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Written Test for the post of Scientific Assistant (NEUROLOGY)

19th February, 2013 **Roll Number: .....**

1. For A good EEG, electrode impedance should be below
A. 50 KΩ
B. 5 KΩ
C. 1 KΩ
D. 10 KΩ

2. The EEG frequency between 30-80 Hz is called:
A. Beta
B. Lambda
C. Phi
D. Gamma

3. All are true for EEG recording in brain death, except
A. Inter-electrode distance should be minimum of 5 cm
B. Impedance should be <10,000 ohms & >100 ohms
C. Sensitivity should be at 2microvolts/mm
D. Neonatal montage needs to be used

4. Minimum ideal sampling rate of the machine to record human scalp EEG is
A. 50 Hz
B. 100 Hz
C. 200 hz
D. 500 Hz

5. Hyperventilation is contraindicated in all conditions except
A. Large Brain tumor
B. Idiopathic intracranial hypertension
C. Ischemic heart disease
D. Multiple sclerosis

6. The number of electrodes in standard 10-5 system of electrode placement are
A. 65
B. 70
C. 74
D. 78

7. All are true for Magnetoencephalography (MEG), except
A. MEG records intracellular signals
B. MEG signals are not affected by skull

C. MEG records activity within the sulci and not from the gyri
D. MEG has lower spatial resolution than EEG

8. All are characteristics of Benign Sporadic Sleep Spikes (BSSS) except
A. Usually seen during early sleep
B. Duration is more than 50 msec but less than 100 msec
C. Has wider field than anterior temporal spike
D. More common in young adults

9. Which patients are more likely to have generalized seizures:
A. Mesial temporal lobe epilepsy
B. Lateral temporal lobe epilepsy
C. Benign Rolandic epilepsy
D. Frontal lobe epilepsy

10. What is the minimum area of cortex to be activated to produce a spike on scalp EEG?
A. 4 Cm^2
B. 6 Cm^2
C. 8 Cm^2
D. 10 Cm^2

11. In Nerve Conduction Study, one statement regarding the ground electrode is WRONG.
A. Ground electrode should always be connected to the same limb as the active electrodes.
B. Ground electrode should be placed between stimulating and recording electrodes.
C. In the ICU setting, where patient is connected to multiple electrical devices, double grounding carries a potential risk, especially if these are connected to different limbs and devices have different power outlets.
D. When voltage leakage develops in a device connected to a limb, use a ground electrode on a different limb

12. Best method of hand hygiene is
A. Hand Rub Products.
B. Carbolic Acid Wash.
C. Hand wash with Soap and Water.
D. Hand Wipes.

13. In sensory conduction study, Orthodromic stimulation differs from Antidromic stimulation by following features, EXCEPT
A. The latency of sensory potential is shorter.
B. There is an initial positive peak making the potential triphasic.
C. The amplitude of the orthodromic potential is taller.
D. If the inter-electrode distance is kept fixed in both procedures, the difference in parameters is negligible.

14. AIDS is caused by the following organism.
A. HTLV 1 Virus.
B. Entero Virus.
C. Human Immuno-Deficiiency Virus.
D. Cox Sackie Virus.

15. Electrophysiological Diagnosis of L2, L3, L4 radiculopathy is difficult due to following reasons, EXCEPT
A. Fibrillation potentials in these muscles disappear early.
B. Affected muscles re-innervate fast and become normal
C. Saphenous nerve parameters are always normal.
D. All relevant muscles are supplied by a single nerve; so difficult to localize between root and nerve.

16. The P100 latency of Pattern Shift Visual Evoked Potential does not increase in the following situation.
A. Decrease of luminance
B. Decrease of contrast between black and white checks.
C. Pupillary constriction.
D. Peripheral retinal disease (Retinitis Pigmentosa).

17. For disposal of waste materials in the wards and labs, the yellow colored container is meant for
A. Paper and paper packets.
B. Blood stained swabs, cotton and dressings.
C. Catheters and plastic tubes.
D. Infected plastic items.

18. Following instructions are advised for safety of patients on implantable cardiac pacemakers, EXCEPT
A. Limit all electrodes including ground to 1 limb of interest.
B. Electrodes should be away from heart.
C. Electrodes should not cross the cardiac devices.
D. Study on patients with external pacer wires is safe.

19. During nerve conduction study, when the ambient temperature falls below 21^0 C,
A. The latency decreases.
B. Velocity increases.
C. Amplitude of CMAP increases.
D. Sensory conduction parameters remain unchanged.

20. H Reflex from Soleus is abolished; Sural nerve SNAP is normal
A. Tibial Neuropathy.
B. S1 radiculopathy.
C. Sciatic Neuropathy.
D. Sacral Plexopathy.

21. A 65-year-old gentleman with Ischemic Heart Disease is referred to the EMG lab for Nerve Conduction and EMG studies. Which among the following medications will make him unsuitable for EMG?

A. Digoxin
B. Enalapril
C. Warfarin
D. Atorvastatin

22. "Axon discontinuity conduction block" due to focal lesions causing axonal injury generally disappear after .....days of the injury.

A. 2-3 days
B. 5-7 days
C. 14-21 days
D. 28-30 days

23. Which among the following is the earliest change noted in the needle EMG in an acute axonal injury?

A. Reduced recruitment
B. Fibrillation potentials
C. Fasciculations
D. Polyphasic potentials

24. Which among the following nerves DOES NOT arise from the medial cord of brachial plexus?

A. Medial brachial cutaneous nerve
B. Medial antebrachial cutaneous nerve
C. Ulnar Nerve
D. Axillary nerve

25. Which among the following artefacts in EEG manifest as low amplitude undulating waves that typically have duration more than 2 seconds and involve several channels representing a region of the scalp?

A. Electrode pop
B. Perspiration artefact
C. Salt bridge artefact
D. Eye movement artefact

26. The Glasgow Coma Scale Score of a patient who opens the eyes only to painful stimuli, does not obey commands or localize pain, but withdraws the limb to painful stimuli and makes only some incomprehensible sounds will be

A. 12
B. 10
C. 8
D. 6

27. A 13 year old boy from Wynad is brought by his parents, to the EEG lab, for an EEG, In view of a single unprovoked seizure. His parents show you a hospital

record from Medical College Hospital, Calicut, which states that , the boy has "Sickle Cell Anaemia". Select the most appropriate response:

A. You should not do Photic Stimulation in this boy; it may damage his eyes.
B. You should not ask him to perform hyperventilation.
C. Collodion paste should not be used for pasting the electrodes in him.
D. He should not be given any medications to induce seep, during the EEG.

28. Which among the following is the only absolute contraindication for Trans-cranial magnetic Stimulation:

A. Implanted medical device in the head
B. Epilepsy
C. History of recent head injury
D. History of syncope

29. During Analog to digital conversion the first-order low pass filter will attenuate frequencies and has a cut-off frequency in Hz of: (R=Resistor, C= Capacitor, V= Voltage)

A. $1/(\pi RC)$
B. $1/(2\ \pi R)$
C. $V/(2\ \pi RC)$
D. $1/(2\ \pi RC)$

30. Aliasing during EEG signal acquisition commonly arises due to:

A. Ultra-fast sampling rate
B. 50Hz artifact
C. Inadequate sampling rate
D. Ballisto-cardiographic artefacts

31. Which of the following is false about how one can attmpt to reduce electromagnetic artifacts during EEG/EMG:

A. Switching on the Notch filter
B. Shielding all equipment with a metal case connected to the ground
C. Plugging all equipment to the same connection point
D. Ensuring power cables run in parallel if close to the electrode wires.

32. Which of the following is true regarding psychomotor variant in EEG:

A. Reported prevalence in EEG records is 0.5-2%
B. Demonstrates a tendency for evolution
C. Is polymorphic and rhythmic
D. Infrequent during transition between wakefulness and drowsiness

33. Stage 2 sleep is defined by the presence of:

A. Spikes and slow wave
B. Sleep spindles and K complexes.
C. Rapid eye movements.
D. 1 to 2 Hz delta frequencies

34. Which of the following are believed to arise from the muscle fibre:
A. Fascicluations
B. Neuromyotonia
C. Myokymia
D. Complex repetitive discharges

35. True about BERA is:
A. Waves II, VI, VII are the most consistent
B. Useful for detecting lesions above midbrain
C. Low pass filter is typically kept at 3000Hz
D. Useful in intraoperative monitoring in Thalamic surgery

36. The equivalent of visual evoked potentials on EEG is:
A. Mu rhythm
B. Lambda rhythm
C. Posterior occipital slow waves of youth
D. 14-6 Hz waves

37. High impedance electrodes can cause which of the following phenomena during EEG
A. Pulse artifact
B. Salt-bridge phenomenon
C. Photoelectric response
D. Eye movement artifacts

38. Which of the choices represents the correct order of montage preference for ensuring enhancements of highly localized fields on EEG?
A. Longitudinal>Laplacian>Average refernce>Common reference
B. Longitudinal>Common Refrence>Average refernce>Laplacian
C. Average Refrence>Laplacian>longiudinal>Common Reference
D. Laplacian>Longitudinal>Common Reference>Average Reference

39. The unit of charge is:
A. Ohm
B. Volt
C. Coulomb
D. Ampere

40. All are true for scoring arousal except
A. Abrupt shift of EEG frequency
B. It should last for at least 5 sec
C. Preceded by 10 sec of stable sleep
D. REM arousal requires concurrent increase in chin EMG activity

41. The most sensitive study for detecting a distal axonal sensorimotor peripheral neuropathy is:
A. Peroneal motor F waves.
B. Sural sensory responses.

C. Median sensory responses.
D. Somatosensory evoked responses

42. Regarding the effects of age on nerve conduction studies:
A. Nerve conduction velocities at birth are approximately 90% of adult values.
B. There is increase in compound muscle action potential amplitude after age of 60.
C. Nerve conduction velocities of premature infants are the same
D. Nerve conduction velocities reach adult values at 3-5 years of age.

43. MSLT stands for
A. Morning sleep latency test
B. Multiple sleep latency test
C. Monitoring sleep latency test
D. Maintenance sleep latency test

44. A PSG epoch has duration of
A. 30 sec
B. 10 sec
C. 60 sec
D. 90 sec

45. When people are attentive to an external stimulus or are thinking hard about something, the alpha rhythm is replaced by
A. Delta
B. Theta
C. Alpha
D. Beta

46. Low- and high-frequency filter settings for EEG channels for PSG are?
A. 0.1 and 15
B. 0.3 and 35
C. 0.5 and 75
D. 10 and 100

47. The condition that may produce temporary, reversible, electrocerebral inactivity includes:
A. CNS stimulants
B. Hypothermia
C. Acute delirium
D. Psychosis

48. An apnea should be scored when
A. There is a drop in the peak thermal excursion by ≥ 90% of baseline
B. The duration of the event lasts at least 15 seconds
C. At least 80% of the event's duration meets the amplitude reduction criteria
D. There should be associated drop in oxygen saturation by 4%

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49. Frequency of sleep spindles:

A. 10 to 14 Hz
B. 0.5 to 4 Hz
C. 20 to 80 Hz
D. 4 to 7 Hz

50. The most characteristic feature of complex repetitive discharges (CRDs) is :

A. Intermittent changes in the signal source.
B. Abrupt onset and cessation.
C. Waxing and waning of frequency
D. Waxing and waning of amplitude

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Signature of the candidate

19.8.13