Appendix A. Questionnaire used for pre- and post- knowledge test (the correct answers are identified in bold).

**Question 1**: According to American Thoracic Society guidelines, which of the following is an absolute contraindication to flexible bronchoscopy:
A. Patient with unstable asthma or status asthmaticus.
B. Patient with refractory hypoxemia or inadequate oxygenation during the procedure.
C. Recent or unstable angina or recent myocardial infarction.
D. Severe hypercarbia and significantly reduced forced expiratory volume in one second.
E. Superior vena cava obstruction.

**Question 2**: Originally, the flexible bronchoscope was designed to be held as shown in the Figure below. A reason for this is
A. The operator must always stand behind the patient; therefore it is best for the control section to be held in the left hand.
B. Dr. Ikeda, original designer of the flexible bronchoscope, was left-handed.
C. The operator must always stand to the right of the patient; therefore, it is best for the control section to be held in the left hand so that the bronchoscopist’s right hand can be closest to the patient.
D. The operator must always stand to the left of the patient; therefore, it is best for the control section to be held in the left hand so that the bronchoscopist’s right hand can be closest to the patient.

![Flexible Bronchoscope](image)

**Question 3**: Maximum flexion of the distal bending tip of the flexible bronchoscope is obtained by which of the following
A. Moving the thumb upwards
B. Moving the thumb downwards

**Question 4**: Each of the following is considered “poor technique” when handling a flexible bronchoscope except
A. Twisting the insertion tube rather than rotating the entire instrument along its entire longitudinal axis.
B. Advancing the bronchoscope by pushing down from the handle.
C. Exerting excessive pressure with one’s fingers on the patient’s nostril or cheek.
D. Attempting to pass an instrument through a fully flexed distal extremity of the bronchoscope.
E. Keeping the bronchoscope “in the midline” of the airway lumen throughout as much of the procedure as possible.
**Question 5:** When referring to digital photography, video imaging, television, or fluoroscopic image intensifiers, the term “resolution” is defined as
A. Number of pixels per square centimeter
B. Number of lines per inch or line pairs per millimeter
C. Brightness of an image on screen
D. Sharpness of an image on screen

**Question 6:** Electrical contact, the venting connector, and light guide are all considered part of which section of the flexible bronchoscope.
A. Universal cord section
B. Control section
C. Light guide connector section
D. Eyepiece (or video) section
E. Insertion tube section

**Question 7:** What happened to the flexible bronchoscope shown in the Figure.
A. It was bitten
B. It was caught in the drawer of a procedure cart
C. It was squeezed by an angry bronchoscopist

**Question 8:** Which of the following positions is inelegant and risks damaging the flexible bronchoscope
A. Pushing downwards on the bronchoscope so that a bend forms in the insertion tube.
B. Standing up straight, shoulders back, weight equally distributed on both feet.
C. Sitting on a stool, keeping the insertion tube straight at approximately patient height.
Question 9: When looking through the eyepiece of a flexible bronchoscope you notice that multiple small black dots are visible. This means that
A. Water has leaked into the bronchoscope
B. The bronchoscope has been excessively exposed to radiation
C. Multiple fiberoptic bundles are broken
D. The bronchoscope needs to be replaced

Question 10: In a tall adult male patient with normal airways, a standard flexible bronchoscope occupies approximately what percentage of cross-sectional area of the trachea.
A. 5 percent
B. 10-15 percent
C. 20-25 percent
D. more than 25 percent
**Question 11:** Bronchoscopy is performed in a patient with cough and partial unilateral atelectasis. Based on the findings shown below, bronchoscopic examination should proceed with
A. Examination of the left bronchial tree, then inspection and biopsy of the lesion on the right.
B. Inspection and biopsy of the lesion on the right, then examination of the left bronchial tree.
C. Examination of the right bronchial tree, then inspection and biopsy of the lesion on the left.
D. Inspection and biopsy of the lesion on the left, then examination of the right bronchial tree.

**Question 12:** While intubating a patient over the flexible bronchoscope, it suddenly becomes difficult to advance the bronchoscope. Although you are able to see the vocal cords, it is impossible to advance the endotracheal tube over the bronchoscope. What happened and what should you do next?
A. The bending tip of the bronchoscope broke. You remove the bronchoscope from the endotracheal tube.
B. The tip of the bronchoscope has accidentally passed through the Murphy eye of the endotracheal tube. You remove the scope and the tube together as an ensemble.
C. The polyurethane covering of the bronchoscope has slipped and intussuscepted over itself, occluding the endotracheal tube lumen. You remove the bronchoscope from the endotracheal tube.
D. The tip of the bronchoscope is flexed too much and the endotracheal tube is caught in the aryepiglottic fold. You partially withdraw the endotracheal tube over the bronchoscope.

**Question 13:** All of the following airway dimensions in the adult are correct except.
A. The left lower lobe bronchus beyond the origin of the superior segment is usually 1 cm in length before giving rise to the basal segmental bronchi.
B. The usual length of the trachea (distance from the cricoid cartilage to the main carina) ranges from 9-15 cm.
C. The usual internal caliber of the trachea ranges from 1.2 cm -2.4 cm.
D. The right upper lobe bronchus is usually located about 1.5-2.0 cm below the main carina.
E. The usual length of the bronchus intermedius ranges from 2-4 cm beyond the origin of the right upper lobe bronchus.
**Question 14:** How would you describe the trachea shown in the Figure below.
A. Normal C-shaped  
B. Normal U-shaped  
C. Normal horseshoe-shaped  
D. Abnormal saber-shaped  
E. Abnormal Lunate shaped

**Question 15:** It is most likely that the patient with this abnormal airway seen in the Figure has which one of the following disorders  
A. Sarcoidosis  
B. Relapsing polychondritis  
C. Teratoma with extrinsic tracheal compression  
D. Underlying chronic obstructive pulmonary disease  
E. Pulmonary amyloidosis