### Cerebral Artery Aneurysm Clipping

1. Cerebral aneurysms are most likely the result of ____.  
   a. Birth defects  
   b. Hypertension  
   c. Hypotension  
   d. Subarachnoid hemorrhage

2. The brain requires a blood flow of ____, making the brain sensitive to even a few seconds of reduced vascular flow.  
   a. 600 ml/min  
   b. 750 ml/hr  
   c. 750 ml/min  
   d. 500 cc/min

3. Which of the following medications is used to decrease vasospasm?  
   a. Heparin  
   b. Papaverine  
   c. TPA  
   d. Thrombin

4. The two arteries that give rise to the Circle of Willis are the ____ and the ____.  
   a. Vertebral, aorta  
   b. Vertebral, external carotid  
   c. Innominate, superior thyroid  
   d. Vertebral, internal carotid

5. The term pterional refers to the ____.  
   a. Frontotemporal suture line  
   b. Transphenoidal approach  
   c. Junction of the frontal, parietal, temporal, and sphenoid bones  
   d. Parietotemporal suture line

6. Which of the following is an artery that comprises the Circle of Willis?  
   a. Superior cerebellar  
   b. Anterior spinal  
   c. Anterior communicating  
   d. Right vertebral artery

7. At which junction are aneurysms most common?  
   a. ICA-PCA  
   b. ECA-ICA  
   c. Right & left vertebral arteries  
   d. Basilar & superior cerebellar

8. What is used to secure the replaced bone flap?  
   a. 4-0 braided Neurolon  
   b. Raney clips  
   c. Titanium plates and screws  
   d. Polymethylmethacrylate

9. In addition to hemodynamic stress, which additional factors may be responsible for aneurysm formation?  
   a. Degenerative osseous lesions  
   b. Atherosclerosis  
   c. Head trauma  
   d. Both B and C

10. Which of the following is an approach that can be used to access aneurysms of the Circle of Willis?  
    a. Posterotemporal  
    b. Midline  
    c. Frontotemporal  
    d. Pterional
1. Histology is the___.
   a. Study of History
   b. Study of the minute structure, composition, and function of tissues
   c. Development of tissues from the undifferentiated germ layer of the embryo
   d. Development of a tumor containing histocytes

2. Which of the following is one of the gene classes that coordinates the life cycle of a cell?
   a. Tumor suppressor
   b. Oncogenes
   c. Glial-cell progenitor
   d. Fibroblast growth factor

3. Types of glial cells include___.
   a. Oligodendroglial cells (CNS)
   b. Ependymal cells (PNS)
   c. Astrocytes
   d. All of the above

4. During which phase of the normal cell cycle does DNA replication occur?
   a. G1
   b. S phase
   c. Gap two
   d. Mitotic phase

5. What is mitosis?
   a. Metastasis of cancer cells
   b. Glial cell oncogenesis
   c. Form of cell division
   d. Chromosomal mutation

6. What is the most malignant of all types of brain tumors?
   a. Glioblastoma multiforme
   b. Anaplastic astrocytoma
   c. Schwannoma
   d. Meningioma

7. In addition to the tumor type and grade, which of the following factors influence the individual prognosis?
   a. Gender
   b. Age
   c. Vascular proliferation
   d. All of the above

8. Which phase of mitosis is autocrine growth factors involved?
   a. M
   b. S
   c. G1
   d. G2

9. In relation to the normal cell cycle, CDKs are___.
   a. Oncogenes
   b. Growth factors
   c. Cyclin dependent kinases
   d. Cyclins

10. The “go/no-go” point in mitosis___.
    a. Is also referred to as the restriction point
    b. Occurs during the S phase of the cell cycle
    c. Occurs during the mitotic (M) phase of the cell cycle
    d. Occurs during the G2 phase of the cell cycle
1. Why do individuals with a tumor in the second grouping have a better prognosis?
   a. The tumor has a less aggressive capacity for invading surrounding tissue
   b. The tumor has a limited growth rate
   c. The tumor has limited anaplastic progression
   d. All of the above

2. Why are tumors in the second grouping less aggressive than tumors in the first grouping?
   a. They are microscopically circumscribed neoplasms
   b. They are adept at infiltrating surrounding tissue
   c. Both A & B
   d. None of the above

3. Which of the following risk factors apply to glioblastoma in the adult?
   a. Race (Caucasian)
   b. Gender (Male)
   c. Age (50s and 60s)
   d. All of the above

4. Meningiomas
   a. Rapidly invade brain tissue
   b. Do not invade brain tissue
   c. Rapidly invade the spinal cord
   d. Rapidly invade the pituitary

5. Tinel’s sign is defined as
   a. Ringing in the ears
   b. Dizziness
   c. A sensation of tingling
   d. Nausea

6. A nerve conduction study is also called a/an
   a. EMG
   b. CT Scan
   c. MRI
   d. Craniotomy

7. Which of the following is subcategory of astrocytoma tumors?
   a. Ependymoma
   b. Medulloblastoma
   c. Gemistocytic
   d. Choroid plexus

8. What is the most common method of administration for a contrast agent?
   a. Oral
   b. Rectal
   c. Inhalation
   d. Intravenous

9. Which of the following is an advantage of CT scan over MRI?
   a. CT is faster than MRI
   b. CT uses ionizing radiation; MRI does not
   c. The strong magnet the CT scanner is usually located in the radiology department
   d. CT uses radio waves; MRI does not

10. Glioblastomas represent approximately ___ of all primary brain tumors.
    a. 5%
    b. 10%
    c. 20%
    d. 42%
1. The nervous system along with the ___ system controls many bodily activities.
   a. Cardiovascular
   b. Respiratory
   c. Endocrine
   d. Urogenital

2. The peripheral nervous system consists of___.
   a. 10 pairs of cranial nerves; 28 pairs of spinal nerves
   b. 11 pairs of cranial nerves; 29 pairs of spinal nerves
   c. 12 pairs of cranial nerves; 31 pairs of spinal nerves
   d. 13 pairs of cranial nerves; 32 pairs of cranial nerves

3. The autonomic nervous system (ANS) primarily innervates all of the following except___.
   a. Glands
   b. Skeletal muscle
   c. Smooth muscle
   d. Cardiac muscle

4. The autonomic nervous system (ANS) is activated mainly by centers located in all of the following except___.
   a. Cerebellum
   b. Hypothalamus
   c. Brain stem
   d. Spinal cord

5. Which of the following is not a response to sympathetic nervous system (SyNs) impulses?
   a. Increase blood pressure
   b. Speed up force/rate of heart beat
   c. Increase blood sugar concentration
   d. Constrict bronchioles

6. Both pre-and postganglionic neurons of the parasympathetic nervous system (PaNS) utilize the neurotransmitter___.
   a. Epinephrine
   b. Norepinephrine
   c. Cholinesterase
   d. Acetylcholine

7. When stimulated by preganglionic sympathetic (thoracicsplanchnic) nerve fibers, the chromaffin cells of the adrenal glands release large quantities of ___ directly into the blood stream.
   a. Acetylcholine
   b. Epinephrine
   c. Norepinephrine
   d. Both B and C

8. Which of the following branches of the aorta does not have a collateral ganglion (plexus) located next to it?
   a. Celiac
   b. Renal
   c. Superior mesenteric
   d. Inferior mesenteric

9. Preganglionic fibers originate from cell bodies in the ___ gray horn of all the thoracic and first two or three lumbar segments of the spinal cord.
   a. Anterior
   b. Lateral
   c. Medial
   d. Posterior

10. ___ receptor sites for acetylcholine (cholinergic) occur at the junction between preganglionic and postganglionic fibers of both the sympathetic and parasympathetic divisions of the ANS.
    a. Nicotinic
    b. Muscarinic
    c. Adrenergic
    d. Oxidase
General Principles and Instrumentation For Cranial Neurosurgery, Part 1

1. Which is another term for the ¾ prone position?
   a. Supine
   b. Lateral oblique
   c. Right lateral recumbent
   d. None of the above

2. When the patient is in the supine or ¾ position, the CST should be ___.
   a. Seated at the head of the table
   b. In front of the patient’s face
   c. Behind the patient’s back
   d. At the patient’s feet

3. The ___ is the site of a bony prominence that overlies the torcular and the attachment of the tentorium to the inner table of the skull.
   a. Frontozygomatic point
   b. Sylvian fissure
   c. Nasion
   d. Inion

4. The ___ separates the motor and sensory areas of the cerebrum.
   a. Frontozygomatic point
   b. Nasion
   c. Sylvian fissure
   d. Rolandic fissure

5. The ___, the site on the temple, is located 3 cm behind the frontozygomatic point on the Sylvian fissure line.
   a. Pterion
   b. Inion
   c. Orbital rim
   d. Tentorium

6. ___ interfere with CT or MRI scans, so are only used with aneurysms.
   a. Pinion head clamps
   b. Rongeurs
   c. Metallic clips
   d. Bone wax

7. ___ is/are used to close small openings in the mastoid air cells and sinuses.
   a. Silk suture
   b. Pericranial grafts
   c. Metallic clips
   d. Bone wax

8. The greatest accuracy and control of the drill is achieved ___.
   a. At high speeds
   b. Through constant pressure
   c. With low speeds
   d. Using minimal irrigation

9. Bipolar coagulation will not occur if ___.
   a. Tips are too far apart
   b. Tips are touching
   c. A and b
   d. None of the above

10. In which areas would unipolar coagulation be hazardous?
    a. Brain stem
    b. Fourth ventricle
    c. Near cranial nerves
    d. All of the above
1. Round-handle forceps with fine serrations inside the tips are called ___.
   a. Needle holding forceps
   b. Dura forceps
   c. Dressing forceps
   d. Coagulation forceps

2. 9.5 cm bayonet forceps are used for which tissues?
   a. Circle of Willis
   b. Cerebellopontine angle
   c. Sellar region
   d. All of the above

3. The smallest Penfield dissector is ___ wide.
   a. 2 mm
   b. 3 mm
   c. 2 cm
   d. 3 cm

4. Jewelers forceps are too short for ___.
   a. Tying superficial microsuture
   b. Handling microneedles near the surface
   c. Deep intracranial operations
   d. None of the above

5. Which suction tube would be best for use at the front of the brain stem?
   a. 5-French
   b. 8 cm shaft
   c. 10 cm shaft
   d. 13 cm shaft

6. In suction tube sizes, how many French units equals 1 mm?
   a. One
   b. Two
   c. Three
   d. Five

7. ___ are used to elevate the surface of the brain away from the cranial base.
   a. Suction tubes
   b. Elevators
   c. Bayonets
   d. Spatulas

8. ___ are used for removing the last shell of bone between a drill surface and neural or vascular structures.
   a. Brain spatulas
   b. Bone currettes
   c. Cup forceps
   d. Shell removers

9. Which allows the surgeon to reach around a corner to grasp tissue or remove tumors?
   a. Angled microcup forceps
   b. 1-2 mm cup forceps
   c. 3-4 mm corner forceps
   d. 45° angle curets

10. The retraction system should include ___.
    a. Flexible arms
    b. Clamps and bars
    c. Tapered and rectangular spatulas
    d. All of the above
1. Which is the most common form of CJD?
   a. Iatrogenic
   b. Genetic
   c. Sporadic
   d. New variant

2. In which form of CJD can doctors use tonsil tissue for diagnosis?
   a. Sporadic
   b. Genetic
   c. Iatrogenic
   d. New variant

3. PrP protein has been discovered on ___
   a. Nerve cells
   b. Muscle cells
   c. White blood cells
   d. All of the above

4. Prions are unlike any other pathogens in that they___.
   a. Contain no DNA or RNA
   b. Survive routine sterilization and disinfection processes
   c. Are not contagious in a traditional sense
   d. All of the above

5. FFI and GSS are both ___.
   a. Prion diseases
   b. Inherited forms of CJD
   c. New variants of CJD
   d. Iatrogenic

6. Beta-sheet prions are___.
   a. Normal PrP
   b. Infectious PrP
   c. Helical
   d. None of the above

7. Which form of CJD has the lowest percentage of cases?
   a. Iatrogenic
   b. Sporadic
   c. Inherited
   d. vCJD

8. According to Rutala & Weber, ___devices contact mucous membranes and broken skin.
   a. Noncritical
   b. Semicritical
   c. Critical
   d. High risk

9. According to the CDC, CJD contaminated instruments are considered sterile after___.
   a. Steam autoclaving for 1 hour at 250˚F
   b. Being soaked for 20 minutes in 5,000 ppm lypochlorite
   c. Using normal sterilization methods
   d. All instruments must be incinerated

10. Which type of human tissue is NOT considered high risk?
    a. Brain
    b. Heart
    c. Eye
    d. Spinal cord
1. What percentage does glioblastoma multiforme account for in all primary intracranial tumors?
   a. 30%
   b. 40%
   c. 75%
   d. 60%

2. Which is characteristic of glioblastoma multiforme?
   a. Arises from astrocyte cells
   b. Grey, white, yellow, red, or brown appearance
   c. Enlarged and irregular cell nuclei
   d. All of the above

3. Which of the following is NOT a symptom of increased intracranial pressure?
   a. Nausea
   b. Headache
   c. Optic papilla
   d. Papilledema

4. A growth in the ___ of the brain would produce psychomotor seizures.
   a. Temporal lobe
   b. Cerebral lobe
   c. Midline
   d. Frontal lobe

5. How long is the prognosis in a patient with untreated glioblastoma multiforme?
   a. 12 weeks
   b. 30 days
   c. 1-2 years
   d. 18 weeks

6. Glioblastoma most commonly arises from white matter of the ___?
   a. Cerebral hemispheres
   b. Pons
   c. Midbrain
   d. Vermis

7. In what age range does GBM most commonly occur?
   a. Under 30 years old
   b. 30-40 years old
   c. 40-50 years old
   d. 50-60 years old

8. Which type of treatment is affected by the bloodbrain barrier?
   a. Gamma Knife
   b. Ultrasonic aspiration
   c. Chemotherapy
   d. Stereotactic surgery

9. Polifeprosan 20 with carmustine is what type of drug?
   a. Antibiotic
   b. Diuretic
   c. Chemotherapeutic
   d. Steroid

10. Approximately how many cases of glioblastoma multiforme are diagnosed annually?
    a. 20,000
    b. 5,000
    c. 7,500
    d. 12,000
Microvascular Decompression For Control of Trigeminal Neuralgia

1. Which is the trigeminal nerve?
   a. IV
   b. V
   c. VI
   d. X

2. Who created a nondestructive technique to decompress the trigeminal nerve?
   a. Andre Douloureux
   b. Walter Dandy
   c. Peter Janetta
   d. Antonio Valsalva

3. Which is mismatched?
   a. V : eyes, upper eyelids and forehead
   b. V : cheeks, lower eyelids, nostrils, upper lips, gums
   c. V : jaw, lower lip, gums, chewing muscles
   d. None are mismatched

4. The most common form of treatment for TN is:
   a. Medication
   b. Open surgery
   c. Ablative procedures
   d. Endoscopic surgery

5. Which is not a symptom of TN?
   a. Brief, lancinating pain
   b. Loss of sensation in the facial nerve
   c. Decreased corneal reflex
   d. Decreased estrogen production

6. TN causes ___, making the patient susceptible to increased pain sensations.
   a. Pulsation of the vessel
   b. Demyelination of the axons
   c. Transmission of facial sensations
   d. None of the above

7. Which drug used to treat TN has had the best results and fewest side effects?
   a. Baclofen
   b. Carbamazepine
   c. Gabapentin
   d. Oxcarbazepine

8. When is the Valsalva maneuver performed?
   a. When nerve exposure is achieved
   b. Once the nerve has been decompressed
   c. Prior to craniectomy
   d. After cranioplasty

9. The most common ablative procedure for TN is:
   a. Percutaneous rhizotomy by glycerol injection
   b. Percutaneous rhizotomy by balloon
   c. Radio frequency rhizotomy
   d. Knifeless surgery

10. The ___ decompression procedure prevents brain retraction and provides enhanced visualization, lighting and magnification.
    a. Endoscopic
    b. Gamma probe
    c. CyberKnife®
    d. Radio frequency rhizotomy
1. The most common cause of cervical spine injuries is
   a. Diving accidents
   b. Motor vehicle accidents
   c. Football accidents
   d. Climbing mishaps

2. The most distinguishing feature on C1 is
   a. Two lateral masses and two arches
   b. Large odontoid process
   c. Absence of a vertebral body
   d. Cruciate ligament

3. The most distinguishing feature of C2 is
   a. Transverse ligaments
   b. Apical ligaments
   c. Alar ligaments
   d. Dens

4. The ____ is shaped like a cross and helps stabilize the ____.
   a. Cruciate ligament, odontoid process
   b. Transverse ligament, dorsal aspect
   c. Alar ligament, medial aspect
   d. Apical ligament, basion

5. Type I odontoid fractures usually involve
   a. A fracture at the base of the odontoid
   b. An avulsion of the tip of the odontoid process
   c. A fracture through the body of C2
   d. An anterior displacement of the dens

6. Type II odontoid fractures usually involve
   a. A fracture through the body of C2
   b. Anterior displacements of the dens
   c. A fracture at the base of the odontoid
   d. Both b and C

7. Type II odontoid fractures have several treatment options, including
   a. Halo traction
   b. Posterior C1-2 fusion
   c. Anterior odontoid screw fixation
   d. All of the above

8. The reason for a transverse skin incision at C4-5 is
   a. Aligning the drill guide with the process
   b. Creating a plane to the vertebral bodies
   c. Exposing the anterior longitudinal ligament
   d. Retracting the carotid sheath

9. A ____ retractor is used to facilitate exposure of the body of C2.
   a. Weitlaner
   b. Apfelbaum
   c. Hohmann
   d. Bennett

10. Factors to be considered in treatment of odontoid fractures are
    a. The level and direction of the fracture line
    b. The rotation of the fracture fragments
    c. The presence of any neurological impairment
    d. All of the above.
Answers  CE CREDIT PKG 3A: 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____________

Cerebral Artery Aneurysm Clipping

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ☐ ☐ ☐ ☐</td>
<td>2. ☐ ☐ ☐ ☐</td>
<td>3. ☐ ☐ ☐ ☐</td>
<td>4. ☐ ☐ ☐ ☐</td>
<td>5. ☐ ☐ ☐ ☐</td>
<td>6. ☐ ☐ ☐ ☐</td>
<td>7. ☐ ☐ ☐ ☐</td>
<td>8. ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.

High Grade Asrocytoma in the Adult, Part 1: Biology and Pathology

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ☐ ☐ ☐ ☐</td>
<td>2. ☐ ☐ ☐ ☐</td>
<td>3. ☐ ☐ ☐ ☐</td>
<td>4. ☐ ☐ ☐ ☐</td>
<td>5. ☐ ☐ ☐ ☐</td>
<td>6. ☐ ☐ ☐ ☐</td>
<td>7. ☐ ☐ ☐ ☐</td>
<td>8. ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.

High Grade Asrocytoma in the Adult, Part 2: Biology, Pathology, Diagnostics and Treatment

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ☐ ☐ ☐ ☐</td>
<td>2. ☐ ☐ ☐ ☐</td>
<td>3. ☐ ☐ ☐ ☐</td>
<td>4. ☐ ☐ ☐ ☐</td>
<td>5. ☐ ☐ ☐ ☐</td>
<td>6. ☐ ☐ ☐ ☐</td>
<td>7. ☐ ☐ ☐ ☐</td>
<td>8. ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.
### The Autonomic Nervous System

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.

### General Principles and Instrumentation For Cranial Neurosurgery, Part 1

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.

### General Principles and Instrumentation For Cranial Neurosurgery, Part 2

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.

### Creutzfeldt-Jakob Disease

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark one box next to each number. Only one correct or best answer will be selected for each question.
## Glioblastoma Multiforme: From Biology to Treatment

Mark one box next to each number. Only one correct or best answer will be selected for each question.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Microvascular Decompression For Control of Trigeminal Neuralgia

Mark one box next to each number. Only one correct or best answer will be selected for each question.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Anterior Internal Fixation of Type II Odontoid Process of Fractures

Mark one box next to each number. Only one correct or best answer will be selected for each question.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>