular diastole begins. Mention that electrical events precede the mechanical events
	(c) Why does a patient with mitral stenosis develop diastolic murmur? **(2 marks)**	**PY 5.1** Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system. **PY 5.7** Describe and discuss haemodynamics of circulatory system	In mitral stenosis, there is narrowing of valve, which results in turbulent blood flow, causing murmur. It is heard in diastolic phase because, blood rushes through the Mitral valve during the filling phase of the ventricles
2	(a) Enlist the different modes of oxygen transport in blood. With the Oxygen dissociation curve, discuss the influence of Bohr's effect in the delivery of oxygen to the tissues **(6 marks)**	**PY 6.3** Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide	Oxygen transport in dissolved and oxyhemoglobin form. Description of ODC, steep part and flat part and causes for the shift in the curve. Mention P50 and its significance. Define and mention the significance of Bohr effect
	(b) What is Oxygen saturation? What is the impact of COVID pneumonia on Oxygen saturation levels? **(4 marks)**	**PY 6.6** Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	It is the ratio of amount of oxygen bound to hemoglobin to the maximum amount of oxygen that can bind hemoglobin. In COVID pneumonia, there will be inflammatory changes affecting diffusion, ventilation perfusion mismatch and shunts causing oxygen desaturation
3	(a) Elaborate on the factors regulating venous return to the heart. (4 **marks)**	**PY 5.9** Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	Enlist the factors and elaborate on all, Cardiac pump, respiratory pump, abdominal pump, skeletal muscle pump, blood volume, gravity, capacity of venous reservoir
	(b) How do athletes maintain their cardiac output despite low heart rate? (1 **mark)**	**PY 5.9** Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	Athletes have physiological cardiomegaly that enhances the stroke volume. Hence the high stroke volume will compensate for the bradycardia and maintain the cardiac output
4	With a suitable diagram, describe the Sino-aortic reflex.	**PY 5.8** Describe and discuss local and systemic cardiovascular regulatory	- Location and innervation of baroreceptors

		mechanisms **PY 5.9** Describe the factors affecting heart rate, regulation of cardiac output & blood pressure	- Stimulus, working range and characteristic features - Describe the pathway - Diagram (**2 marks**) Marey's law (desirable)
5	A 45-year-old man met with a road traffic accident and had a severe blood loss. The ambulance driver shifted the injured person with foot end elevated and advised the attenders not to cover the injured person with blankets. He was brought to the casualty with thready pulse, fall in blood pressure, cold clammy skin and increased respiratory rate. He was diagnosed of Hypovolemic shock and immediately started with IV fluids. Give reasons for the following: (a) Elevating the foot end of the patient (b) Covering with blankets was not encouraged (c) Thready pulse (d) Increased respiratory rate (e) Why adrenaline is not considered the first line of management in this condition?	**PY 5.11** Describe the patho-physiology of shock, syncope and heart failure	**a)** Elevating foot end increase the venous return b) Covering with blankets will cause cutaneous vasodilation and abolish the compensatory vasoconstriction that diverts the blood flow to vital organs c) Due to low volume of blood and fall in blood pressure d) Stimulation of respiratory center through activation of chemoreceptor reflex e) IV fluids are the first line of management. Already adrenaline will be in peak levels due to compensatory mechanisms and adding extra adrenaline doesn't make much difference **(1 mark each)**
6	With a suitable diagram, justify the changes in the timed vital capacity in obstructive and restrictive lung diseases.	**PY 6.7** Describe and discuss lung function tests & their clinical significance	Depict the changes in the FEV1 and FVC for obstructive and restrictive lung diseases appropriately in the diagram
7	(a) Describe the location and mechanism of activation of central chemoreceptors (**2 marks**)	NIL	Location of central chemoreceptors in Medulla and its mechanism of activation (Role of Hydrogen ions and CO2)
	(b) A patient with carbon monoxide poisoning, developed anemic hypoxia, but his respiratory rate was not increased. What is the physiological basis behind this? **(3 marks)**	**PY 6.6** Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing	As the dissolved form of oxygen is normal in anemic hypoxia, peripheral chemoreceptors do not sense the hypoxia, owing to their enormous blood flow with their oxygen needs satisfied by the dissolved form of oxygen
8	Give the physiological basis of the following: (a) What is the cause for joint pains in decompression sickness? (2) (b) Why "recompression" is done before slow decompression in the management of Decompression sickness? (2) (c) Polycythemia in residents of high altitude (1)	**PY 6.4** Describe and discuss the physiology of high altitude and deep-sea diving **PY 6.5** Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.	**a)** Release of Nitrogen as air bubbles in synovial fluid, causes pain in the joints b) Recompression again change the nitrogen from gaseous to liquid state c) High altitude causes hypoxic hypoxia, triggering erythropoiesis

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Sri Manakula Vinayagar Medical College and Hospital

Department of Biochemistry

Log Book

I MBBS (2019 – 2020)

Name: [redacted]

Course: 1st YEAR MBBS

Subject: BIOCHEMISTRY

Batch: 2019 - 2020

Registration No.: _____