

دكتوراه جراحة القلب والصدر  
الفصل الدراسي الاول  
تشریح جراحي وعلم الاجنه  
الزمن 3 ساعات

**Give short account on:**

I- Anatomy of:

1- Interventricular septum (15 marks)

2- Ascending and arch of the aorta (15 marks)

II- Anatomy and embryology of:

1- Diaphragm (15 marks)

2- Surgical anatomy of the left vagus nerve  
(15 marks)

**Choose the best single answer:**

- 1- **What is correct regarding retrotracheal space?**
  - a- Lungs are normal content of the retrotracheal space
  - b- The posterior tracheal line forms the posterior margins of the retrotracheal space
  - c- The posterior tracheal line is produced by the esophagus in contact with the posterior wall of the trachea
  - d- The most common lesion in it is neurogenic in origin
  - e- Right recurrent laryngeal nerve is the most consistent content of the space
  
- 2- **While performing thymectomy to remove a malignant thymoma the surgeon is careful to avoid damaging an important nerve lying on and partly curving posteriorly around the arch of the aorta. Which of the following nerves is the surgeon trying to preserve?**
  - A. left phrenic
  - B. left sympathetic trunk
  - C. left vagus
  - D. right phrenic
  - E. right sympathetic trunk
  
- 3- **Massive hemoptysis is one of the most dreaded of all respiratory emergencies and can have a variety of underlying causes. In 90% of cases, the source of massive hemoptysis is the bronchial circulation. Which of the following statements about bronchial artery anatomy is correct?**
  - A. Aberrant bronchial arteries enter the pulmonary parenchyma through the adherent pleura or via the pulmonary ligament.
  - B. Nonbronchial systemic collateral vessels cannot be angiographically differentiated from aberrant bronchial arteries.
  - C. The bronchial arteries originate directly from the ascending thoracic aorta, most

commonly between the levels of the T2 and T3 vertebrae.

D. The bronchial arteries only supply the intrapulmonary airways and bronchovascular bundles.

E. The majority of aberrant bronchial arteries originate from the aortic arch.

**4- Which of the following arteries is the principle blood supply to the upper two thirds of the trachea?**

A. external carotid.

B. inferior thyroid.

C. internal thoracic.

D. superior thyroid.

E. transverse cervical.

**5- Identify the correct order of structures, from superficial to deep the needle must pass before it enters the pleural cavity when performing pleurocentesis:**

A. External intercostals — Innermost intercostals — Internal intercostals — Parietal pleura

B. External intercostals — Internal intercostals — Parietal pleura — Innermost intercostals

C. Parietal pleura — Innermost intercostals — Internal intercostals — External intercostals

D. External intercostals — Internal intercostals — Innermost intercostals — Parietal pleura

E. External intercostals — Internal intercostals — Innermost intercostals — Visceral pleura

**6- 38-year-old male presented with a lump on his back. While removing this lump, the thoracodorsal nerve (C6-C8) is accidentally injured. What muscle is most likely affected?**

A. Serratus posterior inferior muscle

B. Serratus anterior muscle

- C. Levator scapulae muscle
- D. Longissimus muscle
- E. Latissimus dorsi muscle

**7- A 68-year-old man complained of sudden onset of shortness of breath on postoperative day 7 following coronary artery bypass grafting. He underwent pulmonary angiography with a suspected episode of pulmonary embolism. The pulmonary angiogram showed that the blood clot occluded the apical segmental pulmonary artery that supplies the superior lobe of left lung. The blood clot travelled to this segmental pulmonary artery from a leg vein. Track the appropriate course of the blood clot to the obstructed artery.**

- A. Inferior vena cava — right atrium — mitral valve — right ventricle — pulmonary trunk — left pulmonary artery — left superior lobar artery — left apical segmental artery
- B. Inferior vena cava — left atrium — mitral valve — left ventricle — pulmonary trunk — left pulmonary artery — left superior lobar artery — left apical segmental artery
- C. Inferior vena cava — right atrium — tricuspid valve — right ventricle — pulmonary trunk — left pulmonary artery — left bronchial artery — left apical segmental artery.
- D. Inferior vena cava — right atrium — tricuspid valve — right ventricle — pulmonary trunk — left pulmonary artery — left superior lobar artery — left apical segmental artery
- E. Coronary sinus — right atrium — tricuspid valve — right ventricle — pulmonary trunk — left pulmonary artery — left superior lobar artery — left apical segmental artery

**8- Which of the following statements regarding the venous drainage of the heart is CORRECT?**

- A. The coronary sinus drains into the left atrium
- B. The anterior cardiac veins begin over the anterior surface of the left ventricle, cross over the atrioventricular groove (coronary groove), and directly drain into the left atrium
- C. The great cardiac vein is the largest tributary of the coronary sinus and this vein starts at the apex of the heart and ascends with the anterior ventricular branch of the left coronary artery

- D. The middle and small cardiac veins drain most of the areas supplied by the left coronary artery
- E. The coronary sinus drains into the great cardiac vein

**9- A patient presents with a clinically significant atrial septal defect (ASD). The ASD is most likely due to incomplete closure of the following structure:**

- A. Foramen ovale
- B. Ligamentum arteriosum
- C. Ductus arteriosus
- D. Sinus venarum
- E. Coronary Sinus

**10- Patient presents with a right bundle branch block due to blockage in the atrioventricular (AV) nodal artery. Part of the right bundle branch of the AV bundle is carried by which structure?**

- A. Pectinate muscles
- B. Anterior papillary muscle of the left ventricle
- C. Moderator band (septomarginal trabecula)
- D. Crista terminalis
- E. Chordae tendineae

**11- Surgeon following every posterolateral thoracotomy likes to infiltrate local anesthetic both above and below the incision in order to block the nerves supplying the thoracic wall. The thoracic wall is innervated by the:**

- A. Dorsal primary rami
- B. Intercostal nerves
- C. Lateral pectoral nerves
- D. Medial pectoral nerves
- E. Thoracodorsal nerves

**12- If You want to aspirate the pleural fluid with the patient sitting up in bed, where would the fluid tend to accumulate?**

- A. costodiaphragmatic recess
- B. costomediastinal recess
- C. cupola
- D. hilar reflection
- E. middle mediastinum

**13- 36-year-old bomb blast victim was found to have multiple small metal fragments in his thoracic cavity. He also had pericardial effusion suggestive of a tear in the pericardium. He underwent emergency thoracotomy which revealed that the pericardium was torn inferiorly. The surgeon began to explore for fragments in the pericardial sac. Slipping his hand under the heart apex, he slid his fingers upward and to the right within the sac until they were stopped by the cul-de-sac formed by the pericardial reflection near the base of the heart. His fingertips were then in the**

- A. coronary sinus
- B. coronary sulcus
- C. costomediastinal recess
- D. oblique sinus
- E. transverse sinus

**14- A 22-year-old victim of anterior chest stabbing received a stab in a structure which is in close proximity to where the first rib articulates with the sternum. The structure most likely to be injured is the**

- A. Nipple
- B. Root of the lung
- C. Sternal angle
- D. Sternoclavicular joint
- E. Xiphoid process

**15- A resident is performing his first ductus arteriosus ligation. The professor supervising him instructs him to be careful when placing a clamp on the ductus so as to avoid injury to an important structure immediately dorsal to it. Which of the following structures is the consultant referring to?**

- A. Accessory hemiazygos vein
- B. Left internal thoracic artery
- C. Left phrenic nerve
- D. Left recurrent laryngeal nerve
- E. Thoracic duct

**16- A 21-year-old man was stabbed in the right supraclavicular fossa. The knife punctured the portion of the parietal pleura that extends above the first rib. This portion of the parietal pleura is called the**

- A. costodiaphragmatic recess
- B. costomediastinal recess
- C. costocervical recess
- D. cupola
- E. endothoracic fascia

**17- In a 12-week-old boy with a large subaortic VSD, the congenital cardiac surgeon decides to perform pulmonary artery banding through a left thoracotomy as the child is not fit for surgical closure. In order to pass the tape around the pulmonary artery, the surgeon initially passes his index finger immediately behind the two great arteries in the pericardial sac to mobilise both the great arteries. The surgeon's index finger is inserted into which space?**

- A. Cardiac notch
- B. Coronary sinus
- C. Oblique pericardial sinus
- D. Coronary sulcus
- E. Transverse pericardial sinus

**18- During pericardiectomy sudden bleeding was noticed due to accidental injury to a major vascular structure in the pericardium. The surgeon inserted his left index finger through the transverse pericardial sinus, pulled forward on the two large vessels lying ventral to his finger and compressed these vessels with his thumb to control bleeding. Which vessels were these?**

- A. Pulmonary trunk and brachiocephalic trunk
- B. Pulmonary trunk and aorta
- C. Pulmonary trunk and superior vena cava
- D. Superior vena cava and aorta
- E. Superior vena cava and right pulmonary artery

**19- A 22-year-old patient with a cystic swelling in his left chest underwent a CT guided biopsy. The radiologist inserted the biopsy needle into the 9th intercostal space along the midaxillary line to aspirate the swelling and obtain tissue for histological diagnosis. The swelling is most likely to be in which space?**

- A. Cardiac notch
- B. Costodiaphragmatic recess
- C. Costomediastinal recess
- D. Cupola
- E. Oblique pericardial sinus

**20- A 34-year-old woman with history of cough and weight loss for over a month is noticed to have a rounded opacity in the pleural cavity near the cardiac notch on her chest x-ray. The opacity is most likely to be present in the:**

- A. Costodiaphragmatic recess
- B. Costomediastinal recess
- C. Cupola
- D. Hilum
- E. Pulmonary ligament

**21- Regarding the surface anatomy of the chest:**

- A- The manubrium overlies the aortic arch at the level of T4- T5
- B- The body of the sternum overlies the heart at the level of T5- T8
- C- The manubriosternal joint is at the level of the junction of T3 and T4
- D- The xiphisternal joint is at the level of T8

**22- Which statement about the ribs is accurate?**

- A- The head of atypical rib articulates with the superior costal facet of its own vertebra
- B- The 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> ribs are not false ribs
- C- The 1<sup>st</sup> rib has the subclavian artery as an inferior relation
- D- The costotransverse ligaments pass from the transverse process of the vertebra to the head of the rib

**23- Which of the following statements doesn't correctly describe the oblique sinus of the pericardium?**

- A- The oblique sinus is bounded by the pulmonary veins and the superior vena cava
- B- It is a space posterior to the heart
- C- It lies between the left atrium and the fibrous pericardium
- D- It is limited superiorly by a double layer of serous pericardium separating it from the transverse sinus

**24- Which statement about the right atrium is incorrect?**

- A- The crista terminalis separates the smooth walled part from the rough walled part
- B- The opening of the inferior vena cava into the right atrium is valved
- C- The smooth walled part is derived from the atrial part of the primitive heart tube
- D- It contains the embryological remnant of the foramen ovale

**25- Which statement about the right coronary artery is incorrect?**

- A- Supplies the atrioventricular node in 90% of cases
- B- Arises from the posterior aortic sinus
- C- Contributes to the posterior interventricular artery in a codominant circulation
- D- Anastomoses with the circumflex branch of the left coronary artery in atrioventricular groove

**26- In the lungs, all the following statements are incorrect expect:**

- A- The horizontal fissure is always present in the right side

- B- The fissures create a roughened surface to promote easier expansion
- C- The obliquity of the fissure ensures better expansion of the apex of the lung
- D- Only 2% of lungs have incomplete oblique fissures

**27- Within the thoracic inlet, which of the following statements is true?**

- A- The esophagus lies against the body of C5
- B- On the right side, the trachea is separated from the vagus nerve and apex of the lung
- C- The veins entering the superior mediastinum lie behind the arteries
- D- The trachea touches the jugular notch of the manubrium

**28- Which is not a feature of a typical rib?**

- A- Medial facet of the tubercle faces backwards
- B- Angle is the most posterior point
- C- There are 2 costotransverse ligaments
- D- Intraarticular ligament attaches from the horizontal ridge on the head to the intervertebral disc

**29- Which is true of the thoracic sympathetic trunk?**

- A- Passes into the abdomen behind lateral arcuate ligament
- B- 1<sup>st</sup> thoracic ganglion often fuses with the inferior cervical ganglion
- C- Crosses 1<sup>st</sup> rib lateral to the superior intercostal artery
- D- Gives fibers to the esophageal plexus

**30- Which is true regarding the thoracic duct?**

- A- Commences level with the body of T10
- B- Enters the point of confluence of the left internal jugular and axillary vein
- C- Receives the left jugular and subclavian lymph trunks
- D- Receives lymph from the right thoracic wall

**Good Luck**