

Answers

CE CREDIT PKG 4A: 10 CONTINUING EDUCATION CREDITS

AST Member No: _____

Name: _____

Address: _____ City: _____ State: _____ ZIP: _____

Telephone: _____ Email: _____

(If paying by credit card due to PCI compliance AST cannot accept credit card information by fax or email, you can mail or call in your credit card information.)

Check Enclosed

Yes, I want to pay by credit card: Visa MasterCard AmEx

Card # _____ Expiration Date _____ Signature _____

From bonesetter to orthopaedic surgeon: A history of the specialty of orthopaedics

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Osteoporosis unveiled: Answers to your questions

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

IntraDiscal electrothermal therapy: A novel approach to lumbar disc degeneration and herniation

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Posterior spinal surgery

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

The Ilizarov technique

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Fat embolism: A complication of long bone fracture

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Posterior spinal surgery: 20th century advances

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Bone healing

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Anterior cervical fusion

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Anterior cervical corpectomy: Fusion and stabilization

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>				
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Mark one box next to each number. Only one correct or best answer can be selected for each question.</i>				
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Directions: Complete all 10 answer keys for the exams. Include your check or money order made payable to AST or complete credit card information with the appropriate amount and mail to AST, Attn: CE credits, 6 West Dry Creek Circle, Suite 200, Littleton, CO 80120-8031.

From Bonesetters to Orthopaedic Surgeons: A History of the Speciality of Orthopaedics

- 1. Which was not used in primitive times to splint fractures?**
 - a. Clay
 - b. Bark
 - c. Plaster
 - d. Rawhide
- 2. The Hammurabi Code outlined _____?**
 - a. Types of incantations
 - b. Penalties for poor treatment
 - c. Procedures for limb amputation
 - d. Anatomy and physiology
- 3. Whose book on fractures was the most physiologically and anatomically accurate?**
 - a. Hammurabi
 - b. Edwin Smith
 - c. Hippocrates
 - d. Sustra
- 4. Why did medical advances decline after the fall of the Roman Empire?**
 - a. Only priests studied Latin.
 - b. There were no medical schools in Western Europe.
 - c. Church leaders believed sickness was a penalty for sin
 - d. All of the above.
- 5. Why did the priests prevent physicians from performing surgery?**
 - a. The church was afraid of scandal.
 - b. Saints healed most of the sick
 - c. Physicians didn't have good schools
 - d. Most people couldn't afford surgery
- 6. Duties of a barber included ____.**
 - a. Pulling teeth
 - b. Bloodletting
 - c. Setting broken bones
 - d. All of the above
- 7. In the 15th century, physicians duties included:**
 - a. Bloodletting
 - b. Treating internal conditions
 - c. Mixing medications
 - d. Setting broken bones
- 8. Which two guilds combined in 1540?**
 - a. Surgeons and barbers
 - b. Barbers and bonesetters
 - c. Surgeons and physicians
 - d. Druggists and apothecaries
- 9. The term orthopaedic was coined by ____.**
 - a. Robert Jones
 - b. Hugh Owen Thomas
 - c. Nicholas Andre'
 - d. John Hunter
- 10. Until the 1890s orthopedics focused on:**
 - a. Bloodletting
 - b. Pediatrics
 - c. Amputation
 - d. Geriatrics

Osteoporosis Unveiled: Answers to Your Questions

- 1. What type of bone disease is osteoporotic rarefaction considered?**
 - a. Idiopathic
 - b. Metabolic
 - c. Postmenopausal
 - d. Genetic
- 2. What term describes the bone in a normal state of maintenance?**
 - a. Density
 - b. Osteoclastic
 - c. Calcitonin
 - d. Remodeling
- 3. Type II osteoporosis affects people over the age of?**
 - a. 55
 - b. 65
 - c. 75
 - d. 85
- 4. Osteoporosis that is reversible is caused by:**
 - a. Atherosclerosis
 - b. Hyperthyroidism
 - c. Splenomegaly
 - d. Hypothyroidism
- 5. Which type of osteoporosis is most common in women?**
 - a. Type I
 - b. Type II
 - c. Juvenile Type
 - d. Type associated with osteogenesis imperfecta
- 6. What is the maximum safe dose of calcium for most adults?**
 - a. 1,200 mg
 - b. 1,000 mg
 - c. 2,000 mg
 - d. 500 mg
- 7. What type of drug is Raloxifene?**
 - a. ERT/HRT
 - b. ERT
 - c. HRT
 - d. SERM
- 8. Deep vein thrombosis is a side effect associated with which osteoporosis drug?**
 - a. Raloxifene
 - b. Alendronate
 - c. Estrogen
 - d. Calcitonin
- 9. Which diagnostic exam is most commonly used to measure bone mass?**
 - a. Ultrasonic Densitometry
 - b. DEXA
 - c. PDXA
 - d. SXA
- 10. How many men in the US are affected by osteoporosis?**
 - a. 2 million
 - b. 3 million
 - c. 1 million
 - d. Osteoporosis does not affect men.

Intradiscal Electrothermo Therapy: A Novel Approach to Lumbar Disc Degeneration and Herniation

- Which of the following represent the correct number of vertebrae for the corresponding region of the spine?**
 - 12 Cervical vertebrae
 - 7 Lumbar vertebrae
 - 5 Sacral vertebrae
 - 6 Coccygeal vertebrae
- What is the average diameter of the lumbar spinal canal?**
 - 20-25 mm
 - 15-25 mm
 - 15-17 mm
 - 17-23 mm
- What is the inner core of the intervertebral disc called?**
 - Nucleus pulposus
 - Annulus fibrosus
 - Ligamentum flavum
 - Atlanto-occipital Membrane
- The term normal lordosis refers to ___?**
 - Ventral convexity of the spine
 - Dorsal convexity of the spine
 - Lateral convexity of the spine
 - Medial convexity of the spine
- The nucleus pulposus contains ___ percent water which decreases with age.**
 - 20-30
 - 50-60
 - 70-80
 - 80-90
- What fiber molecules are held together by a heat sensitive bond within the annular wall?**
 - Ligamentous
 - Collagen
 - Cartilaginous
 - Muscular
- While inserting the spinal needle, radicular pain indicates ___.**
 - The thoracolumbar fascia has been entered
 - Contact with a nerve root
 - More anesthetic is needed
 - Needle entry too close to midline
- How many centimeters lateral to the midline are the spinal needles introduced through the skin?**
 - 4 cm
 - 0 cm
 - 10 cm
 - 6 cm
- To what degree is the disc space heated by the IDET™ procedure?**
 - 75° C
 - 80° C
 - 85° F
 - 90° C
- Heavy work or aggressive physical exercise may be resumed ___ post operatively.**
 - One month
 - One year
 - Three months
 - Six months or more

Posterior Spinal Surgery

- 1. Which physician and philosopher proved that interruption of the spinal cord caused paralysis?**
 - a. Aretaeus
 - b. Oribasius
 - c. Galen
 - d. Hippocrates
- 2. In what year did Albee and Hibbs report a successful fusion?**
 - a. 1911
 - b. 1920
 - c. 1897
 - d. None of the above
- 3. According to Harrington, instrumentation in the spine would need to withstand ___ cycles of loading before fatigue?**
 - a. Four thousand
 - b. One hundred
 - c. Seven million
 - d. One billion
- 4. Which surgeon developed the sublaminar wiring technique?**
 - a. Jacobs
 - b. Harrington
 - c. Luque
 - d. Both B and C
- 5. When was the Cotrel-Dubousset instrumentation introduced?**
 - a. 1983
 - b. 1987
 - c. 1984
 - d. 1978
- 6. Who developed the posterior cervical plating system?**
 - a. Edwin Smith
 - b. Guido Lanfranc
 - c. Roy-Camille
 - d. CL Edwards
- 7. What was the earliest known document that described surgical procedures of the spine?**
 - a. Talmud
 - b. Edwin Smith papyrus
 - c. Old Testament
 - d. Galen's diaries
- 8. Segmental fixation of the spine when a technique developed by ___ involved placing buried steel rods in the back were fixed to the spinous processes with wires.**
 - a. Fritz Lange
 - b. Rea Jacobs
 - c. Roy-Camille
 - d. Cotrel-Dubousset
- 9. In Ancient Greece, who discussed the nature of dislocation of the vertebrae and its relationship to paralysis?**
 - a. Aretaeus of Cappadocia
 - b. Celsius
 - c. Hippocrates
 - d. Oribasius
- 10. ___ is a truly universal spinal instrumentation system that is applicable to any area of the spine and to any spinal pathology for which corrective instrumentation is indicated.**
 - a. Louis Plates
 - b. Texas Scottish Rite Hospital Spinal System
 - c. Luque wires
 - d. Harrington rods.

The Ilizarov Technique

1. **Which elements of the Ilizarov frame are used to stabilize bony fragments?**
 - a. Connectors
 - b. Telescoping rods
 - c. Transosseous wires
 - d. Half pins
2. **___ is hard compact connective tissue used for protection and support.**
 - a. Endosteum
 - b. Cancellous tissue
 - c. Cortical tissue
 - d. Trabeculae
3. **Which tissue appears as a honeycomb (trabeculae)?**
 - a. Cortical
 - b. Cancellous
 - c. Red bone marrow
 - d. Lamellae
4. **___ break down osseous tissue.**
 - a. Red blood cells
 - b. Canaliculi
 - c. Osteoblasts
 - d. Osteoclasts
5. **Which is not true about fracture repair?**
 - a. A fracture hematoma forms at the site
 - b. Blood flow to injured cells cease
 - c. Osteoprogenitor cells form trabeculae
 - d. Cancellous bone replaces compact bone in the callus
6. **Which is not true about a callus?**
 - a. Can be divided into internal and external regions
 - b. Accepts mineral deposits
 - c. Connects severed ends of bone
 - d. Contains osteoblasts that form trabeculae
7. **Which is connected with the telescoping rods to allow for distraction and compression techniques.**
 - a. Inner rings
 - b. Outer rings
 - c. Threaded rods
 - d. Half circles
8. **Which are mismatched?**
 - a. Patient size/wire diameter
 - b. Frame stiffness/fragment shifting
 - c. Plain wires/range of motion
 - d. Olive wires/stabilization
9. **Which is a factor in wire placement?**
 - a. Neurovascular structures
 - b. Range of motion
 - c. Fracture line
 - d. All of the above
10. **Which are mismatched?**
 - a. Wire tension/100-130kg of force
 - b. Regenerate/7-10 mm per day
 - c. Nonunion/osteotomy
 - d. 3 Of 4 ossifications/stress test

Fat Embolism: A Complication of Long Bone Fracture

- FES is a condition that develops when:**
 - Milk is ingested
 - Droplets of fat act as emboli
 - Air is introduced into the ventricles of the brain
 - Air is introduced into the ventricles of the heart
- Who was the first to combine experimental, clinical, and pathological observations to identify the presence of fat embolism?**
 - Scriba
 - Lower
 - Magendie
 - Wagner
- The three main clinical features of fat embolism are__.**
 - Cerebral dysfunction, decreased urinary output, and respiratory failure
 - Respiratory failure, decreased bowel motility, and decreased urinary output
 - Respiratory failure, presence of petechiae, and cerebral dysfunction
 - Presence of petechiae, cerebral dysfunction, and paralysis of the upper extremities
- Fat found in the__ can be used as a diagnostic indicator.**
 - Blood
 - Perspiration
 - Bile
 - Urine
- What are the two pathological types of fat embolism?**
 - Hemorrhagic and thrombotic
 - Respiratory and cerebral
 - Cerebral and systemic
 - Pulmonary and systemic
- In 90 percent of cases of fat embolism, the condition manifests itself within__.**
 - 24 hours
 - 72 hours
 - 48 hours
 - 1 week
- The first indications of FES may be__.**
 - Coma and cyanosis
 - Petechiae covering the upper half of the body and tachypnea
 - Restlessness and vague chest pain
 - Confusion and delirium
- Minor to moderate fat embolism syndrome is of little or no clinical importance due to:**
 - The fact that it has not become systemic
 - The enormous capillary bed and the large functional reserves within the lungs
 - The fact that the fat is expelled in the sputum and excreted in the urine
 - The kidneys are the only organ system affected
- How is it possible for the fat to move through the lungs and enter systemic circulation?**
 - Due to the liquid nature of the fat globules and capillary pressure
 - It is not possible for the fat to move through the lungs and enter systemic circulation
 - New emboli are introduced directly into the arteries
 - The patient will always die from the pulmonary embolism, therefore it is impossible for the embolism to become systemic
- The severity of systemic embolism is directly dependent on__.**
 - Impossible to determine, even upon autopsy
 - The amount of total body fat
 - The degree of pulmonary embolism and the nature of the injury
 - Fatty degeneration of the liver

Posterior Spinal Surgery: 20th Century Advances

- 1. Pedicle screw fixation relies on ___ for fixation.**
 - a. Distraction
 - b. Compression
 - c. Posterior elements
 - d. None of the above
- 2. Which system uses three different spacer washers to achieve level metal-to-metal contact between the plate and screw shank?**
 - a. Wilste
 - b. VSP
 - c. Vermont
 - d. AO
- 3. Who developed the first practical method of placing a transpedicular screw?**
 - a. Boucher
 - b. Harrington
 - c. Roy-Camille
 - d. Schlapfer
- 4. Dynamic compression plates allowed___.**
 - a. Screws to be angled in any direction
 - b. Internal fixation
 - c. Rods to be attached
 - d. Removal of facet joints
- 5. The bending strength of a screw is proportional to___.**
 - a. Core diameter
 - b. Screw length
 - c. Screw orientation
 - d. Effective thread diameter
- 6. ___ is a drawback of transpedicular external fixation.**
 - a. Pin tract infection
 - b. Accidental penetration of vertebral body
 - c. Protrusion of the device
 - d. All of the above
- 7. Which system was designed to allow for micromotion between the screw and rod?**
 - a. Vermont
 - b. ESSF
 - c. Pumo-Winter-Byrd
 - d. Edwards
- 8. Which pair is mismatched?**
 - a. Sacral fixation device/no compression or distraction
 - b. Rod-sleeve method/hook dislodgement
 - c. Harrington Rods/no rotational control
 - d. Harrington Rods/hook dislodgement
- 9. Combining ___ made it possible to apply corrective forces and maintain stable fixation in all directions.**
 - a. Moveable clamps and Schanz screws
 - b. Bidirectional ratcheting rods and adjustable connectors
 - c. L-shaped hooks and ratcheting rods
 - d. Rod-sleeve spacers and adjustable connectors
- 10. The ___ construct is best for thoracolumbar fractures.**
 - a. Compression
 - b. D-L
 - c. Rod-sleeve
 - d. Spondylo

Bone Healing

- 1. Which microorganism is often the cause of osteomyelitis?**
 - a. Streptococcus viridans
 - b. Staphylococcus aureus
 - c. Streptococcus pyogenes
 - d. Staphylococcus epidermidis
- 2. Compartment syndrome causes?**
 - a. Neurovascular compromise
 - b. Atherosclerosis
 - c. Pulmonary embolism
 - d. Hyperparathyroidism
- 3. In which stage do osteoblasts form a matrix of collagen that invades the periosteal callus, bridging the fractured bone?**
 - a. Cellular proliferation
 - b. Callus formation
 - c. Ossification
 - d. Remodeling
- 4. Osteomyelitis is ____.**
 - a. Decreased blood supply
 - b. Wound contamination
 - c. Inflammation of bone and marrow
 - d. A disrupted vascular system
- 5. Avascular necrosis can be caused by ____.**
 - a. Steroid use
 - b. Diabetes
 - c. Disease
 - d. All of the above
- 6. Which is not a cause of malunion?**
 - a. Inadequate reduction
 - b. Patient noncompliance
 - c. Inadequate immobilization
 - d. All are causes
- 7. ____ is softening of the bone due to inadequate or delayed mineralization.**
 - a. Osteomyelitis
 - b. Osteomalacia
 - c. Calcitonin
 - d. Bone coagulation
- 8. Which type of cell is responsible for the destruction and resorption of bone?**
 - a. Osteoclast
 - b. Osteoblast
 - c. Osteocyte
 - d. Fibroblast
- 9. ____ allows for the attachment of tendons.**
 - a. Endosteum
 - b. Parathyroid hormone
 - c. Calcitonin
 - d. Periosteum
- 10. ____ are not actual bone replacements, but are structural “scaffolds” to encourage new growth.**
 - a. ORIF devices
 - b. bone fillers
 - c. allografts
 - d. xenografts

Anterior Cervical Fusion

- 1. Which pair is mismatched?**
 - a. C1: atlas
 - b. C2: axis
 - c. C3: thoracic
 - d. C1-C7: cervical vertebrae
- 2. The ___ is a fibrous ring-like structure.**
 - a. Nucleus
 - b. Atlas
 - c. Axis
 - d. Annulus
- 3. Which is the weakest link of the annulus?**
 - a. Posterolateral margin
 - b. Nucleus
 - c. Transverse foramina
 - d. Anterolateral margin
- 4. According to Kelaey, which age group was most affected by acute cervical disc herniations?**
 - a. 40s
 - b. 50s
 - c. 60s
 - d. >70
- 5. Which is not a presenting symptom of potential ACF patients?**
 - a. Headache
 - b. Arm pain
 - c. Shoulder pain
 - d. All are presenting symptoms
- 6. The GardnerWellsTongs and weights accomplishes what?**
 - a. Avoids the need for distraction pins
 - b. Cervical distraction
 - c. Avoids the need for AGF blood machine
 - d. Both a and b
- 7. Surgeons may choose a left-sided approach because of the location of which nerve?**
 - a. Recurrent laryngeal
 - b. Trigeminal
 - c. CN VII
 - d. Vagus
- 8. The bulk of the disc is removed with what?**
 - a. #15 blade
 - b. Pituitary rongeurs
 - c. 18 gauge spinal needle
 - d. Blunt nerve hook
- 9. An improperly sized graft could lead to what?**
 - a. Impingement of the spinal cord
 - b. Graft extrusion
 - c. Graft intrusion
 - d. All of the above
- 10. A long-term consideration of multi-level fusions is what?**
 - a. Premature disc degeneration
 - b. Permanent loss of voice
 - c. Paralysis
 - d. None of the above

Anterior Cervical Corpectomy, Fusion and Stabilization

- 1. At what level does the vertebral artery enters the cervical spine?**
 - a. T-1
 - b. C-7
 - c. C-6
 - d. Foramen magnum
- 2. What term is given to the condition of the atlas being fused to the occiput?**
 - a. Sacralization
 - b. Occipitalization
 - c. Degeneration
 - d. Impingement
- 3. A diameter of less than ___ at the foramen magnum often leads to neurologic deficits?**
 - a. 19 mm
 - b. 26 mm
 - c. 40 mm
 - d. None of the above
- 4. Herniated disk at the ___ level compresses the C8 nerve root.**
 - a. C5-C6
 - b. C6-C7
 - c. T1-T2
 - d. C7-T1
- 5. Which definition is mismatched?**
 - a. Spondylitis-inflammation of vertebrae
 - b. Kyphosis-swelling of the joint
 - c. Ankyloses-stiffening of fixation of the joint
 - d. Stenosis-narrowing of a passage or orifice
- 6. What is the first major structure encountered in the superficial dissection of the neck?**
 - a. Carotid artery
 - b. Omohyoid muscle
 - c. Platysma muscle
 - d. Anterior longitudinal ligament
- 7. Most cervical plates are pre-bent with an angle of cervical___.**
 - a. Lordosis
 - b. Kyphosis
 - c. Spondylosis
 - d. Ankylosis
- 8. With which type of screws are the holes tapped after they are drilled?**
 - a. Cranial
 - b. Caudal
 - c. Bicortical
 - d. All are tapped
- 9. If spondylosis is left untreated, what may result?**
 - a. Scoliotic deformity
 - b. Kyphotic deformity
 - c. Segmental instability
 - d. Both b and c
- 10. Which is a factor in the pathogenesis of cervical disk disease?**
 - a. Cigarette smoking
 - b. Genetics
 - c. Autoimmune phenomenon
 - d. All are factors

Answers CE CREDIT PKG 4A: 10 CONTINUING EDUCATION CREDITS

AST Member No: _____

Name: _____

Address: _____ City: _____ State: _____ Zip: _____

Telephone: _____ Email: _____

The fee is \$15. This package is only available to AST & ASA members.

Check Enclosed Yes, I want to pay by Credit Card: Visa MasterCard AmEx
 (due to PCI compliance, AST cannot accept credit card payment information by fax or email, you can mail or call in your credit card information).

Card# _____ Expiration Date _____ Signature _____

From Bonesetters to Orthopaedic Surgeons: A History of the Speciality of Orthopaedics

a	b	c	d	a	b	c	d		
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mark one box next to each number. Only one correct or best answer will be selected for each question.
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Ossteoporosis Unveiled: Answers to Your Questions

a	b	c	d	a	b	c	d		
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mark one box next to each number. Only one correct or best answer will be selected for each question.
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

IntraDiscal electrothermal Therapy: A Novel Approach to Lumbar Disc Degeneration and Herniation

a	b	c	d	a	b	c	d	
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	Mark one box next to each number. Only one correct or best answer will be selected for each question.
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Posterior Spinal Surgery

a	b	c	d	a	b	c	d	
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	Mark one box next to each number. Only one correct or best answer will be selected for each question.
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

The Ilizarov Technique

a	b	c	d	a	b	c	d	
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	Mark one box next to each number. Only one correct or best answer will be selected for each question.
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Fat Embolism: A Complication of Long Bone Fracture

a	b	c	d	a	b	c	d	
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	Mark one box next to each number. Only one correct or best answer will be selected for each question.
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Posterior Spinal Surgery: 20th Century Advances

a	b	c	d	a	b	c	d			Mark one box next to each number. Only one correct or best answer will be selected for each question.
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

Bone Healing

a	b	c	d	a	b	c	d			Mark one box next to each number. Only one correct or best answer will be selected for each question.
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

Anterior Cervical Fusion

a	b	c	d	a	b	c	d			Mark one box next to each number. Only one correct or best answer will be selected for each question.
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

Anterior Cervical Corpectomy, Fusion and Stabilization

a	b	c	d	a	b	c	d				Mark one box next to each number. Only one correct or best answer will be selected for each question.
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								