

General Instructions

- (i) This question paper contains 144 questions. All questions are compulsory.
- (ii) It comprises 142 single-correct multiple-choice questions and 2 multiple-correct questions.
- (iii) Attempt every question; detailed solutions are provided in the companion solutions booklet.
- (iv) For multiple-correct questions, all correct options must be selected to earn full marks.

1. Among the following neurodegenerative disorders, which one has a distinct (potentially curable) treatment?

- (A) Pantothenate kinase-associated neurodegeneration (PKAN)
- (B) Wilson disease
- (C) Progressive multifocal leukoencephalopathy (PML)
- (D) PLA2G6-associated neurodegeneration

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2. Which cardiac abnormality is most characteristically associated with systemic sclerosis (scleroderma)?

- (A) Aortic regurgitation (AR)
- (B) Mitral stenosis (MS)
- (C) Pericarditis / pericardial effusion
- (D) Dilated cardiomyopathy (DCM) from myocardial fibrosis

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3. Which of the following intercellular junctions seals the paracellular space and is classified as a tight (occluding) junction?

- (A) Fascia adherens
- (B) Desmosome (macula adherens)
- (C) Gap junction
- (D) Zonula occludens

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4. A 2-day-old neonate presents with blistering/erosive skin lesions over the face and abdomen. There is no fever and no mucosal involvement. The mother has a history of an autoimmune blistering disorder. What is the most likely diagnosis?

- (A) Neonatal pemphigus from transplacental transfer of maternal antibodies
- (B) Staphylococcal scalded skin syndrome (SSSS)
- (C) Bullous pemphigoid (BP)
- (D) Epidermolysis bullosa (EB)

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5. In poisoning with which of the following is central respiratory depression **not** a feature?

- (A) Strychnine
- (B) Opium (opioids)
- (C) Barbiturates
- (D) Datura (atropine-type)

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6. On defecography, a rectocele is considered significant when the anterior bulging of the rectal wall into the posterior vaginal wall exceeds:

- (A) 1 cm
- (B) 2 cm
- (C) 5 cm
- (D) 7 cm

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7. In laparoscopic (TAPP/TEP) inguinal hernia repair, what is the minimum distance of dissection below the inguinal ligament required to adequately expose the entire myopectineal orifice of Fruchaud?

- (A) 0.5 cm
- (B) 1 cm
- (C) 2 cm
- (D) 10 cm

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8. The accompanying histology slide of esophageal mucosa shows the lower esophageal lining replaced by columnar (intestinal-type) epithelium with goblet cells in place of the normal stratified squamous epithelium. Which condition does this represent?

- (A) Barrett's esophagus
- (B) Squamous cell carcinoma
- (C) Adenocarcinoma
- (D) Low grade dysplasia

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9. Which clinical feature best differentiates mechanical small intestinal obstruction from paralytic ileus?

- (A) Colicky pain
- (B) Tachycardia
- (C) Abdominal distension
- (D) Vomiting

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10. Based on the clinical photographs shown, identify the facial anomaly depicted (bilateral defect of the upper lip with associated nasal deformity).

- (A) Bilateral cleft lip
- (B) Midline cleft lip
- (C) Cleft palate
- (D) Oblique facial cleft

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11. Total Mesorectal Excision (TME), the standard operation for rectal cancer, is best described as:

- (A) Excision of only the peritumoral fat
- (B) Sharp dissection of the entire mesorectum as a single intact unit
- (C) Blunt dissection of the mesorectum
- (D) Ligation of the internal iliac artery

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12. In the modern trauma resuscitation protocol used for a patient with exsanguinating external hemorrhage, what is the correct order of priorities?

- (A) Catastrophic hemorrhage control to Airway to Breathing to Circulation to Disability to Exposure (C-ABCDE)
- (B) Airway to Breathing to Circulation to Disability to Exposure (ABCDE)
- (C) Circulation to Airway to Breathing to Disability to Exposure (CABDE)
- (D) Disability to Airway to Breathing to Circulation to Exposure

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13. A prostate biopsy reports a Gleason score of 4+4. Which ISUP/WHO Grade Group does this correspond to?

- (A) Grade Group 1
- (B) Grade Group 2
- (C) Grade Group 3
- (D) Grade Group 4

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14. All of the following are sphincter-preserving surgical techniques for anal fistula EXCEPT:

- (A) LIFT (Ligation of Intersphincteric Fistula Tract)
- (B) FiLaC (Fistula-tract Laser Closure)
- (C) VAAFT (Video-Assisted Anal Fistula Treatment)
- (D) Fistulectomy

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15. A 20-month-old child says only one word and is otherwise developmentally normal in motor and social domains. What is the most appropriate next step?

- (A) Reassure the parents
- (B) Speech and hearing evaluation
- (C) Diagnose as autism
- (D) Reassess at 5 years of age

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16. Which pedigree pattern best characterises a trait showing INCOMPLETE PENETRANCE?

- (A) A generation appears skipped - an obligate carrier is unaffected so affected individuals occur in alternate generations
- (B) Only one gender is ever affected
- (C) None of the family members are affected
- (D) Every individual in all generations is affected

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17. A 6-week-old infant presents with bacterial meningitis. Which organism is the most likely cause?

- (A) Staphylococcus aureus
- (B) Streptococcus pneumoniae
- (C) Haemophilus influenzae
- (D) Listeria monocytogenes

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18. Which of the following correctly matches a gynaecological cause of amenorrhoea with its mechanism?

- (A) Asherman syndrome - intrauterine adhesions (endometrial scarring after curettage)
- (B) PCOD - hypogonadotropic hypogonadism with low LH
- (C) Sheehan syndrome - primary ovarian (gonadal) failure
- (D) Premature ovarian failure (POF) - outflow tract obstruction with normal FSH

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19. Which of the following is **NOT** a complication of a monochorionic diamniotic (MCDA) twin pregnancy?

- (A) Cord entanglement
- (B) Selective fetal growth restriction (sFGR)
- (C) Congenital deformities
- (D) Need for first-trimester medical termination of pregnancy (MTP)

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20. A woman develops a painful, tense, fluctuant swelling in the vulvovaginal region following a forceps delivery, along with difficulty in passing urine. The most likely diagnosis is:

- (A) Vulvovaginal hematoma
- (B) Urethral diverticulum
- (C) Cervical tear
- (D) Local infection / abscess

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21. Which of the following is a **probable** sign of pregnancy?

- (A) Hegar sign
- (B) Braxton Hicks contractions
- (C) Oslander sign
- (D) Goodell sign

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22. Which of the following is a respiratory effect of progesterone during pregnancy?

- (A) Increased respiratory drive (hyperventilation)
- (B) Decreased tidal volume
- (C) Decreased arterial PO_2
- (D) Increased arterial PCO_2

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23. In a woman at high risk because of a past history of pre-eclampsia, which is the best method to prevent pre-eclampsia in the current pregnancy?

- (A) Low-dose aspirin started from 12 weeks of gestation
- (B) Aspirin combined with low-molecular-weight heparin (LMWH)
- (C) Strict salt (sodium) restriction
- (D) Calcium supplementation

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24. A propagated (progressive) epidemic showing multiple peaks separated by the incubation period is characteristically seen in which of the following diseases?

- (A) Measles
- (B) Staphylococcal food poisoning
- (C) Typhoid fever (common-source)
- (D) Salmonella food poisoning (salmonellosis)

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25. Under the RMNCAH+ (Reproductive, Maternal, Newborn, Child and Adolescent Health) framework, districts are colour-coded for performance. Which of the following indicators, when meeting the stated criterion, would be marked as a RED card (poor performance)?

- (A) IMR less than 20%
- (B) TFR more than 20%
- (C) MMR <20%
- (D) Children receiving healthcare <20%

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26. The "lethal triad" (deadly triad) associated with massive blood transfusion classically comprises hypothermia, coagulopathy and acidosis. Which of the following is NOT a component of this classic lethal triad?

- (A) Hyperkalemia
- (B) Coagulopathy
- (C) Hypothermia
- (D) Hypocalcemia

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27. Lamotrigine is a broad-spectrum antiepileptic. For which of the following seizure types is lamotrigine particularly useful and a recognised first/adjunctive choice?

- (A) Generalised tonic-clonic seizures (GTCS)
- (B) Myoclonic seizures
- (C) Absence seizures
- (D) Atonic seizures

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28. Cilnidipine is unique among dihydropyridine calcium channel blockers in not causing reflex tachycardia. This is because, in addition to L-type channels, it also blocks which type of voltage-gated calcium channel located on sympathetic nerve endings?

- (A) T-type
- (B) R-type
- (C) N-type
- (D) L-type

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29. All of the following are ligand-gated ion channel (ionotropic) receptors EXCEPT:

- (A) 5-HT₃ receptor
- (B) Nicotinic acetylcholine receptor
- (C) GABA-A receptor
- (D) Histamine H₂ receptor

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30. Which of the following is a classic example of a MEDIUM-vessel vasculitis?

- (A) Leukocytoclastic (cutaneous small-vessel) vasculitis
- (B) Polyarteritis nodosa (PAN)
- (C) Granulomatosis with polyangiitis (GPA)
- (D) Microscopic polyangiitis (MPA)

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31. Which special stain is used to demonstrate fibrosis (collagen deposition) in a liver biopsy?

- (A) Masson trichrome
- (B) Periodic acid-Schiff (PAS)
- (C) Gomori methenamine silver (GMS)
- (D) Gram stain

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32. Which of the following is the **least likely** direct cause of falls in the elderly?

- (A) Balance disturbance
- (B) Rheumatoid arthritis
- (C) Muscle weakness
- (D) Hearing impairment

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33. Frailty in the elderly is most directly characterised/affected by which of the following?

- (A) Age
- (B) Sarcopenia
- (C) Male gender
- (D) Gait alone

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34. Regarding nicotine replacement therapy (NRT), which of the following statements is **correct**?

- (A) Acidic foods/beverages should be avoided for about 15 minutes before using nicotine gum or lozenge
- (B) Nicotine gum delivers more nicotine than an equivalent lozenge
- (C) Varenicline carries a black box warning for cardiovascular risk
- (D) Swallowed nicotine is well absorbed from the gastrointestinal tract

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35. Which of the following receptors is coupled to the stimulatory G protein (Gs)?

- (A) M2 muscarinic receptor
- (B) M1 muscarinic receptor
- (C) Beta-adrenergic receptor
- (D) Alpha-2-adrenergic receptor

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36. Match each targeted anticancer drug with its molecular target. Which of the following pairings is entirely correct?

- (A) Sunitinib - c-KIT/VEGFR; Nilotinib - BCR-ABL; Trastuzumab - HER2; Gefitinib - EGFR
- (B) Sunitinib - HER2; Nilotinib - EGFR; Trastuzumab - BCR-ABL; Gefitinib - c-KIT
- (C) Sunitinib - BCR-ABL; Nilotinib - c-KIT; Trastuzumab - EGFR; Gefitinib - HER2
- (D) Sunitinib - EGFR; Nilotinib - HER2; Trastuzumab - c-KIT; Gefitinib - BCR-ABL

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37. Regarding the pathophysiology of beta-thalassemia major, which of the following correctly describes the disease mechanism?

- (A) Ineffective (defective) erythropoiesis
- (B) Hepcidin is markedly increased
- (C) Hepcidin is suppressed, causing iron overload
- (D) Predominantly intravascular hemolysis

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38. Regarding anti-ageing/longevity drugs and their molecular targets, which of the following pairs is **incorrectly** matched?

- (A) Rapamycin - mTOR inhibitor
- (B) Metformin - AMPK activator
- (C) Resveratrol - Sirtuin (SIRT1) activator
- (D) Spermidine - decreases autophagy

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39. A child with Dravet syndrome is started on fenfluramine for seizure control. Which of the following must be specifically monitored during therapy?

- (A) Cardiovascular status (echocardiography for valvulopathy/pulmonary hypertension)
- (B) Agranulocytosis
- (C) Hepatic failure
- (D) Renal failure

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40. Renin secretion from the juxtaglomerular apparatus is stimulated in response to:

- (A) Elevated sodium delivery to the macula densa
- (B) Elevated renal perfusion pressure
- (C) Reduced renal perfusion pressure
- (D) Increased extracellular fluid volume

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41. A patient has Hb 9 g/dL, MCV 68 fL and a low serum ferritin. The most likely type of anemia is:

- (A) Iron deficiency anemia
- (B) Megaloblastic anemia
- (C) Aplastic anemia
- (D) Hemolytic anemia

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42. A patient has symptomatic hypercalcemia due to malignancy. Which of the following is the most appropriate **first** step in acute management?

- (A) Administration of bisphosphonates
- (B) Intravenous fluids (isotonic saline volume expansion)
- (C) Loop diuretics
- (D) Find the source of exogenous calcium

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43. Hyperpolarization of the receptor cell on stimulation is characteristically seen with which of the following sensory modalities?

- (A) Olfactory
- (B) Visual
- (C) Taste
- (D) Tactile

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44. In refeeding syndrome, which electrolyte abnormality is the most important and characteristic?

- (A) Hypocalcemia
- (B) Hypophosphatemia
- (C) Hypokalemia
- (D) Hyponatremia

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45. Regarding Extended-Spectrum Beta-Lactamase (ESBL)-producing organisms, which of the following statements are TRUE?

- (A) Carbapenems can be used for treatment
- (B) Resistance is plasmid-transmitted
- (C) Piperacillin-tazobactam is the reliable drug of choice
- (D) Third-generation cephalosporins can be used

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46. In which region of the adult human brain can neurons regenerate and increase in number (adult neurogenesis)?

- (A) Ventral part of spinal cord
- (B) Dentate gyrus of the hippocampus
- (C) Substantia nigra
- (D) Locus ceruleus

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47. Lesion at which site is associated with impaired emotional prosody (loss of emotional tone/melody of speech)?

- (A) Cingulate gyrus
- (B) Superior temporal gyrus
- (C) Parietal lobe
- (D) Precentral gyrus

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48. High serum triglycerides are seen in all of the following conditions EXCEPT:

- (A) High fructose intake
- (B) Diabetes mellitus
- (C) Nephrotic syndrome
- (D) Abetalipoproteinemia

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49. Ultraviolet (UV) radiation causes DNA damage primarily by which of the following mechanisms?

- (A) Formation of pyrimidine dimers
- (B) Inhibition of p53
- (C) Deamination of cytosine
- (D) Increase in cyclins

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50. Which vitamin-derived coenzyme is required for a transamination reaction?

- (A) Thiamine (Vitamin B1)
- (B) Pyridoxine (Vitamin B6)
- (C) FAD (Riboflavin / Vitamin B2)
- (D) NAD (Niacin / Vitamin B3)

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51. Which technique is best suited for identifying a specific protein in a formalin-fixed paraffin-embedded (FFPE) tissue section?

- (A) Immunohistochemistry (IHC)
- (B) Fluorescence in situ hybridization (FISH)
- (C) Western blot
- (D) Flow cytometry

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52. Which bacterium possesses two circular chromosomes?

- (A) Escherichia coli
- (B) Vibrio cholerae
- (C) Mycobacterium tuberculosis
- (D) Mycoplasma genitalium

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53. A middle-aged woman from Assam presents with chronic cough, fever, weight loss and cavitary lung lesions. Lung biopsy shows granulomatous inflammation with caseous necrosis and histiocyte-rich infiltrates. Which of the following should be strongly considered in the differential diagnosis?

- (A) Sarcoidosis
- (B) Aspergillosis
- (C) Histoplasmosis
- (D) Granulomatosis with polyangiitis

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54. Which of the following antifungal agents is NOT effective for the treatment of mucormycosis?

- (A) Isavuconazole
- (B) Posaconazole
- (C) Voriconazole
- (D) Amphotericin B

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55. The trabecular meshwork of the eye is composed of which of the following components? (Select all that apply)

- (A) Uveal meshwork
- (B) Corneoscleral meshwork
- (C) Juxtacanalicular (pericanalicular) meshwork
- (D) Canal of Schlemm

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56. On entering a dark room (dark adaptation), which of the following physiological changes occur in the eye? (Select all that apply)

- (A) Conversion of all-trans retinol towards regeneration of rhodopsin photopigment
- (B) Mydriasis (pupillary dilatation)
- (C) Photopsin and retinal recombine to form rhodopsin (not the reverse)
- (D) Increased sensitivity of the retina to light

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57. A young adult sustains chest trauma with haemodynamic instability and bilateral femur and tibia fractures. Once the patient has been resuscitated and is haemodynamically stabilized, what is the most appropriate definitive management of the fractures?

(Figure: X-ray of the limb showing the long-bone fracture.)

- (A) Intramedullary nailing of both femurs and external fixation of the tibiae
- (B) Plating of the tibiae and external fixation of the femurs
- (C) Nailing / plating / external fixation chosen by whichever procedure the surgeon can perform fastest
- (D) External fixation of both femurs and both tibiae

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58. A young adult presents with chest trauma, haemodynamic instability and fractures of bilateral femur and tibia. After the patient has been resuscitated and rendered haemodynamically stable, what is the most appropriate definitive management of the long-bone fractures?

- (A) Intramedullary nailing of the femurs and external fixation of the tibiae
- (B) Plating of the tibiae and external fixation of the femurs
- (C) Nailing / plating / external fixation as per whichever procedure the surgeon can perform fastest
- (D) External fixation of both femurs and both tibiae

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59. What is the most likely cause of **unilateral** genu varum (bow-leg deformity of one leg) in a patient with a history of a previous injury to that limb?

(Figure: AP X-ray of both lower limbs showing bowing of one leg.)

- (A) Malunion of a previous fracture
- (B) Rickets
- (C) Non-ossifying fibroma
- (D) Osteofibrous dysplasia

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60. An athlete presents with sudden pain in the back of the ankle after a push-off, with weakness of plantarflexion. Imaging suggests Achilles tendon rupture. Which of the following is the relevant clinical finding/sign for this condition?

(Figure: Sagittal fat-saturated ankle MRI showing discontinuity of the Achilles tendon.)

- (A) Positive Thompson (Simmonds) test
- (B) Positive McMurray test
- (C) Steroid injection
- (D) Plaster cast immobilisation

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61. A patient with HIV and a CD4 count <40 cells/mm³ presents with a ring-enhancing lesion in the brain on contrast imaging. What is the most likely diagnosis?

- (A) Lymphoma
- (B) Toxoplasma
- (C) Tuberculosis
- (D) Progressive multifocal leukoencephalopathy (PML)

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62. A patient presents with right iliac fossa (RIF) pain of 48 hours' duration. The ultrasound (colour-Doppler) image is shown. What is the most appropriate next step in management?

- (A) Surgery (appendicectomy)
- (B) CECT abdomen
- (C) USG-guided drainage
- (D) Conservative management with antibiotics only

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63. According to ACR guidelines, a Group II gadolinium-based contrast agent (lowest risk of nephrogenic systemic fibrosis) can be safely administered in which of the following?

- (A) A patient with GFR <50 mL/min/ 1.73m^2
- (B) A 30-year-old with no renal function test done
- (C) A 60-year-old with no renal function test done
- (D) A child with normal renal function

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64. A 12-year-old child presents with an uncomplicated upper respiratory tract infection (URTI). What is the most appropriate next radiological investigation?

- (A) No radiological investigation
- (B) HRCT chest
- (C) CECT chest
- (D) Chest X-ray

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65. A Group II gadolinium-based contrast agent (per ACR/RCR guidance, lowest risk of nephrogenic systemic fibrosis) can be safely administered in which of the following patients?

- (A) A patient with GFR <50 mL/min/ 1.73m^2
- (B) A 30-year-old with no renal function test done
- (C) A 60-year-old with no renal function test done
- (D) A patient with normal renal function tests

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66. A 12-year-old child presents with an uncomplicated upper respiratory tract infection (URTI). What should be the next step regarding radiological imaging?

- (A) No radiological investigation
- (B) HRCT chest
- (C) CECT chest
- (D) Chest X-ray

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67. A 70-year-old man with a past history of pulmonary tuberculosis, currently on anti-tubercular therapy (ATT), presents with back pain. An MRI of the spine is performed and shows a vertebral lesion. What is the next investigation of choice to reach a definitive diagnosis?

- (A) Mantoux test
- (B) Biopsy
- (C) Serum protein electrophoresis
- (D) CT chest

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68. Match the clinical sign with the correct dermatological condition and select the correctly matched pair(s):

- (i) Positive Nikolsky sign - Pemphigus vulgaris
 - (ii) Negative/absent Nikolsky sign - Bullous pemphigoid
 - (iii) Pseudo-Nikolsky sign - Stevens-Johnson syndrome / Toxic epidermal necrolysis
 - (iv) Cerebriform tongue - Pemphigus vegetans
- (A) Positive Nikolsky - Pemphigus vulgaris
 - (B) Negative/absent Nikolsky - Bullous pemphigoid
 - (C) Pseudo-Nikolsky - Stevens-Johnson syndrome
 - (D) Cerebriform tongue - Pemphigus vegetans

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69. A patient presents with a black pigmented lesion on the heel/sole (as shown). Which is the investigation of choice to establish the diagnosis?

- (A) Biopsy
- (B) KOH mount
- (C) Gram stain
- (D) Tzanck smear

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70. A patient presents with painful grouped vesicles over the penile/genital region associated with fever and malaise. What is the most likely causative organism?

- (A) Herpes simplex virus (HSV)
- (B) Haemophilus ducreyi
- (C) Human papillomavirus (HPV)
- (D) Treponema pallidum (Syphilis)

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71. The lesion shown is consistent with tinea capitis. What is the treatment of choice?

- (A) Oral antifungals
- (B) Antibiotics
- (C) Methotrexate
- (D) Topical steroids

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72. Which of the following are advantages/benefits of non-treponemal tests (e.g., VDRL, RPR) in the diagnosis and follow-up of syphilis? (Select all that apply)

- (A) They can be used to monitor response to treatment
- (B) A standard dilution is used
- (C) They remain positive for life
- (D) They are quantitative

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73. A divorced, alcoholic man with major depression presents stating, "What is the point in living?" What is the most appropriate next step in management?

- (A) Hospitalize
- (B) Cognitive behavioural therapy (CBT)
- (C) Antidepressant
- (D) Reassure that it is a normal part of life

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74. Which of the following statements best describes classical conditioning?

- (A) Unconditioned stimulus producing an unconditioned response
- (B) Conditioned stimulus producing a conditioned response
- (C) Association between a conditioned stimulus and a conditioned response
- (D) Association between an unconditioned stimulus and an unconditioned response

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75. The clinical photograph shows a scalp lesion consistent with tinea capitis. What is the treatment of choice?

- (A) Oral antifungals
- (B) Antibiotics
- (C) Methotrexate
- (D) Topical steroids

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76. Match the poison with its characteristic feature. Which of the following is correctly matched?

- (A) Cyanide - bitter almond smell
- (B) Carbon monoxide - cherry red discolouration
- (C) Phosphorus - garlic odour
- (D) Organophosphate - excessive secretions

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77. Which of the following is a type of blunt-force mechanical injury produced without a break in the continuity of the skin?

- (A) Stab wound of the abdomen
- (B) Laceration
- (C) Bomb blast injury
- (D) Contusion

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78. A 16-year-old girl raped by a neighbour presents at 16 weeks of gestation. Which of the following is NOT a part of her management?

- (A) Inform the police
- (B) Preserve fetal tissue for DNA analysis
- (C) Take consent from the parents/guardian
- (D) MTP can be done on the opinion of a single doctor

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79. In organophosphate (OP) poisoning, which drug reverses the inhibited activity of acetylcholinesterase (AChE)?

- (A) Atropine
- (B) Pralidoxime
- (C) Flumazenil
- (D) Naloxone

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80. When should a prophylactic antibiotic be administered before elective entry into the GI tract (e.g., elective cholecystectomy)?

- (A) Within 1 hour before incision
- (B) 4 hours before incision
- (C) 6 hours before incision
- (D) At the time of skin closure

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81. A neonate presents with prolonged jaundice and an umbilical hernia. The most likely diagnosis is:

- (A) Down syndrome
- (B) Congenital hypothyroidism
- (C) Cerebral palsy
- (D) Biliary atresia

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82. Differential cyanosis (pink upper limbs with cyanosed lower limbs) is characteristically seen in:

- (A) Patent ductus arteriosus (PDA) with reversal of shunt / Eisenmenger
- (B) Osler-Weber-Rendu syndrome
- (C) Peripheral arterial disease
- (D) Transposition of great arteries (simple)

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83. In the management of shoulder dystocia, after calling for help the first/next manoeuvre to be performed is:

- (A) McRoberts manoeuvre (with suprapubic pressure)
- (B) Zavanelli manoeuvre
- (C) Wood's corkscrew manoeuvre
- (D) Symphysiotomy

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84. The Pearl Index, used to express contraceptive failure rate, is defined as:

- (A) Number of accidental pregnancies per woman year
- (B) Number of accidental pregnancies per 100 woman-years of exposure
- (C) Number of pregnancies over number of losses per 100 woman-years
- (D) Number of accidental pregnancies per 1000 women per year

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85. If X percent of stroke in a population is attributable to hypertension, and removing hypertension from the population would prevent this proportion of strokes, this scenario is an example of:

- (A) Relative risk
- (B) Attributable risk
- (C) Population attributable risk
- (D) Odds ratio

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86. In a meta-analysis, assessing heterogeneity (e.g. using the I^2 statistic or Cochran's Q test):

- (A) Evaluates the variation between the included studies
- (B) Detects publication bias directly
- (C) Measures confounding within a single study
- (D) Quantifies the precision of an individual study

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87. Which of the following statements about ticagrelor is TRUE?

- (A) It is a reversible P2Y₁₂ receptor inhibitor
- (B) It is a prodrug requiring hepatic activation
- (C) It causes more cerebral bleeding than clopidogrel
- (D) It is given once daily

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88. From the quantal dose-response curves shown, the median toxic dose TD_{50} is 400 mg and the median effective dose ED_{50} is 100 mg. Calculate the therapeutic index. (Refer to the figure.)

- (A) 4
- (B) 0.25
- (C) 1
- (D) 500

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89. The graph shows the relative filterability of molecules across the glomerular capillary wall plotted against effective molecular radius, for three curves A, B and C carrying different charges. Based on charge, which molecule is filtered most readily? (Refer to the figure; for a given molecular radius, filterability order $A > B > C$, with C marked as anions.)

- (A) A (cation)
- (B) B (neutral)
- (C) C (anion)
- (D) All are filtered equally

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90. Which intestinal membrane transporter is exploited in the therapeutic management (oral rehydration) of secretory diarrhea?

- (A) CFTR chloride channel
- (B) SGLT (sodium-glucose cotransporter)
- (C) Na^+/K^+ ATPase pump
- (D) Aquaporin-2 water channel

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91. Which of the following enzymes is active in its **dephosphorylated** state?

- (A) Glycogen synthase
- (B) Glycogen phosphorylase
- (C) PFK-2 (phosphofructokinase-2)
- (D) Fructose-2,6-bisphosphatase

• • •

92. Which of the following bacterial toxins acts by inhibiting elongation factor 2 (EF-2)?

- (A) Diphtheria toxin
- (B) Cholera toxin
- (C) Tetanospasmin
- (D) Heat-labile toxin of *E. coli*

• • •

93. A patient presents with septic arthritis. Culture grows a Gram-positive coccus that is catalase positive and **cefoxitin sensitive**. What is the drug of choice?

- (A) Cloxacillin
- (B) Penicillin
- (C) Vancomycin
- (D) Linezolid

• • •

94. A poorly controlled diabetic patient presents with facial pain and a **black eschar** over the nasal/palatal region. Which organism is most likely responsible?

- (A) *Rhizopus* species (mucormycosis)
- (B) *Aspergillus* species
- (C) *Candida* species
- (D) *Cryptococcus neoformans*

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95. What is the approximate amplitude (power) of accommodation in a 7-year-old child?

- (A) +14 D
- (B) +10 D
- (C) +5 D
- (D) +2 D

• • •

96. Neuropraxia (the mildest grade of nerve injury) is best described as:

- (A) A reversible physiological conduction block with intact axon
- (B) Cut/disruption of the endoneurium
- (C) Cut/disruption of the nerve sheath (epineurium)
- (D) Complete transection of the whole nerve trunk

• • •

97. Neurapraxia is best described as:

- (A) Physiological conduction block with intact axon
- (B) Endoneurium and axon cut
- (C) Nerve sheath (perineurium) cut
- (D) Complete transection of the whole nerve trunk

• • •

98. An infant presents with intensely itchy erythematous papules and vesicles distributed over the palms, soles and umbilical region, with similar lesions in family members. The most likely diagnosis is:

- (A) Scabies
- (B) Psoriasis
- (C) Atopic dermatitis
- (D) Seborrhoeic dermatitis

• • •

99. A patient has an irregular black pigmented lesion on the heel/sole suspicious for acral melanoma. The most appropriate confirmatory investigation is:

- (A) Excisional / full-thickness biopsy with histopathology
- (B) KOH mount / Gram stain
- (C) Tzanck smear
- (D) Wood's lamp examination

• • •

100. An Afghan national arriving at the airport is found to have swallowed multiple well-sealed, professionally prepared condoms/packets filled with narcotic drugs for the purpose of international trafficking. This practice is termed:

- (A) Body packing
- (B) Body stuffing
- (C) Masking
- (D) Body pushing

• • •

101. An infant girl shows normal early development followed by regression of acquired milestones at around 6-18 months, with deceleration of head growth and loss of purposeful hand use replaced by stereotyped hand-wringing movements. The most likely diagnosis is:

- (A) Rett syndrome
- (B) Childhood disintegrative disorder (Heller syndrome)
- (C) Classic autism spectrum disorder
- (D) Attention-deficit/hyperactivity disorder

• • •

102. Which adverse effect is most characteristically associated with the antiepileptic drug lamotrigine?

- (A) Severe cutaneous reactions including Stevens-Johnson syndrome / dizziness
- (B) Marked dose-independent hepatotoxicity
- (C) Gingival hyperplasia
- (D) Irreversible visual field constriction

• • •

103. In *Bacillus anthracis*, the poly-D-glutamic acid (poly- γ -D-glutamate) capsule is encoded by which plasmid?

- (A) pXO1 (toxin plasmid)
- (B) pXO2 (capsule plasmid)
- (C) Chromosomal genes only
- (D) pXO1 and pXO2 jointly

• • •

104. Which of the following is a **novel (newer) antidepressant** that acts as a serotonin partial agonist and reuptake inhibitor (SPARI)?

- (A) Vilazodone
- (B) Trazodone
- (C) Imipramine
- (D) Amitriptyline

• • •

105. A phenotypic female presents with primary amenorrhoea, an **absent uterus**, **normally developed breasts** and **sparse/absent pubic and axillary hair**. What is the most likely diagnosis?

- (A) Androgen insensitivity syndrome (complete AIS)
- (B) Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome
- (C) Turner syndrome (45,XO)
- (D) Kallmann syndrome

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106. The clinical photograph and slit-lamp image show iris hamartomas (Lisch nodules) with skin findings in a child with neurofibromatosis type 1 (NF1). Which cutaneous lesion is the earliest and most characteristic feature of NF1?

- (A) Café-au-lait macules
- (B) Ash-leaf (hypopigmented) macules
- (C) Port-wine stain
- (D) Shagreen patch

— — —

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107. The photograph shows a permanent tattoo on the skin. In which layer of the skin is the tattoo pigment chiefly deposited and retained?

- (A) Dermis
- (B) Stratum corneum of the epidermis
- (C) Subcutaneous fat
- (D) Deep fascia

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108. What is the specific antidote used in acute **opioid** (e.g. heroin, morphine) poisoning?

- (A) Naloxone
- (B) Flumazenil
- (C) Atropine
- (D) N-acetylcysteine

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109. According to the AAST (American Association for the Surgery of Trauma) Colon Injury Scale, a laceration involving more than 50% of the bowel circumference (without transection) corresponds to which grade?

- (A) Grade I
- (B) Grade II
- (C) Grade III
- (D) Grade IV

• • •

110. A trauma patient opens his eyes only to painful stimulus, makes incomprehensible sounds, and localises to pain. What is his total Glasgow Coma Scale (GCS) score?

- (A) 8
- (B) 9
- (C) 10
- (D) 11

• • •

111. An elderly man with a history of atrial fibrillation presents with sudden severe abdominal pain that is out of proportion to physical findings. Which laboratory finding most strongly supports the diagnosis of acute mesenteric ischemia?

- (A) Raised serum lactate (and LDH)
- (B) Raised serum amylase only
- (C) Hypocalcaemia
- (D) Raised serum bilirubin

• • •

112. Which of the following is NOT a feature of Kawasaki disease?

- (A) Purulent conjunctivitis
- (B) Bilateral non-exudative conjunctival injection
- (C) Strawberry tongue and cracked lips
- (D) Cervical lymphadenopathy

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113. A term neonate has a blood glucose of 36 mg/dL. The infant is feeding well and has no clinical signs. Which characteristic of this neonate favours continued breastfeeding (with monitoring) rather than immediate intravenous dextrose infusion?

- (A) The neonate is asymptomatic
- (B) The neonate is symptomatic with jitteriness
- (C) The neonate is having seizures
- (D) The neonate is lethargic and not feeding

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114. Regarding the HPV vaccine, which of the following statements is INCORRECT?

- (A) It guarantees 100% complete protection against cervical cancer
- (B) The primary target group for vaccination is girls aged 9-14 years
- (C) A single-dose schedule is now endorsed by WHO and national guidelines for the targeted age group
- (D) It is highly immunogenic, with high seroconversion rates in the target age group

• • •

115. A researcher plots the average per-capita alcohol intake of 10 different countries against the cirrhosis mortality rate of each of those countries, using one data point per country, to look for an association. Which type of epidemiological study design does this represent?

- (A) Ecological study
- (B) Cohort study
- (C) Case-control study
- (D) Cross-sectional study

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116. In a case-control study, among the cases there are 60 exposed and 20 unexposed individuals, while among the controls there are 40 exposed and 80 unexposed individuals. What is the odds ratio of exposure?

- (A) 6
- (B) 3
- (C) 1.5
- (D) 0.17

• • •

117. A new screening test is applied. It yields 90 true positives and 50 false positives. What is the positive predictive value (PPV) of the test?

- (A) 64.3%
- (B) 90%
- (C) 50%
- (D) 35.7%

• • •

118. An influenza vaccine shows 90% efficacy in a randomized controlled trial but only 85% performance when used in the routine community programme. Which value represents the **effectiveness** of the vaccine?

- (A) 85% (performance in real-world field conditions)
- (B) 90% (performance in the ideal trial setting)
- (C) 5% (difference between the two values)
- (D) 87.5% (average of the two values)

• • •

119. An influenza vaccine is evaluated in a well-conducted randomized controlled trial and again during routine community use. The trial value is 90% and the field value is 85%. Which value represents the **efficacy** of the vaccine?

- (A) 90% (performance in the ideal trial setting)
- (B) 85% (performance in real-world field conditions)
- (C) 5% (difference between the two values)
- (D) 87.5% (average of the two values)

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120. Regarding the pattern of coronary blood flow, how does flow in the right coronary artery (RCA) differ from that in the left coronary artery (LCA) during the cardiac cycle?

- (A) RCA receives appreciable flow in **both** systole and diastole (biphasic), whereas LCA flow occurs predominantly in diastole
- (B) RCA flow occurs almost entirely in diastole, while LCA flow is biphasic
- (C) Both RCA and LCA are perfused only during systole
- (D) Both RCA and LCA are perfused only during diastole

• • •

121. An ECG shows ST-segment elevation in leads II, III and aVF in a patient presenting with acute chest pain. Which coronary artery is most likely occluded?

- (A) Right coronary artery (RCA)
- (B) Left anterior descending artery (LAD)
- (C) Left circumflex artery (LCx)
- (D) Left main coronary artery

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122. A patient with long-standing rheumatoid arthritis develops nephrotic-range proteinuria. Renal biopsy with Congo red stain shows apple-green birefringence under polarised light. Which type of amyloid protein is most likely deposited?

- (A) AA (serum amyloid A-derived) amyloid
- (B) AL (immunoglobulin light chain) amyloid
- (C) Abeta2-microglobulin amyloid
- (D) ATTR (transthyretin) amyloid

• • •

123. The plasma drug-concentration versus time curve shown declines such that the half-life remains constant regardless of the starting concentration, and a constant fraction of drug is eliminated per unit time. This pattern best represents which type of elimination kinetics?

- (A) First-order kinetics
- (B) Zero-order kinetics
- (C) Michaelis-Menten (saturation) kinetics at saturating dose
- (D) Mixed-order kinetics

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124. In the Ann Arbor staging of Hodgkin lymphoma, a mediastinal mass is designated “bulky” (the X modifier) when its maximum width exceeds what proportion of the intrathoracic diameter on chest radiograph?

- (A) Greater than one-third ($>1/3$) of the maximum intrathoracic diameter
- (B) Greater than one-half ($>1/2$) of the maximum intrathoracic diameter
- (C) Greater than one-quarter ($>1/4$) of the maximum intrathoracic diameter
- (D) Greater than two-thirds ($>2/3$) of the maximum intrathoracic diameter

• • •

125. A child develops cola-coloured urine, periorbital oedema and hypertension two weeks after a sore throat. Urine microscopy shows red blood cell casts. On electron microscopy of the renal biopsy, which finding is characteristic of this condition?

- (A) Subepithelial electron-dense “humps”
- (B) Subendothelial deposits with “tram-track” basement membrane splitting
- (C) Diffuse effacement of podocyte foot processes with no deposits
- (D) Linear ribbon-like deposits along the glomerular basement membrane

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126. Transplacental transfer of maternal anti-Ro (SS-A) and anti-La (SS-B) antibodies is most characteristically associated with which neonatal condition?

- (A) Neonatal lupus erythematosus (with congenital complete heart block)
- (B) Neonatal myasthenia gravis
- (C) Haemolytic disease of the newborn
- (D) Neonatal Graves’ (thyrotoxicosis)

• • •

127. A histology slide of myocardium is taken from a patient who died 1-3 days after an acute myocardial infarction. Which of the following cellular changes is MOST characteristic of this time interval?

- (A) Dense neutrophilic (polymorphonuclear) infiltration of necrotic myocardium
- (B) Coagulative necrosis with wavy fibres and contraction bands only
- (C) Macrophage infiltration with phagocytosis of dead myocytes
- (D) Dense collagenous scar with few cells

• • •

128. Hand-eye coordination, integration of visual and somatosensory information, and spatial awareness are mainly functions of which lobe of the cerebral cortex?

- (A) Parietal lobe
- (B) Frontal lobe
- (C) Occipital lobe
- (D) Temporal lobe

• • •

129. The inguinal ligament (Poupart's ligament), forming the floor of the inguinal canal, is a modification of the lower border of the aponeurosis of which muscle?

- (A) External oblique muscle of the abdomen
- (B) Internal oblique muscle of the abdomen
- (C) Transversus abdominis muscle
- (D) Rectus abdominis muscle

• • •

130. An inhaled foreign body more commonly lodges in the right main bronchus than the left. Which set of features of the right main bronchus BEST explains this tendency?

- (A) It is wider, shorter and more vertical (in line with the trachea), and the right lung has three lobes
- (B) It is narrower, longer and more horizontal, and the right lung has two lobes
- (C) It is wider but more horizontal, and the right lung has two lobes
- (D) It is narrower and more vertical, and the right lung has three lobes

• • •

131. Which of the following carbohydrates is a NON-reducing sugar and therefore gives a NEGATIVE Benedict's (and Fehling's) test?

- (A) Sucrose
- (B) Maltose
- (C) Lactose
- (D) Glucose

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132. Pretomanid, a nitroimidazole used in the BPaL/BPaLM regimen for drug-resistant tuberculosis, acts mainly by which mechanism?

- (A) Inhibition of mycolic acid synthesis (and generation of reactive nitrogen species), impairing cell-wall formation and anaerobic respiration
- (B) Inhibition of the RNA polymerase beta-subunit (rpoB)
- (C) Inhibition of mycobacterial ATP synthase
- (D) Inhibition of DNA gyrase (topoisomerase II)

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133. What is the mode of infection (route of entry into the human host) of *Necator americanus* (New World hookworm)?

- (A) Skin penetration by filariform larvae
- (B) Ingestion of embryonated eggs
- (C) Bite of an infected female sandfly
- (D) Ingestion of undercooked pork containing cysts

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134. A post-splenectomy patient is at greatest risk of overwhelming sepsis from which organism?

- (A) *Streptococcus pneumoniae*
- (B) *Staphylococcus aureus*
- (C) *Escherichia coli*
- (D) *Pseudomonas aeruginosa*

• • •

135. Which class of antibiotics characteristically shows **concentration-dependent killing**?

- (A) Aminoglycosides
- (B) Beta-lactams (penicillins)
- (C) Glycopeptides (vancomycin)
- (D) Macrolides (erythromycin)

• • •

136. The posterior cricoarytenoid (PCA) muscle of the larynx is the only muscle that performs which action on the vocal cords?

- (A) Abduction (opening) of the vocal cords
- (B) Adduction (closing) of the vocal cords
- (C) Tensing (lengthening) of the vocal cords
- (D) Relaxation (shortening) of the vocal cords

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137. Sudden sensorineural hearing loss (SSNHL) is defined as ≥ 30 dB of SNHL over at least three contiguous frequencies developing within 3 days. What is the mainstay of treatment?

- (A) Corticosteroids (systemic, with intratympanic steroids as salvage)
- (B) Oral antiviral therapy alone
- (C) Immediate cochlear implantation
- (D) Broad-spectrum intravenous antibiotics

• • •

138. Which is the most characteristic cardiovascular effect of the inhalational anaesthetic **halothane**?

- (A) Dose-dependent fall in cardiac output and blood pressure (often a 20-30 mm Hg drop) from myocardial depression
- (B) Increase in cardiac output with reflex tachycardia
- (C) Rise in systemic vascular resistance with hypertension
- (D) No measurable effect on cardiac output or blood pressure

• • •

139. A chronic alcoholic with thiamine deficiency develops a memory disturbance in which he is unable to form new memories, though older memories are relatively preserved. This Korsakoff syndrome is characterised by which type of memory deficit?

- (A) Anterograde amnesia
- (B) Retrograde amnesia
- (C) Transient global amnesia
- (D) Dissociative amnesia

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140. A firearm wound shows an entry with an abraded collar and a grease (dirt) collar, but there is NO tattooing (no gunpowder stippling), no soot blackening, and no burning around the wound. What is the range of fire?

- (A) Distant range
- (B) Contact range
- (C) Close range
- (D) Near (intermediate) range

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141. A victim of a bomb blast sustains burns to the chest and face caused by the fireball and the heat of the explosion (not by the blast wave, flying fragments, or being thrown against a structure). This burn injury is best classified as which category of blast injury?

- (A) Quaternary blast injury
- (B) Primary blast injury
- (C) Secondary blast injury
- (D) Tertiary blast injury

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142. An entry firearm wound demonstrates an abrasion collar and a grease collar but completely lacks gunpowder tattooing (stippling), soot, and singeing of hair. The most appropriate interpretation of the firing distance is:

- (A) Distant range
- (B) Contact (tight) range
- (C) Close range
- (D) Intermediate (near) range

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143. A characteristic pattern of multiple radiating, brush-like abrasions resembling a bird's foot ("sparrow-foot" or crow-foot marks) is found on the skin of a deceased. This injury pattern is most characteristic of:

- (A) Motor vehicle (road traffic) accident
- (B) Fall from height onto a flat surface
- (C) Firearm injury
- (D) Electrocution

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144. A patient is brought to the emergency department with pin-point pupils, depressed respiration, and a reduced level of consciousness following suspected opioid (e.g., morphine/heroin) overdose. Which drug is the specific antidote?

- (A) Naloxone
- (B) Flumazenil
- (C) Atropine
- (D) N-acetylcysteine