

# HA SN MODEL SET EXAM 60 DAYS CHALLENGE APPLIED SCIENCE (PHARMACOLOGY/MICROBIOLOGY)

## Part I: Pharmacology (Questions 1–25)

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1. Which of the following is the most common route of drug administration?

- (a) Intravenous
- (b) Intramuscular
- (c) Oral
- (d) Subcutaneous

**Correct Answer: Oral**

*Explanation: The oral route is the most common, convenient, and economical route of drug administration.*

2. What is the antidote for Paracetamol poisoning?

- (a) Atropine
- (b) N-Acetylcysteine
- (c) Naloxone
- (d) Vitamin K

**Correct Answer: N-Acetylcysteine**

*Explanation: N-Acetylcysteine replenishes glutathione stores in the liver, preventing hepatic damage.*

3. Drug of choice for Anaphylactic shock is:

- (a) Hydrocortisone
- (b) Adrenaline
- (c) Avil
- (d) Atropine

**Correct Answer: Adrenaline**

*Explanation: Adrenaline (Epinephrine) is the first-line treatment for anaphylaxis due to its vasoconstrictive and bronchodilatory effects.*

4. Which antibiotic inhibits cell wall synthesis?

- (a) Gentamicin
- (b) Tetracycline
- (c) Penicillin

(d) Erythromycin

**Correct Answer: Penicillin**

*Explanation: Beta-lactam antibiotics like Penicillin inhibit bacterial cell wall synthesis (peptidoglycan layer).*

5. The 'Red Man Syndrome' is associated with rapid infusion of:

- (a) Vancomycin
- (b) Rifampicin
- (c) Gentamicin
- (d) Amikacin

**Correct Answer: Vancomycin**

*Explanation: Red Man Syndrome is a histamine-mediated reaction to rapid Vancomycin infusion.*

6. Which of the following is a Potassium Sparing Diuretic?

- (a) Furosemide
- (b) Hydrochlorothiazide
- (c) Spironolactone
- (d) Mannitol

**Correct Answer: Spironolactone**

*Explanation: Spironolactone is an aldosterone antagonist that promotes sodium excretion while retaining potassium.*

7. In DOTS therapy, 'H' stands for which drug?

- (a) Rifampicin
- (b) Isoniazid
- (c) Pyrazinamide
- (d) Ethambutol

**Correct Answer: Isoniazid**

*Explanation: In Anti-TB regimen codes: H=Isoniazid, R=Rifampicin, Z=Pyrazinamide, E=Ethambutol, S=Streptomycin.*

8. Metronidazole is the drug of choice for:

- (a) Typhoid
- (b) Amoebic Dysentery
- (c) Malaria
- (d) Tuberculosis

**Correct Answer: Amoebic Dysentery**

*Explanation: Metronidazole acts against anaerobic bacteria and protozoa like Entamoeba histolytica.*

9. Which drug causes 'Gray Baby Syndrome' in neonates?

- (a) Chloramphenicol
- (b) Tetracycline
- (c) Penicillin
- (d) Ampicillin

**Correct Answer: Chloramphenicol**

*Explanation: Neonates lack the glucuronyl transferase enzyme needed to metabolize Chloramphenicol, leading to toxicity.*

10. Aspirin should be avoided in children with viral fever to prevent:

- (a) Reyes Syndrome
- (b) Stevens-Johnson Syndrome
- (c) Cushing Syndrome
- (d) Down Syndrome

**Correct Answer: Reyes Syndrome**

*Explanation: Reye's Syndrome is a rare but serious condition causing liver and brain swelling, linked to Aspirin use in viral infections.*

11. The most serious side effect of Aminoglycosides (e.g., Gentamicin) is:

- (a) Hepatotoxicity
- (b) Ototoxicity and Nephrotoxicity
- (c) Bone marrow depression
- (d) Cardiotoxicity

**Correct Answer: Ototoxicity and Nephrotoxicity**

*Explanation: Aminoglycosides can cause damage to the 8th cranial nerve (Ototoxicity) and kidney damage (Nephrotoxicity).*

12. Nitroglycerin is administered in Angina Pectoris via which route?

- (a) Oral
- (b) Sublingual
- (c) Intramuscular
- (d) Subcutaneous

**Correct Answer: Sublingual**

*Explanation: Sublingual route avoids first-pass metabolism and provides rapid onset of action for Angina pain.*

13. Which vitamin is given with Isoniazid to prevent peripheral neuropathy?

- (a) Vitamin B1
- (b) Vitamin B6 (Pyridoxine)
- (c) Vitamin B12
- (d) Vitamin C

**Correct Answer: Vitamin B6 (Pyridoxine)**

*Explanation: Isoniazid competes with Pyridoxine, leading to deficiency and neuropathy; supplementation is required.*

14. Identify the Proton Pump Inhibitor (PPI):

- (a) Ranitidine
- (b) Omeprazole
- (c) Sucralfate
- (d) Antacids

**Correct Answer: Omeprazole**

*Explanation: Omeprazole irreversibly blocks the H<sup>+</sup>/K<sup>+</sup> ATPase enzyme system (proton pump) in gastric parietal cells.*

15. Standard dose of Albendazole for deworming in adults is:

- (a) 200 mg stat
- (b) 400 mg stat
- (c) 100 mg BD
- (d) 500 mg stat

**Correct Answer: 400 mg stat**

*Explanation: The standard single dose for Albendazole in adults and children >2 years is 400 mg.*

16. Atropine is obtained from:

- (a) Papaver somniferum
- (b) Atropa belladonna
- (c) Digitalis purpurea
- (d) Cinchona

**Correct Answer: Atropa belladonna**

*Explanation: Atropine is an anticholinergic alkaloid extracted from the deadly nightshade plant (Atropa belladonna).*

17. Which of the following is a Category X drug in pregnancy (Teratogenic)?

- (a) Paracetamol
- (b) Thalidomide
- (c) Amoxicillin
- (d) Folic Acid

**Correct Answer: Thalidomide**

*Explanation: Thalidomide causes phocomelia (sea-limbs) and is strictly contraindicated in pregnancy.*

18. ORS (Oral Rehydration Solution) composition does NOT include:

- (a) Sodium Chloride
- (b) Potassium Chloride
- (c) Sodium Citrate
- (d) Calcium Gluconate

**Correct Answer: Calcium Gluconate**

*Explanation: WHO ORS contains NaCl, KCl, Sodium Citrate, and Glucose. Calcium is not a component.*

**19.** Digoxin is primarily indicated for:

- (a) Hypertension
- (b) Congestive Heart Failure (CHF)
- (c) Asthma
- (d) Diabetes

**Correct Answer: Congestive Heart Failure (CHF)**

*Explanation: Digoxin increases the force of myocardial contraction (positive inotropic effect).*

**20.** Salbutamol is a:

- (a) Beta-1 blocker
- (b) Beta-2 agonist
- (c) Alpha blocker
- (d) Muscarinic agonist

**Correct Answer: Beta-2 agonist**

*Explanation: Salbutamol stimulates Beta-2 receptors in the lungs causing bronchodilation, used in Asthma.*

**21.** Common side effect of ACE inhibitors (e.g., Enalapril) is:

- (a) Dry Cough
- (b) Hypokalemia
- (c) Tachycardia
- (d) Constipation

**Correct Answer: Dry Cough**

*Explanation: Dry cough is a classic side effect due to the accumulation of bradykinin in the lungs.*

**22.** Loading dose of MgSO<sub>4</sub> in Eclampsia includes:

- (a) 4g IV + 10g IM
- (b) 14g IV
- (c) 10g IM only
- (d) 4g IV only

**Correct Answer: 4g IV + 10g IM**

*Explanation: Pritchard regimen: 4g IV slowly over 5-10 mins followed by 10g IM (5g in each buttock).*

**23.** Drug of choice for Malaria in pregnancy (First Trimester):

- (a) Primaquine
- (b) Quinine
- (c) Doxycycline
- (d) Artesunate

**Correct Answer: Quinine**

*Explanation: Quinine is considered safe in the first trimester. Primaquine is contraindicated in pregnancy.*

**24.** Oxytocin is stored at what temperature?

- (a) Room temperature
- (b) 2-8 degree Celsius
- (c) Freezer
- (d) 37 degree Celsius

**Correct Answer: 2-8 degree Celsius**

*Explanation: Oxytocin is heat sensitive and should be maintained in the cold chain (2-8°C).*

**25.** Psychotropic drug Lithium is used for:

- (a) Schizophrenia
- (b) Bipolar Disorder (Mania)
- (c) Anxiety
- (d) Depression

**Correct Answer: Bipolar Disorder (Mania)**

*Explanation: Lithium Carbonate is the classic mood stabilizer used for Bipolar Disorder.*

## Part II: Microbiology (Questions 26–50)

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26. Who is known as the 'Father of Microbiology'?

- (a) Robert Koch
- (b) Louis Pasteur
- (c) Antonie van Leeuwenhoek
- (d) Joseph Lister

**Correct Answer: Antonie van Leeuwenhoek**

*Explanation: Leeuwenhoek was the first to observe microorganisms using a microscope he designed.*

27. Temperature and time for Autoclaving is:

- (a) 100°C for 30 mins
- (b) 121°C for 15-20 mins
- (c) 160°C for 1 hour
- (d) 72°C for 15 secs

**Correct Answer: 121°C for 15-20 mins**

*Explanation: Standard autoclave settings are 121°C at 15 lbs pressure for 15-20 minutes.*

28. Ziehl-Neelsen (ZN) staining is used for identification of:

- (a) Mycobacterium tuberculosis
- (b) Staphylococcus
- (c) E. coli
- (d) Salmonella

**Correct Answer: Mycobacterium tuberculosis**

*Explanation: ZN stain (Acid Fast Stain) specifically identifies acid-fast bacilli like TB bacteria.*

29. Which immunoglobulin crosses the placenta?

- (a) IgM
- (b) IgA
- (c) IgG
- (d) IgE

**Correct Answer: IgG**

*Explanation: IgG is the only antibody isotype that can cross the placenta to provide passive immunity to the fetus.*

30. Causative agent of Syphilis is:

- (a) Neisseria gonorrhoeae
- (b) Treponema pallidum

- (c) Chlamydia trachomatis
- (d) Trichomonas vaginalis

**Correct Answer: Treponema pallidum**

*Explanation: Syphilis is caused by the spirochete bacterium Treponema pallidum.*

**31.** Rice water stool is characteristic of:

- (a) Typhoid
- (b) Cholera
- (c) Dysentery
- (d) Giardiasis

**Correct Answer: Cholera**

*Explanation: Vibrio cholerae causes massive watery diarrhea described as 'rice water stool'.*

**32.** BCG vaccine is a type of:

- (a) Killed vaccine
- (b) Live attenuated vaccine
- (c) Toxoid
- (d) Subunit vaccine

**Correct Answer: Live attenuated vaccine**

*Explanation: BCG contains live attenuated Mycobacterium bovis.*

**33.** Widal test is used for the diagnosis of:

- (a) Malaria
- (b) Typhoid fever
- (c) Tuberculosis
- (d) HIV

**Correct Answer: Typhoid fever**

*Explanation: Widal test detects antibodies against Salmonella typhi.*

**34.** Sterilization by Hot Air Oven is done at:

- (a) 121°C for 15 min
- (b) 160°C for 1 hour
- (c) 100°C for 30 min
- (d) 63°C for 30 min

**Correct Answer: 160°C for 1 hour**

*Explanation: Hot Air Oven uses dry heat; typical cycle is 160°C for 1 hour (or 160°C for 2 hours for total certainty).*

**35.** Which hepatitis virus is spread by fecal-oral route?

- (a) Hepatitis B
- (b) Hepatitis C
- (c) Hepatitis A
- (d) Hepatitis D

**Correct Answer: Hepatitis A**

*Explanation: Hepatitis A and E are transmitted via the fecal-oral route; B, C, and D are blood-borne.*

**36.** The definitive host for Plasmodium (Malaria) is:

- (a) Man
- (b) Female Anopheles Mosquito
- (c) Pig
- (d) Sandfly

**Correct Answer: Female Anopheles Mosquito**

*Explanation: Sexual cycle of malaria occurs in the mosquito, making it the definitive host. Man is the intermediate host.*

**37.** Which of the following is a DNA virus?

- (a) HIV
- (b) Hepatitis B
- (c) Influenza
- (d) Measles

**Correct Answer: Hepatitis B**

*Explanation: Hepatitis B is a DNA virus (Hepadnaviridae), while HIV, Flu, and Measles are RNA viruses.*

**38.** Hospital acquired infection is also known as:

- (a) Nosocomial infection
- (b) Iatrogenic infection
- (c) Opportunistic infection
- (d) Subclinical infection

**Correct Answer: Nosocomial infection**

*Explanation: Infections acquired 48 hours after hospital admission are termed Nosocomial infections.*

**39.** Mantoux test is a hypersensitivity reaction of type:

- (a) Type I (Immediate)
- (b) Type II (Cytotoxic)
- (c) Type III (Immune complex)
- (d) Type IV (Delayed)

**Correct Answer: Type IV (Delayed)**

*Explanation: The Tuberculin skin test is a classic example of Type IV delayed hypersensitivity.*

40. Which bacteria causes 'Lock Jaw' (Tetanus)?

- (a) Clostridium botulinum
- (b) Clostridium tetani
- (c) Clostridium perfringens
- (d) Bacillus anthracis

**Correct Answer: Clostridium tetani**

*Explanation: C. tetani produces tetanospasmin which causes muscle rigidity and lockjaw.*

41. Kala-azar is transmitted by:

- (a) Aedes Mosquito
- (b) Culex Mosquito
- (c) Sandfly
- (d) Tsetse fly

**Correct Answer: Sandfly**

*Explanation: Leishmania donovani (Kala-azar) is transmitted by the bite of the Sandfly (Phlebotomus).*

42. Negri bodies are found in nerve cells infected with:

- (a) Polio virus
- (b) Rabies virus
- (c) Herpes virus
- (d) Smallpox virus

**Correct Answer: Rabies virus**

*Explanation: Negri bodies are intracytoplasmic inclusion bodies pathognomonic for Rabies.*

43. Staphylococcus aureus typically causes:

- (a) Boils and Abscesses
- (b) Sore throat
- (c) Urinary Tract Infection
- (d) Gas Gangrene

**Correct Answer: Boils and Abscesses**

*Explanation: S. aureus is a pyogenic (pus-producing) bacteria causing skin infections like boils and abscesses.*

44. Which vaccine is given at birth in Nepal?

- (a) DPT
- (b) Measles
- (c) BCG
- (d) Pentavalent

**Correct Answer: BCG**

*Explanation: According to the National Immunization Schedule of Nepal, BCG is given at birth (or as early as possible).*

45. Universal Donor blood group is:

- (a) A Positive
- (b) AB Positive
- (c) O Negative
- (d) O Positive

**Correct Answer: O Negative**

*Explanation: O Negative red cells lack A, B, and Rh antigens, minimizing reaction risk.*

46. Fungal infection of the scalp is called:

- (a) Tinea pedis
- (b) Tinea capitis
- (c) Tinea corporis
- (d) Tinea cruris

**Correct Answer: Tinea capitis**

*Explanation: Tinea capitis is ringworm of the scalp.*

47. Best method to sterilize disposable plastic syringes is:

- (a) Autoclaving
- (b) Gamma Radiation
- (c) Hot Air Oven
- (d) Boiling

**Correct Answer: Gamma Radiation**

*Explanation: Heat damages plastics; Gamma radiation is used industrially for disposable medical plastics.*

48. Vibrio cholerae is a:

- (a) Gram positive cocci
- (b) Gram negative comma shaped bacilli
- (c) Gram positive bacilli
- (d) Spirochete

**Correct Answer: Gram negative comma shaped bacilli**

*Explanation: Vibrio cholerae is classically described as a Gram-negative, comma-shaped (curved) rod.*

49. ELISA test is most commonly associated with screening for:

- (a) Diabetes
- (b) HIV
- (c) Malaria
- (d) Cancer

**Correct Answer: HIV**

*Explanation: ELISA is the standard screening test for HIV antibodies.*

50. The vector for Dengue fever is:

- (a) Anopheles
- (b) Culex
- (c) Aedes aegypti
- (d) Mansonia

**Correct Answer: Aedes aegypti**

*Explanation: Aedes aegypti is the primary vector for Dengue, Chikungunya, and Zika.*