MRCPsych Paper 2: 600 MCQs

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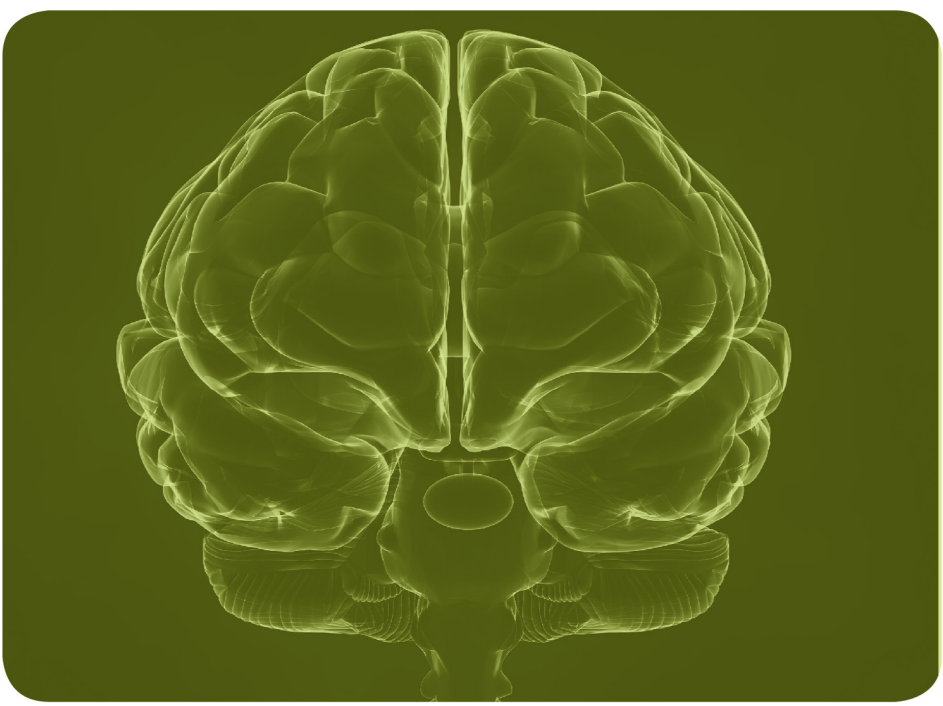

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Chapter 2

Test questions: 2

Questions: MCQs

For each question, select one answer option.

NEUROSCIENCES: NEUROANATOMY

1. A 52-year-old woman was recently diagnosed with a lesion in her subthalamic nucleus. Which of the following is the most likely effect of this lesion?

A Bradykinesia
B Hemiballismus
C Huntington's disease
D Parkinsonism
E Wilson's disease

2. Which of the following cells are the smallest of all neurons in the cerebellum?

A Basket cells
B Golgi cells
C Granule cells
D Purkinje cells
E Stellate cells

3. Which of the following statements about the subdivisions of the brain is correct?

A Central sulcus delineates the border between parietal and temporal lobes
B Heschl's gyrus delineates the border between temporal and occipital lobes
C Lateral fissure separates the temporal and frontal lobes
D Longitudinal fissure separates the cerebellum into left and right hemispheres
E Parieto-occipital sulcus separates the occipital and parietal cortex on the lateral aspect of hemisphere

4. Which of the following cranial nerves has a pure sensory component?

A Abducens nerve
B Facial nerve
C Hypoglossal nerve
D Optic nerve
E Trochlear nerve

5. Which of the following structures is involved in the auditory pathway?

A Corona radiata
B Lateral geniculate body
C Myer's loop
D Tectum
E Trapezoid body

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6. A 64-year-old man was diagnosed with Parkinson's disease. Which of the following macroscopic changes would be present in the brain?

A Changes in the locus ceruleus
B Dilatation of the lateral and third ventricles
C Marked atrophy of the cerebral cortex
D Marked atrophy of the corpus striatum
E Small brain with a reduced mass

7. A 84-year-old man died 10 years after a diagnosis of Alzheimer's disease. Which of the following microscopic changes would be seen on postmortem examination of his brain?

A Ballooned neurons
B Focal neuronal loss
C Hirano's bodies in hippocampus
D Pick's bodies
E Proliferation of cholinergic neurons

8. Which of the following tumours are derived from Schwann cells?

A Gliomas
B Haemangioblastomas
C Pituitary adenomas
D Medulloblastomas
E Neurilemmomas

9. Which of the following statements about amyloid plaques and neurofibrillary tangles is correct?

A Amyloid plaques are intracellular accumulations
B Amyloid plaques are soluble, composed of BA4 amyloid
C Both are pathognomonic of Alzheimer's dementia
D Neurofibrillary tangles are intraneuronal aggregations
E Neurofibrillary tangles are dephosphorylated protein

10. Which lesions can be demonstrated by using Bielschowsky's stain?

A Amyloid plaques
B Huntington's disease inclusions
C Lewy bodies
D Pick's bodies
E Prion deposition

11. Which of the following stages constitute the longest percentage of sleep time in a young adult?

A Non-rapid eye movement (NREM) stage1
B NREM stage 2
C NREM stage 3
D NREM stage 4
E REM

12. According to Erlanger/Gasser, what is the diameter of Aδ cutaneous temperature and pain afferents?

A 3 μm
B 5 μm
C 8 μm
D 13 μm
E 15 μm

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13. A normal 38-year-old man had undergone an electroencephalogram (EEG) investigation. He was awake but with his eyes closed. What frequency waves would you expect to see on EEG recordings?

A 0–4 Hz
B 4–8 Hz
C 8–13 Hz
D 13–24 Hz
E 24–28 Hz

14. A 58-year-old man was diagnosed with sporadic Creutzfeldt–Jakob disease. Which of the following EEG changes will be seen?

A 3-Hz spike-and-wave activity
B Hypsarrhythmia
C Normal or non-specific EEG
D Periodic discharge with focal δ activity over temporal lobes
E Triphasic 1–2 Hz discharge

15. Which of the following is the inotropic receptor?

A Acetylcholine (muscarinic)
B Acetylcholine (nicotinic)
C Dopamine
D γ-Aminobutyric acid B
E Serotonin (or 5-HT_1)

16. A 45-year-old man was diagnosed with depression. What abnormalities can be noted on hypothalamic–pituitary axis regulation?

A Decreased cortisol levels
B Decreased adrenal vasopressin
C Down-regulation of glucocorticoid receptor
D Reduced corticotrophin-releasing hormone
E Reduced size of adrenal glands

NEUROSCIENCES: NEUROCHEMISTRY

17. Which of the following is a peptide neurotransmitter?

A Cholecystokinin
B Dopamine
C Adrenaline
D Glycine
E Glutamate

18. Which of the following is a precursor of tryptophan?

A Adrenaline
B Acetylcholine
C Dopamine
D Noradrenaline
E Serotonin

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19. A 34-year-old man was diagnosed with schizophrenia and had active psychotic symptoms. Which neurochemical changes in the glutamate receptor could be responsible for his psychotic symptoms?

A Decreased glutamatergic function at *N*-methyl-D-aspartate (NMDA)
B Decreased glutamatergic function at the AMPA (α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid) receptor
C Decreased glutamatergic function at kainate receptors
D Increased glutamatergic function at NMDA
E Increased glutamatergic function at γ-aminobutyric acid

20. Which of the following is the precursor in the synthesis of histamine?

A Choline
B L-Tryptophan
C L-Tyrosine
D Dopamine β hydroxylase
E Histidine

21. A 70-year-old man was diagnosed with Alzheimer's dementia. What would you expect to see on brain neuroimaging?

A Disease in and around the front parietal lobes
B Increase in grey matter lesions
C Increase in ventricular dilatation of 5% per year
D Localised atrophy in the hippocampal area
E Reduced medial temporal lobe width at level of brain stem

22. What information can be obtained by using a T1-weighted image on MRI of brain?

A Anatomical structures
B Brain/cerebrospinal fluid contrast
C Definition of soft-tissue pathology
D Small infarcts
E White matter lesions

23. What ligand is used for dopamine receptors D_2/D_3 in positron emission tomography?

A [^{11}C]Hyoscine
B [^{11}C]Raclopride
C [^{18}F]-Flumazenil
D [^{18}F]-Fluorodopa
E [^{18}F]-Setoperone

24. Which of the following scans uses a radioactive tracer to measure cerebral functions?

A CT
B fMRI
C MRI
D Positron emission tomography
E Single photon emission computed tomography

25. MRI magnets are rated in teslas units. What is the usual range of MRI scanners used for clinical purpose?

A 0.001–003 T
B 0.01–0.03 T
C 0.3–2.0 T
D 2–3 T
E 3–4 T

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PSYCHOPHARMACOLOGY: PHARMACOKINETICS

26. If the estimated glomerular filtration rate is 10–50 mL/min per 1.73 m^2 then what is the maximum dose of prescribed paliperidone tablet?

A 2 mg
B 3 mg
C 4 mg
D 5 mg
E 6 mg

27. Which of the following antipsychotics has the best available evidence for use in patients with moderate-to-severe liver impairment?

A Aripiprazole
B Haloperidol
C Paliperidone
D Quetiapine
E Risperidone

PSYCHOPHARMACOLOGY: PHARMACODYNAMICS

28. Which of the following about acamprosate is correct?

A Antagonist of glutamate receptor
B Antagonist of 5-HT_3
C Dopamine agonist
D Inhibit alcohol dehydrogenase
E Partial agonist of 5-HT_{1A}

29. Which of the following drugs blocks the transaminase enzyme that converts γ-aminobutyric acid to glutamate?

A Barbiturates
B Benzodiazepine
C Carbamazepine
D Phenytoin
E Sodium valproate

30. Which of the following benzodiazepines has the shortest elimination half-life?

A Diazepam
B Lorazepam
C Nitrazepam
D Oxazepam
E Temazepam

31. Which of the following drugs is a partial agonist of dopamine receptors?

A Amisulpiride
B Aripiprazole
C Clobazam
D Paliperidone
E Ziprasidone

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32. What of the following statements about Paliperidone is correct?

A Anticholinergic side effects are common
B It acts as an agonist on 5-HT_{2A} receptors
C It is a precursor of risperidone
D It is also available as a depot injection formulation
E It is licensed to be used in bipolar affective disorder as a mood stabiliser in the UK

33. Which of the following drugs reduces the anticoagulant effect of warfarin?

A Mirtazepine
B Selective serotonin reuptake inhibitors
C St John's wort
D Sodium valproate
E Venlafaxine

34. A 32-year-old woman on contraceptive pills discovered that she was pregnant. Which of the following drugs was she most probably taking along with the pills?

A Fluoxetine
B Olanzapine
C St John's wort
D Sodium valproate
E Venlafaxine

PSYCHOPHARMACOLOGY: ADVERSE REACTIONS

35. Which of the following antidepressants can be used in patients who are worried about weight gain?

A Amitriptyline
B Imipramine
C Lofepramine
D Mianserin
E Trazadone

36. Which of the following depot antipsychotic injections is associated with post-injection syndrome?

A Fluphenazine decanoate
B Flupenthixol decanoate
C Risperidal Consta
D Pipothiazine palmitate
E Olanzapine embonate

37. Which of the following explains hypersalivation due to clozapine?

A α_1-Receptor antagonism
B Extrapyramidal side effects
C Impaired deglutition
D M_3-Receptor blockade
E M_2-Receptor stimulation

38. What is the minimum dose of paracetamol overdose taken within 24 hours that might give rise to hepatocellular necrosis?

A 50 mg/kg
B 100 mg/kg

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C 150 mg/kg
D 200 mg/kg
E 250 mg/kg

39. Which of the following statements about risk factors for neuroleptic malignant syndrome (NMS) is correct?

A Dose of antipsychotics affects the risk
B Family history of NMS is inversely related to the risk of NMS
C Women are at lesser risk than men
D Longer duration of treatment with antipsychotics poses greater risk
E Slow decrease in dosage of antipsychotics increases the risk

PSYCHOPHARMACOLOGY: THEORIES OF ACTION

40. Which of the following drugs should be withdrawn before starting venlafaxine?

A Duloxetine
B Mirtazapine
C Reboxetine
D Sertraline
E Trazadone

41. What is the approximate dose of clozapine required for treatment-resistant schizophrenia in a female patient who smokes excessively?

A 300 mg
B 350 mg
C 400 mg
D 450 mg
E 500 mg

42. How many milligrams of valproic acid is equivalent to 500 mg of sodium valproate?

A 100 mg
B 250 mg
C 400 mg
D 433 mg
E 538.2 mg

43. A 65-year-old woman with a history of ischaemic heart disease was noted to be depressed after a recent myocardial infarction. What would be the most appropriate antidepressant to start?

A Fluoxetine
B Imipramine
C Paroxetine
D Sertraline
E Venlafaxine

44. Which antiepileptic drug was reported to improve drinking behaviour?

A Carbamazepine
B Gabapentin
C Lamotrigine
D Sodium valproate
E Topiramate

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45. A 43-year-old man dependent on 20 mg temazepam every day attended the drug and alcohol service with the aim of stopping it. The consultant wanted to convert temazepam to an equivalent dose of diazepam. What is the dose of diazepam prescribed that is equivalent to temazepam 20 mg?

A 2 mg
B 5 mg
C 10 mg
D 20 mg
E 40 mg

GENETICS: CELLULAR AND MOLECULAR GENETICS

46. What is the mechanism of production of duplicate DNA copies from template DNA called?

A Modification
B Replication
C Synapsis
D Transcription
E Translation

47. Which of the following chromosomes is largest in size?

A Chromosome 1
B Chromosome 2
C Chromosome 3
D X chromosome
E Y chromosome

48. In which of the following phases of cell cycle does DNA synthesis occur?

A M phase
B G1 phase
C G2 phase
D S phase
E O phase

49. Which of the following statements describes genetic heterogeneity?

A It is a phenomenon in which genes interact with other factors in ways not well understood and difficult to quantify
B It means that a single gene can give rise to multiple phenotypes or disorders
C It means that different genotypes cause the same phenotype and are associated with the same risks of developing the phenotype or disorder
D It means that different genotypes cause the same phenotype but each genotype is associated with very different risks
E It means that multiple genes give rise to multiple phenotypes or disorders

50. Which of the following is associated with schizophrenia?

A 45, X
B 45, X/46, XX
C 47, XYY
D Trisomy 16
E Trisomy 21

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51. What is the prevalence rate of schizophrenia in 22q11.2 syndrome?

A 10%
B 25%
C 50%
D 65%
E 90%

52. What is the lifetime empirical risk of developing schizophrenia in offspring when both parents have schizophrenia?

A 6%
B 10%
C 13%
D 46%
E 56%

53. Which of the following chromosome pairs indicate genome-wide significant evidence for linkage for bipolar affective disorder types 1 and 2?

A Chromosomes 10q and 12q
B Chromosomes 2p and 4p
C Chromosomes 2q and 4q
D Chromosomes 6p and 8p
E Chromosomes 6q and 8q

54. What is the most common comorbidity seen in a familial subtype of bipolar affective disorder?

A Generalised anxiety disorder
B Obsessive–compulsive disorder
C Panic disorder
D Phobic disorder
E Somatoform disorder

55. Which allele is associated with the risk for major depression and suicidality in patients exposed to stressful life events?

A Deletion allele
B Insertion allele
C Inversion allele
D Recombinant allele
E Translocation allele

56. Which of the following is consistent with comparative genomic use?

A Macroarray analysis
B Microarray analysis
C Microformat analysis
D Real-time, polymerase chain reaction gene, expression profiling
E Microsatellite analysis

GENETICS: BEHAVIOURAL GENETICS

57. What is epistasis in behavioural genetics?

A Gene–environment correlation
B Gene–environment interaction

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C Non-additive interaction of alleles at different loci (gene–gene interaction)
D Non-additive interaction of alleles within a locus
E Responsible for the additive genetic variance

58. Which of the following observations is the best way to examine the effects of environmental sharing in twins?

A Dizygotic twins reared in different environments
B Dizygotic twins reared in the same environment
C Monozygotic twins reared in different environments
D Monozygotic twins reared in same environment
E Twins who are mistaken about their zygosity

59. Which of the following statements about path analysis in qualitative genetics is correct?

A It estimates genetic and environmental contributions using a simple diagrammatic method
B It is a traditional twin design to represent genetic data for showing genetic and environmental contributions
C It is a type of multiple regression analysis used in genetics
D It is an eclectic mix of various appropriate statistical methods used in genetics
E It is a representation of raw data that is then analysed according to the principles of 'model fitting' in genetics

60. The commonest cause of profound intellectual disability in girls and women is Rett's disorder. Which of the following statements about Rett's disorder is correct?

A Approximately 99.5% of cases are a single occurrence in a family
B Gene mutation occurs in the *MECP5* gene
C It is an autosomal dominant condition
D It is inherited as an X-linked recessive condition
E There is no pervasive growth failure

61. Which of the following types of schizophrenia is less familial and also associated with a lower monozygotic twin concordance rate?

A Catatonic schizophrenia
B Hebephrenic schizophrenia
C Paranoid schizophrenia
D Residual schizophrenia
E Simple schizophrenia

62. The heritability of social anxiety disorder is 25% in male twins. What is the heritability in female twins?

A 25%
B 40%
C 50%
D 65%
E 80%

63. Which of the following syndromes is caused by microdeletion of 7q 11?

A Angelman's syndrome
B Cri-du-chat syndrome
C DiGeorge's syndrome
D Prader–Willi syndrome
E Williams' syndrome

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64. Which of the following conditions is caused by CGG trinucleotide repeat?

A Fragile X syndrome
B Friedreich's ataxia
C Huntington's disease
D Myoclonic dystrophy
E Myoclonus epilepsy

GENETICS: ENDOPHENOTYPES

65. P300 amplitude elicited from visual odd ball task is used as an endophenotype of alcohol dependence. What is a P300 amplitude reduction due to?

A Craving
B Executive dysfunction
C Impulsivity
D Sensation seeking
E Tolerance

66. Who proposed the concept of endophenotypes in psychiatry?

A Falconer
B Gottesman and Shields
C Gregor Mendel
D John and Lewis
E Michael Rutter

67. Which of the following statements about an endophenotype is most accurate?

A Endophenotypes and the illness co-segregate
B Endophenotypes are described in family members of affected individuals
C Endophenotypes are not heritable
D Endophenotypes are rarely seen in a normal population
E Endophenotypes are state dependent

GENETICS: GENETIC EPIDEMIOLOGY

68. Collaborative studies on genetics of alcoholism study have found some chromosomes and genes that are involved in alcohol dependence. Which of the following is associated with alcohol dependence?

A 5*HTT* gene
B Chromosomes 14 and 22
C *DAT*1 gene
D *GABAb* gene
E *GABRA*2 gene

GENETICS: GENE–ENVIRONMENT INTERACTION

69. Which of the following statements about familiality and genetic factors in schizophrenia is correct?

A Common high penetrance variants are high-risk factors for schizophrenia

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