Q3.

1. Enteric fever
2. Salmonella typhi; S. paratyphi A, B & C
3. Blood, Bone marrow Asp., Stool, Urine sample & Duodenal Asp.
4. Culture
5. a) Tube agglutination test
   b) TH, AH, BH, TO antibodies
6. Disc diffusion test (Kirby-Bauer's)

Q4.

1. Diphtheria: Corynebacterium diphtheria
2. Throat swab along with the portion of pseudomembrane
3. Irregularly stained club shaped gpb & chinese letter or cuneiform letter
4. Loeffler Serum slope - enrichment medium
   KTA - Selective media
5. Anti-Diphtheric Antitoxin - passive immunization to neutralize the toxin

   Erythromycin should be started by 6hrs of infection.

Q5.

1. Primary Syphilis; Treponema pallidum
2. Extremely thin & delicate with tapering ends. They're flexible. spirally coiled around long axis (6-12 spirals)
3. Non-Treponemal test - cardiolipin — VDRL / RPR
   ~~Treponemal test - T. pallidum specific antigen~~ — TPT / ~~FTA-ABS~~
4. Treponemal pallidum immobilization test
   Treponemal pallidum particle agglutination test
5. Yes, we need to rule out malaria, IMN, Autoimmune diseases like SLE etc. as they can cause false positive test to Non-specific Treponemal tests.

B1.
1. culture & sensitivity ; pus aspirate

2. (a) β-hemolytic golden yellow opaque colonies on blood agar

(b) gram positive cocci in clusters, with pus cells

(c) methicillin Resistant staphylococcus Aureus

3. (a) positive coagulase test

(b) slide coagulase test: A suspension of S. aureus with a positive & negative control is prepared, & a drop of rabbit plasma is mixed with it & checked for clumping

BOUND COAGULASE ⊕ve

tube coagulase test: FREE COAGULASE ⊕ve

5. Ensure barrier nursing to prevent the spread, clean & disinfect all reusable equipments.

DOC: vancomycin

6. Linezolid,

B2. 1. Shigella dysenteriae; 10-100 bacilli

2. Shigella dysenteriae, S. flexneri S. boydii, S. sonnei

3. Fresh stool, Rectal swab

4. Transport media: Sachs buffered glycerol saline, Cary Blair medium

Enrichment media: selenite F broth

5. MICROSCOPIC FEATURE

charcot leyden crystal - ⊕ in Amoebic Dysentery, ⊖ in Bacillary Dysentery

MACROSCOPIC FEATURE

COLOUR - DARK RED in Amoebic Dysentery, BRIGHT RED in Bacillary Dysentery

6. Non-lactose fermenting colonies on macconkey agar

B5.

1. ~~xx~~ Cytotoxic Necrotizing Factor-1
   Hemolysins
   P-fimbriae
   capsular K-antigen
2. Females've high chances of acquiring UTI because of possessing shorter urethra
3. E.coli, Klebsiella
4. Clean catch midstream urine collected in a universal containes
5. Refrigerate at 4°C
   Use specimen containes with 1.8% boric acid
6. Gram negative bacteria with pus cells & macConkey lactose fermenting colonies on ~~blood~~ agar
7. ✓ Uropathogenic E.coli
   ✓ Klebsiella pneumoniae
   ✓ Enterobacter
   ✓ Citrobacter, Proteus
8. ✓ pregnancy
   ✓ males undergoing transurethral resection of prostate

B7.

1. Gram stain, culture & sensitivity
2. For culture & sensitivity; we first remove the superficial tissue & then take the aspirate, exudate or tissue from deepest aspect to avoid contamination. we can also take blood.
3. Pseudomonas aeruginosa, S. aureus
4. opaque irregular colonies with metallic sheen & blue-green pyocyanin pigments on nutrient agar suggests presence of pseudomonas.
   Also, on gram smear, we see slender gram-negative bacilli with pus cells
5. ✓ easily affects immunocompromised people; survives in moisture & disinfectant
   ✓ multidrug resistant; so easily affects patients

B6. _____ .

Case 1.

A 50 year old male with pre-existing heart disease came to OP with persistent fever, tiredness, and night sweats. He had undergone a tooth extraction recently. O/E there were signs of heart failure

a. What is your provisional diagnosis? Give reason. Infective endocarditis. He is a patient with pre-existing heart disease. After tooth extraction, there'll be bacteria transiently gain access to the bloodstream colonise damaged endocardial surface

b. Name FOUR typical etiological agents of this condition viridans streptococci, skin bacteria staphylococci, HACEK organisms, Streptococcus gallolyticus & enterococci

c. What is the most important bacteriological investigation you would like to do? Blood culture

d. Briefly mention about sample collection – When to collect? How many samples to be sent? Volume of sample? Preparation of site? • ✓ Two blood culture sets should be collected at an interval of > 12 hrs apart ✓ Alternatively 3 blood cultures can be collected over an hour. • 8-10mL = adult, 3-10 = child • Disinfect the area with 70% alcohol from centre to periphery of skin followed by I_2-compound. Iodine should be left on the skin for at least a minute

e. Samples yielded α lytic minute translucent colonies on blood agar. What could be the organism? Can this be the causative agent? Why? Streptococci viridans - Yes it is a causative agent. It is commensal of ORT, mouth reaches to blood transiently via brushing, chewing

f. Describe the diagnostic criteria used for this condition modified Dukes criteria ↓ Definitive diagnosis : ✓ Two major criteria ✓ One major criteria & three minor criteria ✓ Five minor criteria

g. How will you treat this patient?

VI.

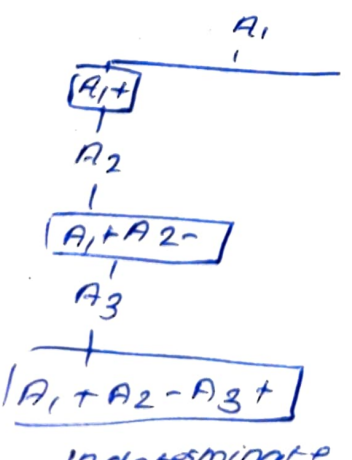
1. Hepatitis B
2. Hepatitis B virus
3. 0.00001 ml
4. 30 - 180 days
5. Sexual transmission, perinatal transmission
6. Homosexual, pregnant mothers during delivery transmits virus to the offspring
7. Antibodies that used in exist. It is used to detect HBV antigens & antibodies
8. Hepatitis B surface antigen
9. Hepatitis B precore antigen & HBV DNA
10. Hepatitis B recombinant subunit vaccine.
    It is administered I/M over deltoid region
    Three doses given at 0, 1 & 6 months
11. Hepatitis C virus

V2.

1. AIDS & HIV
2. Sexual mode
   Blood transfusion
   Percutaneous transfusion
   Perinatal mode
3. IV drug abusers, fetus born to infected mother, homosexuals
4. a) antibodies to HIV 1 & HIV 2 Antigen
   b) If control dot is not formed. test is invalid

5.

Strategy II B



6. Cryptosporidium parvum

V3

1. Dengue fever
2. Dengue virus; Flaviviridae
3. Bite of Aedes mosquito
4. ✓ Dengue fever
   ✓ Dengue hemorrhagic fever
   ✓ Dengue shock syndrome
5. ELISA microtiter plate; Used for detecting dengue antigens & antibodies
6. NS1 antigen, IgM, IgG
7. Primary infection
   - ✓ Antibody response is slow & low titer; IgM appears first 5 days of fever
   - ✓ IgG is detectable at low titre in 14-21 days of illness & then it slowly rises

   Secondary infection
   - ✓ IgG rises rapidly
   - ✓ IgM titer is significantly low.
8. Yellow fever virus, Kyasanur Forest disease virus

V4

1. SARS-CoV-2; ✓ Nucleocapsid (+)ve sense ssRNA with nucleocapsid protein
   ✓ envelope – spike protein
   – membrane glycoprotein
   envelope protein
   ✓ RdRP, helicase etc.
2. Droplet transmission
3. Throat & nasal swabs are dipped in viral transport media after collection. It should be properly labelled, packed in 3 layers & transported to lab maintaining an adequate
4. cold chain.
5. RT-PCR, ~~Rapid~~ Rapid Antigen Test
   Sanitizer, mask, social distance
6. N95
7. Covaxin & Covishield

V5.

1. Influenza virus has lipid envelope (HA & NA)
2. ✓ Helical nucleocapsid with
   ✓ Segmented RNA
   ✓ Polymerase proteins (PB1, PB2 & PA)
   ✓ matrix proteins (M1 & M2)
   ✓ Non-structural proteins (NS1 & NS2)
3. Pneumonia
   myositis
4. Nasopharyngeal swab, lavage fluid

   The specimens are immediately put inside the viral transport media, kept at 4°C during transport upto 4 days, then stored at -70°C.
5. Strict handhygiene is an important measure for disease prevention as it helps in destroying enveloped viruses.