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ROLL NUMBER

**WRITTEN TEST FOR THE POST OF TECHNICAL
ASSISTANT(NEUROLOGY) – A**

DATE : 21/02/2017

TIME : 09.30 AM

DURATION : 90 MINUTES

TOTAL MARKS : 80

INSTRUCTIONS TO THE CANDIDATE

1. Write your Roll Number on the top of the Question Booklet and in the OMR sheet.
2. Each question carries 1 mark.
3. There will not be any Negative Marking.
4. Darken only the bubble corresponding to the most appropriate answer.
5. Marking more than one answer will invalidate the answer.
6. Candidate should sign in the question paper and OMR sheet.
7. Candidate should hand over the question paper and OMR sheet to the invigilator before leaving the examination hall.

Signature of the Candidate

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) – A

1. Which of the following permits storage of charge
A. Resistor B. Insulator C. Capacitor D. Conductor
2. A 70 Hz high frequency filter would reduce amplitude of 70 Hz input by what percentage?
A. 30% B. 50% C. 70% D. 100%
3. Notch filter in India is set at what frequency?
A. 10 Hz B. 50 Hz C. 60 Hz D. 100 Hz
4. Electroencephalography machine filters help in increasing which of the following?
A. Signal noise ratio B. Fidelity C. Frequency D. Aliasing
5. Following are contraindications to hyperventilation activation procedure during EEG **EXCEPT**
A. Recent subarachnoid haemorrhage or stroke B. Pregnancy
C. Sickle cell and Moya Moya disease D. Recent seizure
6. First person to record human electroencephalogram and report it in 1929 was –
A. Richard Caton B. Frederic A. Gibbs C. William G. Lennox D. Hans Berger
7. First person to record an electroencephalogram in animals was –
A. Richard Caton B. Frederic A. Gibbs C. William G. Lennox D. Hans Berger
8. According to Ohm's law, what is the voltage drop across a 10 ohm resistor passing a 1 milli Amp current?
A. 1 milliVolt B. 10 milliVolt C. 1 microVolt D. 10 Volt
9. Time constant of a filter is equal to the product of its –
A. Power and resistance B. Resistance and conductance
C. Resistance and capacitance D. Voltage and resistance
10. An RC circuit with the capacitor before the resistor in series with voltage out across the resistor would function as what component in an EEG machine?
A. Low frequency filter B. Differential amplifier
C. High frequency filter D. Notch filter
11. In an AC circuit, a component that conducts better in one direction than other is called –
A. Resistor B. Capacitor C. Inductor D. Rectifier
12. Brachial plexus comes from roots –
A. C8-T1 B. C8-T3 C. C5-T3 D. C5-T1
13. Ulnar is a branch of which cord of the brachial plexus?
A. Medial B. Lateral C. Posterior D. Anterior
14. Deltoid muscle is supplied by which nerve?
A. Musculocutaneous B. Suprascapular C. Radial D. Axillary
15. Tibialis anterior muscle is supplied by which nerve?
A. Posterior tibial nerve B. Deep peroneal nerve
C. Sural nerve D. Superficial peroneal nerve
16. The largest white matter connection between the two cerebral hemispheres is –
A. Thalamus B. Third ventricle C. Corpus callosum D. Posterior commissure
17. The hippocampus lies in which lobe of brain?
A. Frontal B. Temporal C. Parietal D. Occipital
18. Muscles of the anterior compartment of the thigh are supplied by –
A. Obturator nerve B. Sciatic nerve C. Inguinal nerve D. Femoral nerve

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) - A

19. In an EEG recording in bipolar montage, the following can be used for localization -
- A. Phase reversal
 - B. Highest amplitude
 - C. Sharpest spike
 - D. Localization is not possible
20. End of chain issue in EEG interpretation refers to problem with -
- A. Interpreting field when abnormality is in O1/2 or Fp1/2
 - B. Having an equipotential zone due to large field
 - C. Having an involved reference electrode A1/2 or Cz
 - D. Having an improperly placed end electrode
21. All of the following are true regarding referential montages **EXCEPT**
- A. Largest amplitude is likely to be the source of waveform
 - B. Good for assessing symmetry
 - C. The reference electrode is always neutral or uninvolved
 - D. It avoids some of the problems of signal cancellation with bipolar montages
22. All of the following are true regarding Grounding in the hospital **EXCEPT**
- A. Connecting wires to a patient is associated with risks ranging from mild shock to electrocution
 - B. The patient should be connected to the same earth ground that the machine is connected to
 - C. If there are multiple machines connected to a patient, only a single ground should be connected to the patient
 - D. The patient should not come in contact with a metal pipe or other conductor which might be connected to the earth
23. A Fast Fourier Transform is primarily used in EEG for -
- A. Automatic spike detection on the EEG
 - B. Generating a power versus frequency analysis
 - C. Automatic reading and interpretation of the EEG
 - D. Automated method for checking impedance at all electrodes
24. All of the following are true regarding EEG in Benign Rolandic Epilepsy **EXCEPT**
- A. Centrottemporal location
 - B. Symmetric V shape with two or three phases
 - C. Anteroposterior dipole
 - D. Photic stimulation markedly accentuates
25. The defining feature of stage 2 sleep is -
- A. Vertex sharp waves
 - B. Sleep spindles
 - C. Slowing of background
 - D. Drop out of posterior dominant rhythm
26. All of the following are characteristic of drowsiness on EEG **EXCEPT**
- A. Slowing and anterior spread of alpha activity
 - B. Drop out of the posterior dominant rhythm
 - C. Fast eye movements in lateral eye and frontal leads
 - D. Vertex sharp waves
27. The transient increase in posterior dominant alpha frequency on eye closure is referred to as -
- A. Alpha squeak
 - B. Alpha block
 - C. Photic alpha drive
 - D. Subharmonic alpha
28. Surface positive sharply contoured waves in occipital lobe during wakefulness with the eyes open which correlate with visual fixation to a target are called -
- A. Mu waves
 - B. Posterior slow waves of Youth
 - C. Lambda waves
 - D. Positive Occipital Sharp Transients

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) – A

29. Following are true regarding Mu waves **EXCEPT**
- A. Beta frequency activity
 - B. Arciform in morphology
 - C. Predominant over central regions
 - D. Suppressed by moving contralateral extremity
30. Positive Occipital Sharp Transients of Sleep (POSTS) are characteristic of
- A. Stage 3 or stage 4 sleep
 - B. Only stage 2 sleep
 - C. Stage 1 or stage 2 sleep
 - D. Rapid eye movement (REM) sleep
31. A person with a 10 Hz posterior dominant rhythm has photic driving response only at 20 Hz photic. What is this phenomenon called?
- A. Photoparoxysmal response
 - B. Photomyoclonic response
 - C. Evoked potential driving
 - D. Overdriving
32. Which of the following is the hallmark of 'electrode pop'?
- A. Spike contour
 - B. Absence of a field
 - C. Very brief transient
 - D. Repetitive
33. "Salt bridges" or low impedance connections between two adjacent electrodes during recording of an EEG will cause –
- A. Fast repeated spikes
 - B. Slow undulating potential
 - C. Theta range activity
 - D. Electrode "pop"
34. Which of the following differentiates photoelectric response from photomyoclonic response
- A. Very brief potential
 - B. Frontally located electrode
 - C. Seen only occasionally
 - D. Implies electrode with high impedance
35. Electrocardiogram (ECG/EKG) artefact in EEG is produced by –
- A. Ventricular contraction
 - B. Ventricular relaxation
 - C. Sinoatrial node activation
 - D. Arterial pulse
36. In the normal alpha rhythm, the amplitude can be –
- A. 50% lower on the left
 - B. 50% lower on the right
 - C. 40% lower on the right
 - D. 75% lower on the left
37. Asynchrony of the alpha rhythm occurs when there is –
- A. Any difference in rhythm from side to side
 - B. Greater than 0.5 Hz difference in the rhythm from side to side
 - C. Greater than 1 Hz difference in the rhythm from side to side
 - D. Greater than 2 Hz difference in the rhythm from side to side
38. Low amplitude frontal beta activity can normally be seen in following **EXCEPT**
- A. Anxious adults
 - B. Light sleep
 - C. Stage 4 sleep
 - D. Medications like benzodiazepines
39. Following is true regarding breach rhythm
- A. Decreases the low frequency filtering of the skull
 - B. Allows more high amplitude slow activity
 - C. Most often seen in occipital electrodes
 - D. No increased risk of seizures associated with this rhythm
40. Following is true regarding Rhythmic Midtemporal Theta of Drowsiness
- A. Also known as Psychomotor variant
 - B. Is associated with psychosis
 - C. Cannot be bilateral
 - D. Most often seen in elderly

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) – A

41. Occipital intermittent rhythmic delta activity can be seen in interictal EEG of –
A. Lennox Gastaut syndrome
B. Landau Kleffner syndrome
C. Absence epilepsy
D. Syncope
42. Following are true regarding triphasic waves **EXCEPT**
A. Patients are arousable and not comatose when triphasic waves are seen
B. These waves are diagnostic of hepatic encephalopathy
C. Frontal dominance
D. Frontal to posterior time lag is common
43. All the following regarding temporal lobe delta activity are true **EXCEPT**
A. Temporal lobe delta activity is common with temporal lobe epilepsy
B. Intermittent polymorphic delta (TIPDA) has good lateralizing value
C. Intermittent polymorphic delta (TIPDA) has good localizing value
D. Intermittent rhythmic delta (TIRDA) has good localizing value
44. By convention, the duration of a spike waveform lasts –
A. Less than 50 msec B. 20-70 msec C. 50-100 msec D. 100-200 msec
45. Repetitive spike and wave discharges are referred to as “slow” if they repeat
A. Less than 4 per sec B. Less than 3 per sec
C. Less than 2.5 per sec D. Less than 2 per sec
46. What is the nerve conduction velocity for a median nerve study if distal latency is 5 msec, proximal latency is 15 msec, and distance between distal and proximal stimulation points is 200 mm?
A. 2 m/sec B. 0.2 m/sec C. 20 m/sec D. 20 mm/sec
47. In bipolar stimulation of peripheral nerves, the depolarization occurs –
A. At the cathode
B. At the anode
C. At a point equidistant from anode and cathode
D. Whichever point is closer to recording site
48. Sources of incorrect measurement of latencies in motor nerve conduction study can be due to following **EXCEPT**
A. Supramaximal stimulation B. Unstable triggering of sweep
C. Poorly defined take-off of evoked response D. Inaccurate calibration
49. Following are true regarding effect of temperature on nerve conduction **EXCEPT**
A. Lower temperatures slow down nerve conduction
B. Distal latencies of median nerve will increase by 0.3 msec for every degree of cooling
C. This is a consequence of effect of cooling on surface electrode
D. Very high temperatures can decrease motor and sensory potentials in amplitude
50. Which of the following is a test of cardiovagal (parasympathetic) function?
A. Blood pressure response to cold pressor test
B. Blood pressure response to isometric hand grip test
C. Blood pressure response to Valsalva
D. Heart rate response to deep breathing

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) – A

51. Which of the following is a contraindication of performing head up tilt table test?
A. Postural orthostatic tachycardia syndrome B. Neurocardiogenic syncope
C. Critical carotid artery stenosis D. Orthostatic hypotension
52. The lowest chin EMG tone during polysomnography is seen in –
A. Stage N1 B. Stage N2 C. Stage N3 D. Stage REM
53. Random noise is also known as –
A. In band noise B. Synchronous noise C. Pink noise D. White noise
54. Build-up of slow waves after the end of hyperventilation is seen in –
A. Absence epilepsy B. Complex partial seizures
C. Grand Mal epilepsy D. Moya Moya disease
55. Large amplitude spikes triggered by less than 3 Hz photic stimulation is observed in
A. Neuronal ceroid lipofuscinosis B. Jeavons syndrome
C. Childhood absence epilepsy D. Complex partial seizures
56. The following are true of small sharp spikes **EXCEPT**
A. Seen commonly in early childhood B. Seen predominantly in temporal and frontal areas
C. Seen in drowsy state D. Seen in light (non REM) sleep
57. The following are biological artifacts in EEG **EXCEPT**
A. Glossokinetic B. Pulse C. Intravenous drip D. Eye movement
58. Benign fasciculations are characterized by –
A. Fibrillation potentials B. Lack of wasting and weakness
C. Myokymia D. Varied appearance at different sites
59. What is meant by orthodromic sensory nerve conduction study?
A. Nerve trunk is stimulated and recording from digits
B. Proximal stimulation and distal recording
C. Stimulator anode should be placed before cathode
D. Orthodromic means along from digit towards spinal cord
60. By convention in motor nerve conduction study, if active electrode (G1) is placed on belly of muscle, the reference electrode (G2) is placed on –
A. Belly of adjacent muscle B. Tendon of same muscle
C. Bony origin of same muscle D. On palm of hand
61. Repetitive nerve stimulation is done at what frequency when myasthenia is suspected?
A. 0.5-1 Hz B. 2-3 Hz C. 5-10 Hz D. 15-20 Hz
62. Following are true regarding Post tetanic exhaustion in repetitive nerve stimulation study **EXCEPT**
A. It is a function of the neuromuscular junction
B. It reflects the safety factor
C. It increases the sensitivity of Repetitive nerve stimulation study as a test of neuromuscular transmission
D. It increases the specificity of Repetitive nerve stimulation study as a test of neuromuscular transmission

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) - A

63. Marked potentiation of amplitude of compound muscle action potential following a brief voluntary exercise is most characteristic for which of the following?
- A. Motor neuron disease
 - B. Lambert Eaton myasthenic syndrome
 - C. Myasthenia gravis
 - D. Post poliomyelitis syndrome
64. In normal resting muscle, electrical activity on needle electromyography can be recorded from –
- A. Belly of muscle
 - B. Tendon of muscle
 - C. End plate
 - D. At no location
65. Following require precautions prior to needle electromyography **EXCEPT**
- A. Patient taking anticoagulants
 - B. Hemophilia
 - C. Prosthetic heart valve
 - D. Hypothyroidism
66. Following can be consistent with neurogenic pattern on needle electromyography **EXCEPT**
- A. Increased insertional activity
 - B. Increased spontaneous activity with fibrillation potentials
 - C. Large amplitude motor unit potentials
 - D. Early recruitment and complete interference on maximum volitional effort
67. Which of the following is considered the most likely explanation for F wave in nerve conduction studies?
- A. Recurrent discharge of antidromically activated motor neurons
 - B. Sensory motor reflex from adjacent sensory fibres traveling to cord
 - C. Supramaximal stimulation causes local reflex activation of muscle
 - D. Reversal of stimulator is the cause for the delayed response
68. Following are true regarding F wave **EXCEPT**
- A. A supramaximal stimulus applied at practically any point along the course of a nerve elicits the F wave
 - B. Reversal of the stimulator orientation is the most important principle of recording the F wave
 - C. The display is set for high amplification and low sweep speed
 - D. Slight voluntary contraction enhances the incidence of the F wave
69. Which of the following studies gives highest amplitudes at submaximal stimulation?
- A. Compound muscle action potential
 - B. F wave
 - C. H reflex
 - D. Repetitive nerve stimulation at 2 to 3 Hz
70. The "Blink" reflex is studied in the neurophysiology lab by –
- A. Stimulating the facial nerve and recording from orbicularis oculi
 - B. Stimulating the trigeminal nerve and recording from levator palpebrae
 - C. Stimulating the abducens nerve and recording from the nasalis
 - D. Stimulating the trigeminal nerve and recording from orbicularis oculi
71. Technical requirements for recording visual evoked potentials are following **EXCEPT**
- A. Low frequency filter at 0.2 to 1.0 Hz
 - B. High frequency filter at 200 to 300 Hz
 - C. Recording epoch is 250 msec in adults
 - D. Stimulation is delivered at 10 Hz
72. An acoustic neuroma is most likely to cause which of the following abnormalities on brainstem auditory evoked potentials
- A. Absent wave III with normal waves I and V and I-V interval
 - B. Increase in III-V interpeak latency
 - C. Increase in I-III interpeak latency
 - D. Absence of wave II with normal waves I and III

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (NEUROLOGY) - A

73. Following are true regarding recording parameters for brainstem auditory evoked potentials **EXCEPT**
- A. Low frequency filter at 10 to 30 Hz
 - B. High frequency filter at 2500 to 3000 Hz
 - C. Sampling at 10000 Hz
 - D. Sweeps lasting 5 seconds
74. Presence of normal sensory nerve action potentials (SNAP's) on nerve conduction study implies -
- A. Normal peripheral sensory pathways till dorsal root ganglion
 - B. Normal central and peripheral sensory pathways till cortex
 - C. Normal sensory pathways within the spinal canal
 - D. Normal sensory pathways in the cord
75. Surface electromyography of forearm muscles in a patient with dystonia is likely to show -
- A. Alternating contraction of agonists and antagonists
 - B. Co-contraction of agonists and antagonists
 - C. Weakness of agonists and contraction of antagonists
 - D. Contraction of agonists and weakness of antagonists
76. Surface EMG of a patient with orthostatic tremor will show rhythmic contractions closest to following frequency -
- A. 1 Hz
 - B. 5 Hz
 - C. 10 Hz
 - D. 15 Hz
77. Martin Gruber anastomosis is seen between -
- A. Median and ulnar nerves
 - B. Median and radial nerves
 - C. Tibial and peroneal nerves
 - D. Musculocutaneous and radial nerves
78. Somatosensory evoked potentials are carried in which tract of spinal cord?
- A. Anterior spinothalamic
 - B. Lateral spinothalamic
 - C. Posterior columns
 - D. Ventral spinocerebellar
79. Following are minimum technical standards for diagnosis of brain death **EXCEPT**
- A. At least 30 min recording at sensitivity of 2 uV/mm
 - B. Low frequency filter setting should not be less than 5 Hz
 - C. High frequency filter setting should not be less than 30 Hz
 - D. Full set of scalp electrodes including Fz, Cz, Pz should be used
80. Following findings on nerve conduction study can be consistent with demyelinating neuropathy **EXCEPT**
- A. Delayed proximal latencies
 - B. Delayed F wave latencies
 - C. Faster conduction velocity
 - D. Delayed H reflex latencies

TECHNICAL ASSISTANT (NEUROLOGY)- A
ANSWER KEY (21/02/2017)

1	C	21	C	41	C	61	B
2	A	22	B	42	B	62	C
3	B	23	B	43	C	63	B
4	A	24	D	44	B	64	C
5	D	25	B	45	C	65	D
6	D	26	C	46	C	66	D
7	A	27	A	47	A	67	A
8	B	28	C	48	A	68	B
9	C	29	A	49	C	69	C
10	A	30	C	50	D	70	D
11	D	31	D	51	C	71	D
12	D	32	B	52	D	72	C
13	A	33	B	53	D	73	D
14	D	34	D	54	D	74	A
15	B	35	A	55	A	75	B
16	C	36	A	56	A	76	D
17	B	37	C	57	C	77	A
18	D	38	C	58	B	78	C
19	A	39	D	59	D	79	B
20	A	40	A	60	B	80	C