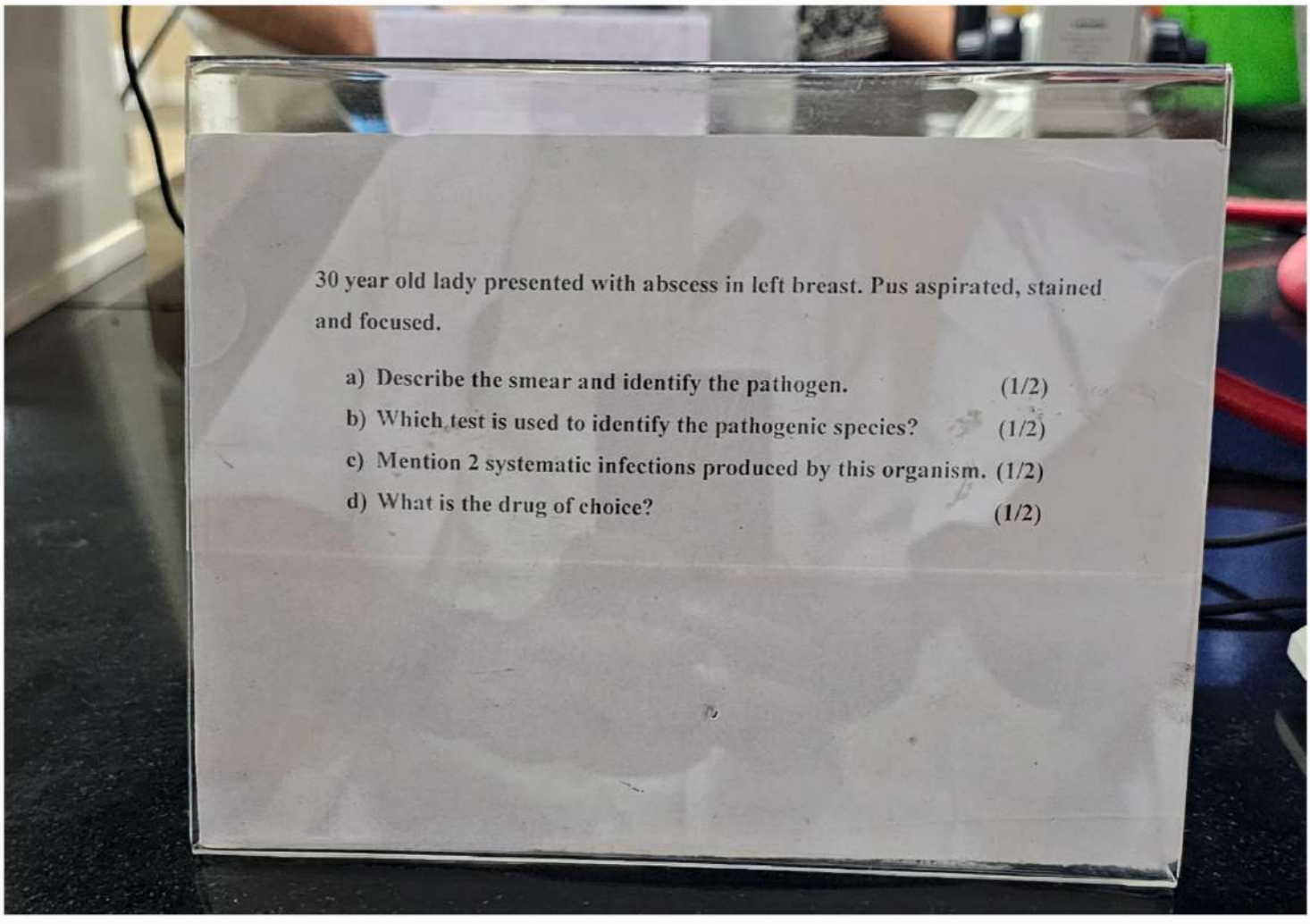
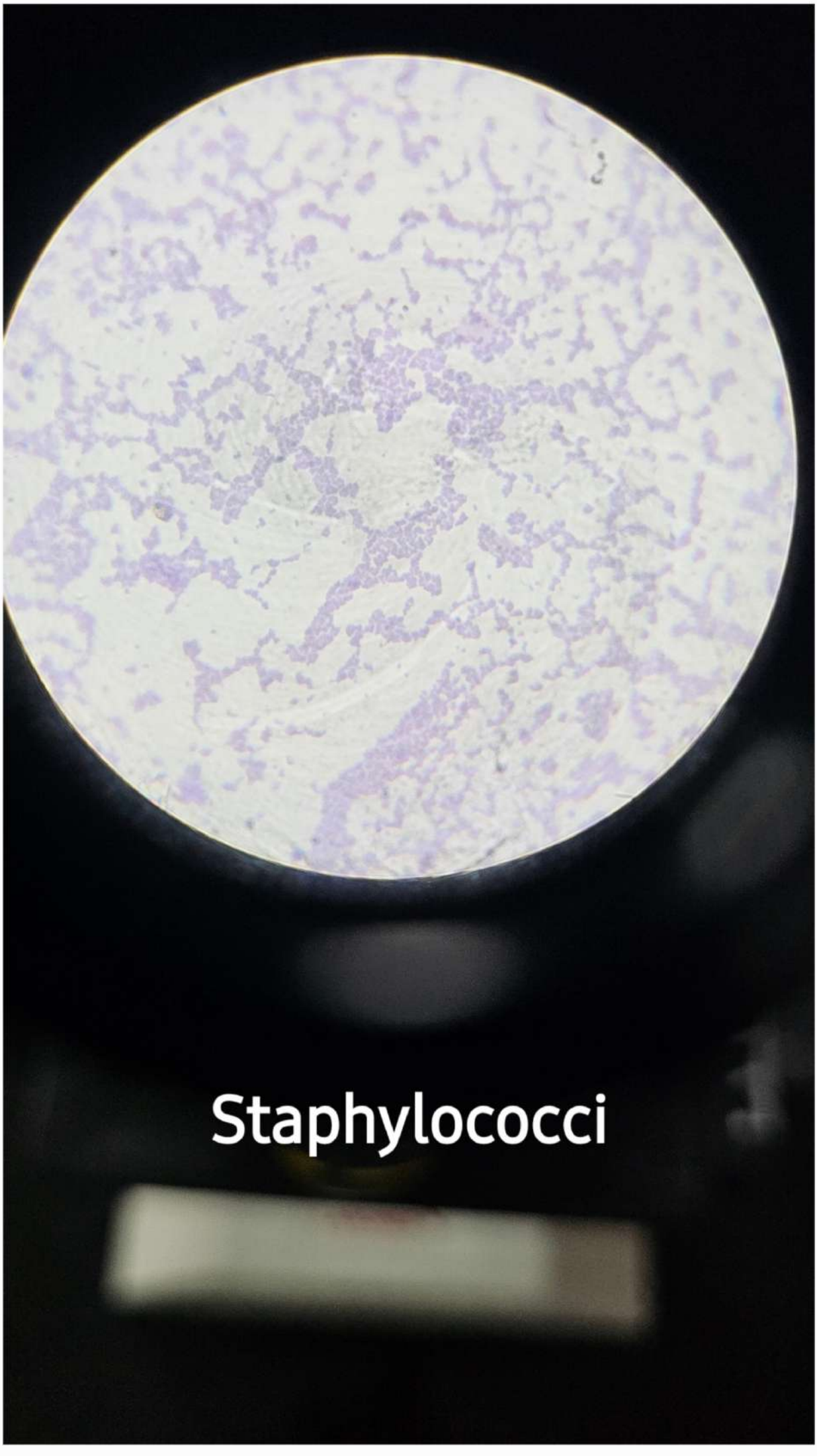
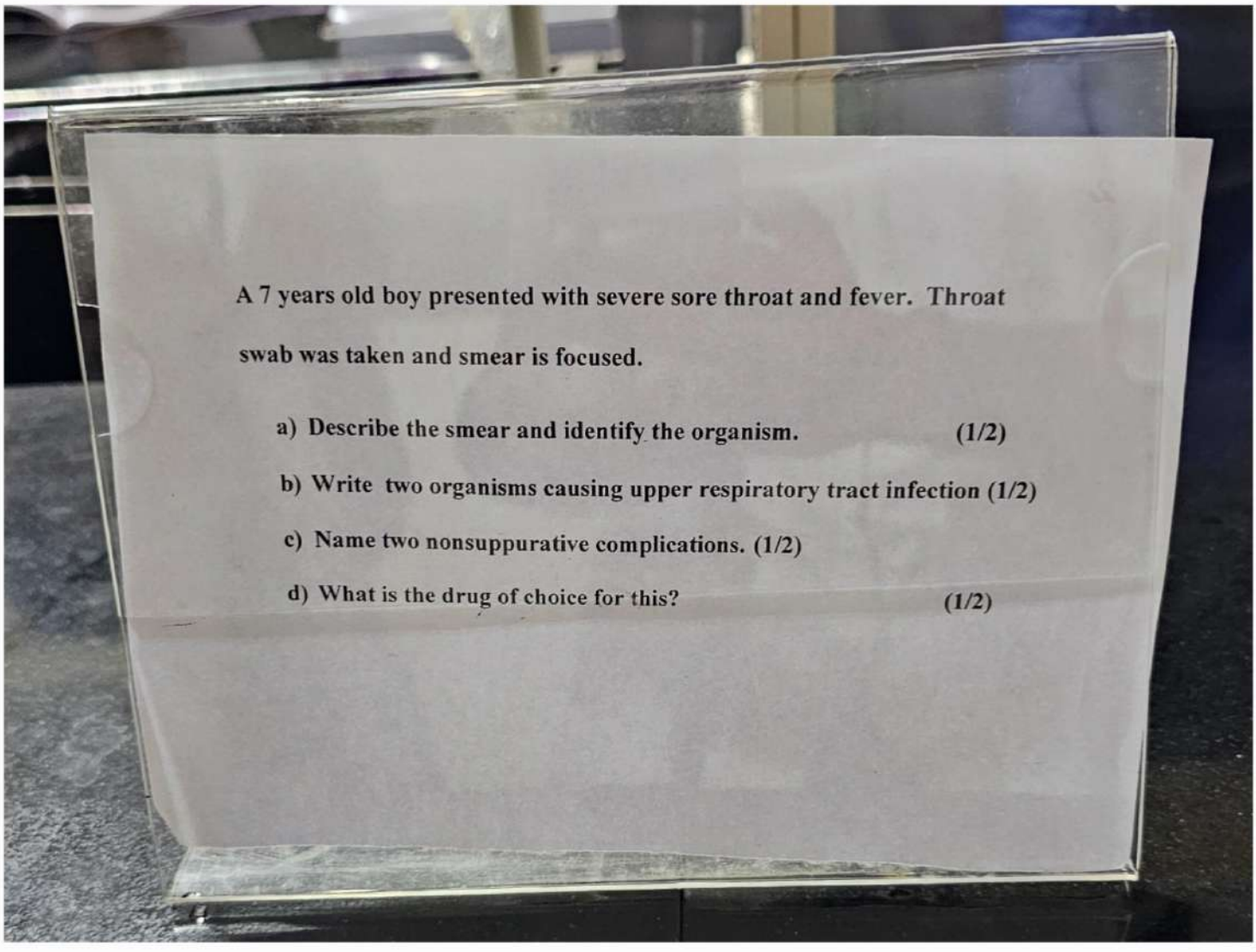


30 year old lady presented with abscess in left breast. Pus aspirated, stained and focused.

a) Describe the smear and identify the pathogen. (1/2)
b) Which test is used to identify the pathogenic species? (1/2)
c) Mention 2 systematic infections produced by this organism. (1/2)
d) What is the drug of choice? (1/2)

1) a) Gram positive cocci in clusters, Staphylococcus Aureus
b) Coagulase test
c) Ventilator associated pneumonia
Toxic shock syndrome
d) Penicillin G
MSSA – cloxacillin
MRSA – Vancomycin


Staphylococci



A 7 years old boy presented with severe sore throat and fever. Throat swab was taken and smear is focused.

a) Describe the smear and identify the organism. (1/2)

b) Write two organisms causing upper respiratory tract infection (1/2)

c) Name two nonsuppurative complications. (1/2)

d) What is the drug of choice for this? (1/2)

2)

a) Gram positive cocci in short chains, Streptococcus pyogenes

b) Streptococcus pneumonia
Hemophilus Influenzae

c) Acute Rheumatic fever
PSGN

d) Penicillin


Streptococci

A 60 year old male presented with high grade fever, mild chest pain and produce cough. Chest X-ray showed consolidation (R) lower lobe. Sputum culture yielded the organism which is focuses here.

a) Identify the smear and describe the morphology. (1/2)

b) What is the staining method used. (1/2)

c) Name one important virulence factor. (1/2)

d) What is the drug of choice? (1/2)

3)

a) Pneumococci
Lanceolate shaped gram positive diplococci surrounded by clear halo

b) Negative staining

c) Capsular Polysaccharide
Pneumolysin

d) Amoxicillin


Pneumococci

A 12 year old boy presented with trismus following Road Traffic Accident. Culture from the wound yielded the organism.

a) Identify the organism, comment on the staining. (1/2)

b) What is the toxin produced and its mechanism of action. (1/2)

c) Name one test for detecting toxigenecity. (1/2)

d) What is the prophylaxis? (1/2)

4) a) clostridium Tetani, Gram positive bacilli with terminal, round spores, bulging (Drumstick appearance)

b) Tetanospasm

MOA

Prevents the presynaptic release of GABA & Glycine

↓

Spastic muscle Contraction

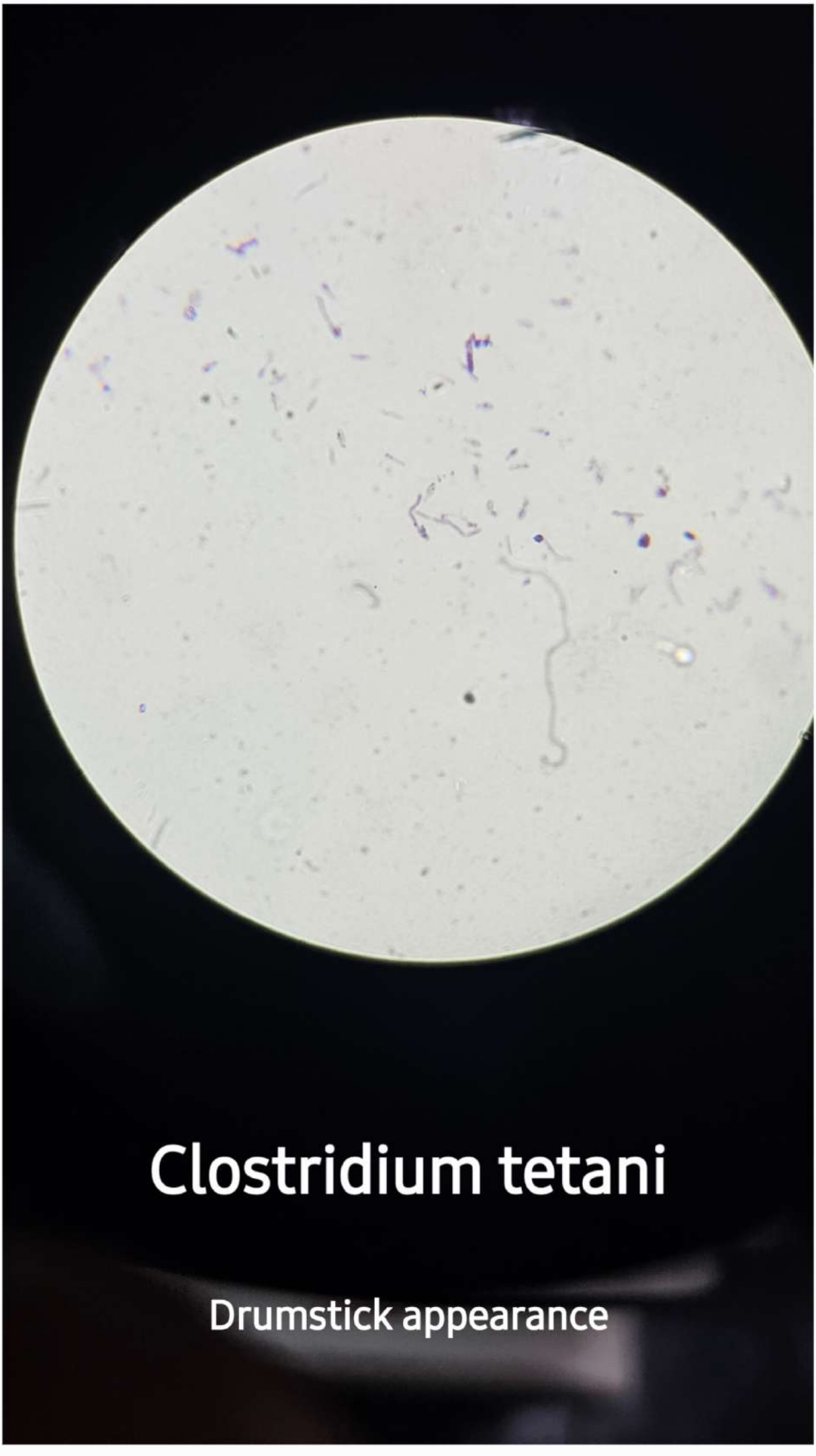
c) In vivo mouse inoculation test

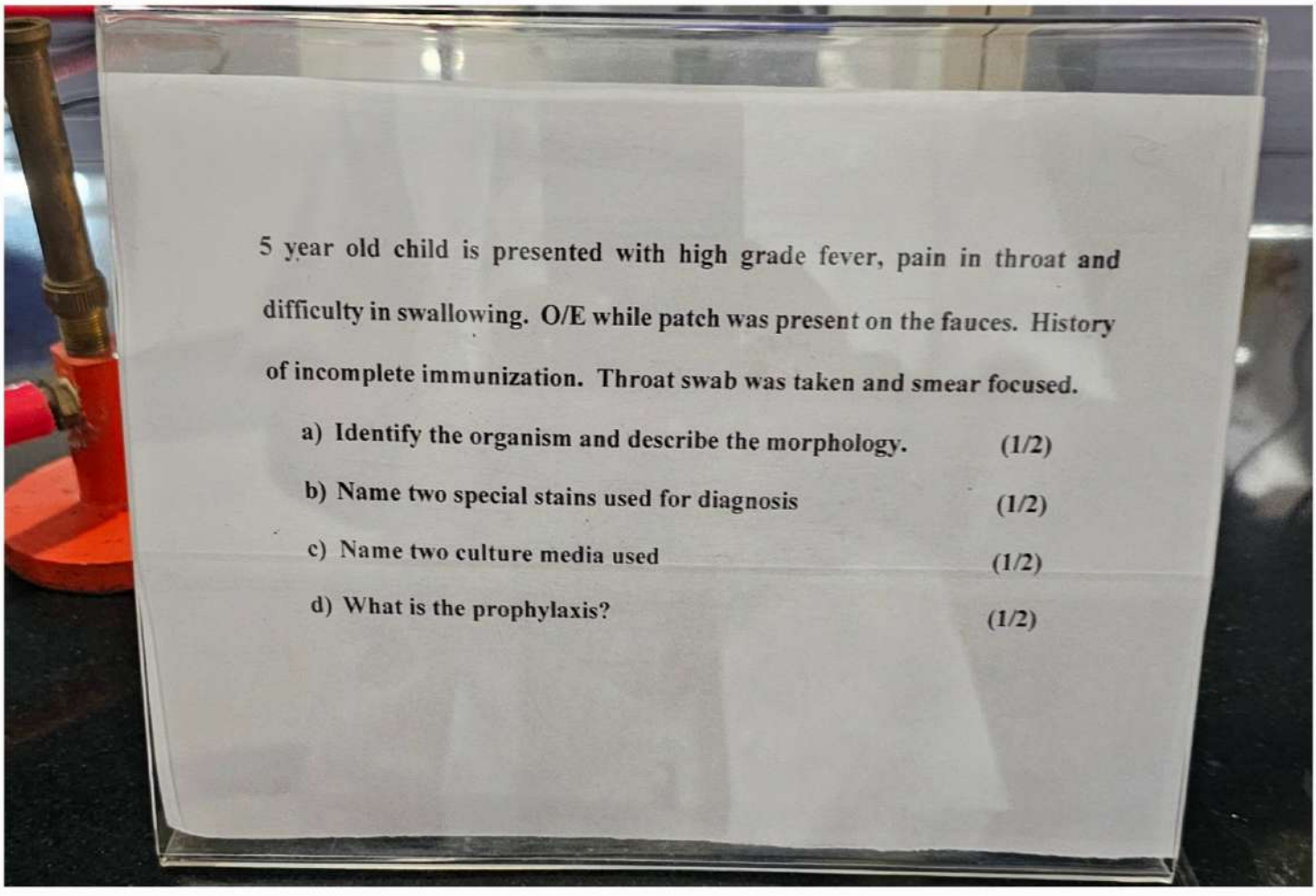
d) TT

DPT

Td

Pentavalent vaccine


Clostridium tetani
Drumstick appearance



5 year old child is presented with high grade fever, pain in throat and difficulty in swallowing. O/E while patch was present on the fauces. History of incomplete immunization. Throat swab was taken and smear focused.

a) Identify the organism and describe the morphology. (1/2)

b) Name two special stains used for diagnosis (1/2)

c) Name two culture media used (1/2)

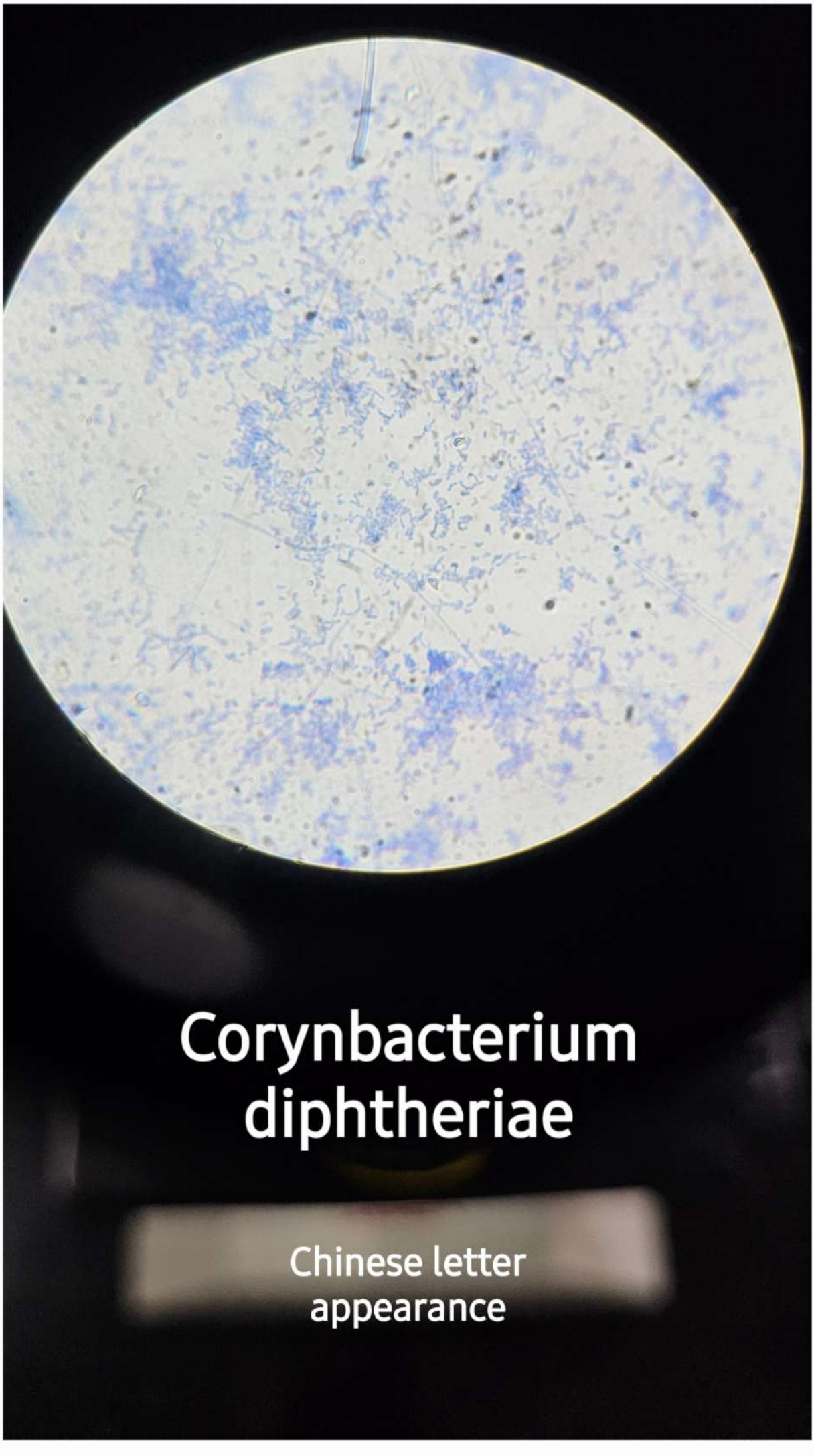
d) What is the prophylaxis? (1/2)

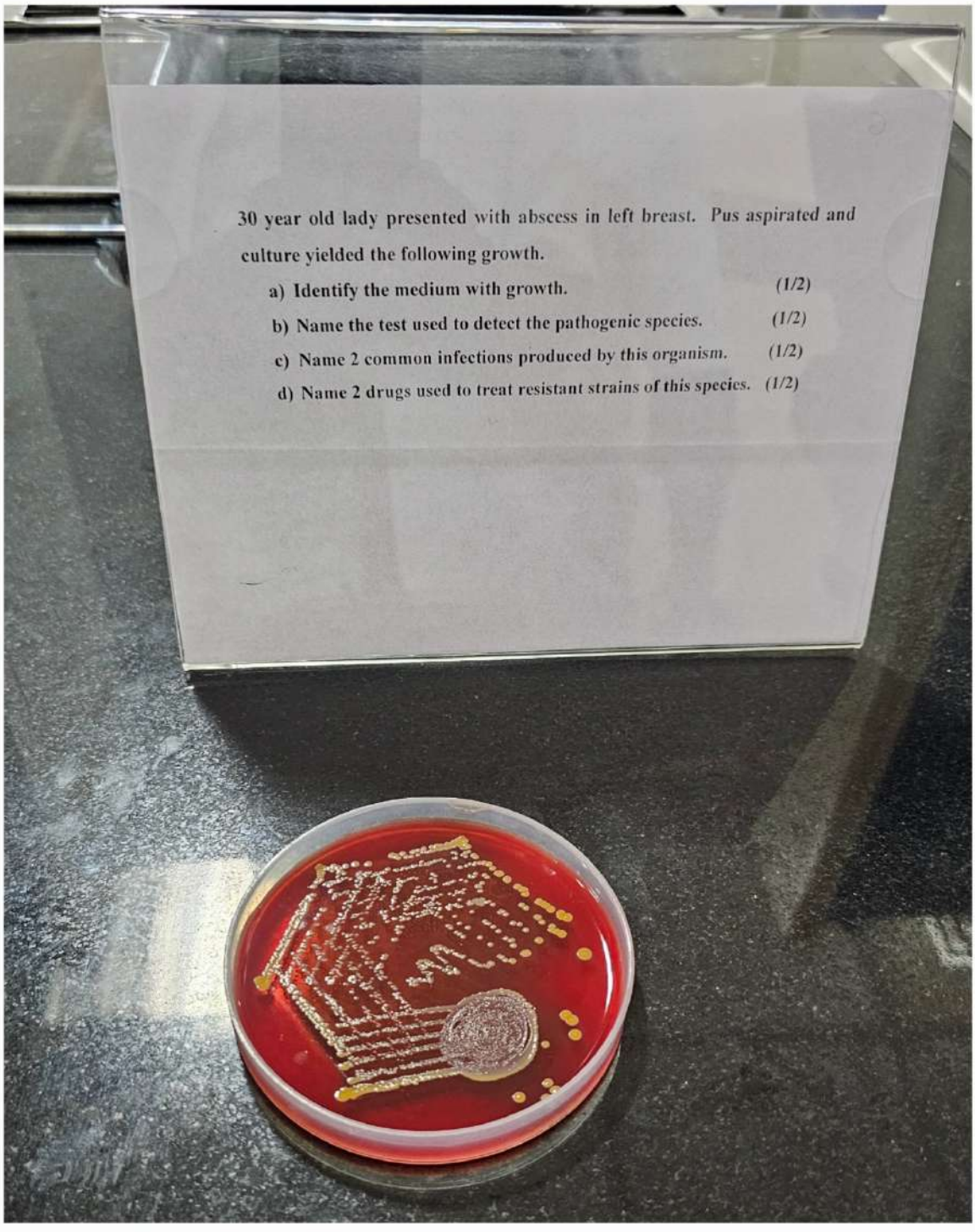
5) a) Corynebacterium diphtheria
club shaped gram positive bacilli with chinese letter arrangement

b) Albert stain
Neisser's stain

c) Loefflee's serum slope
Potassium tellurite agar

d) DPT
DaPT
Td
Pentavalent vaccine


Corynbacterium diphtheriae
Chinese letter appearance

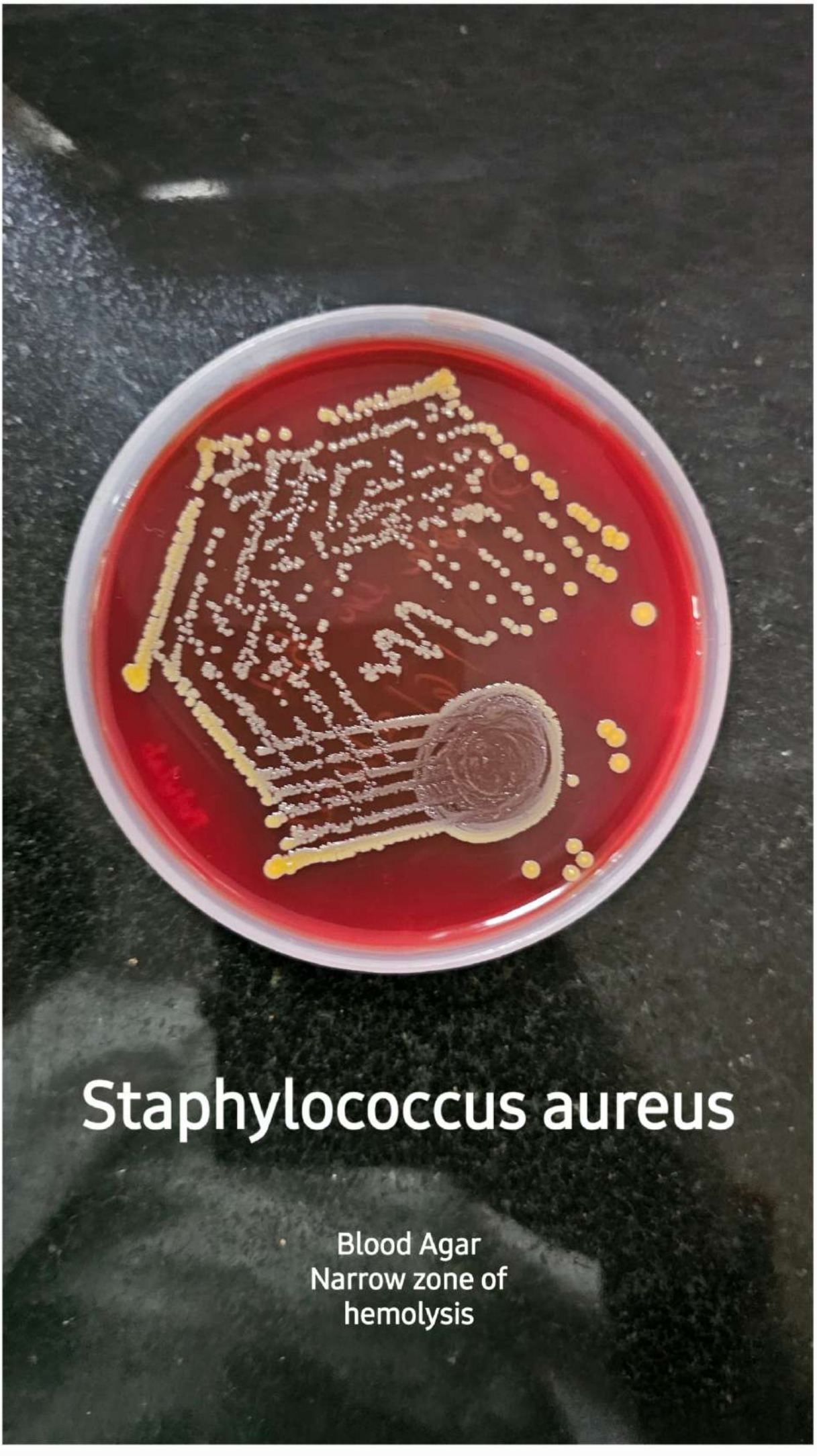


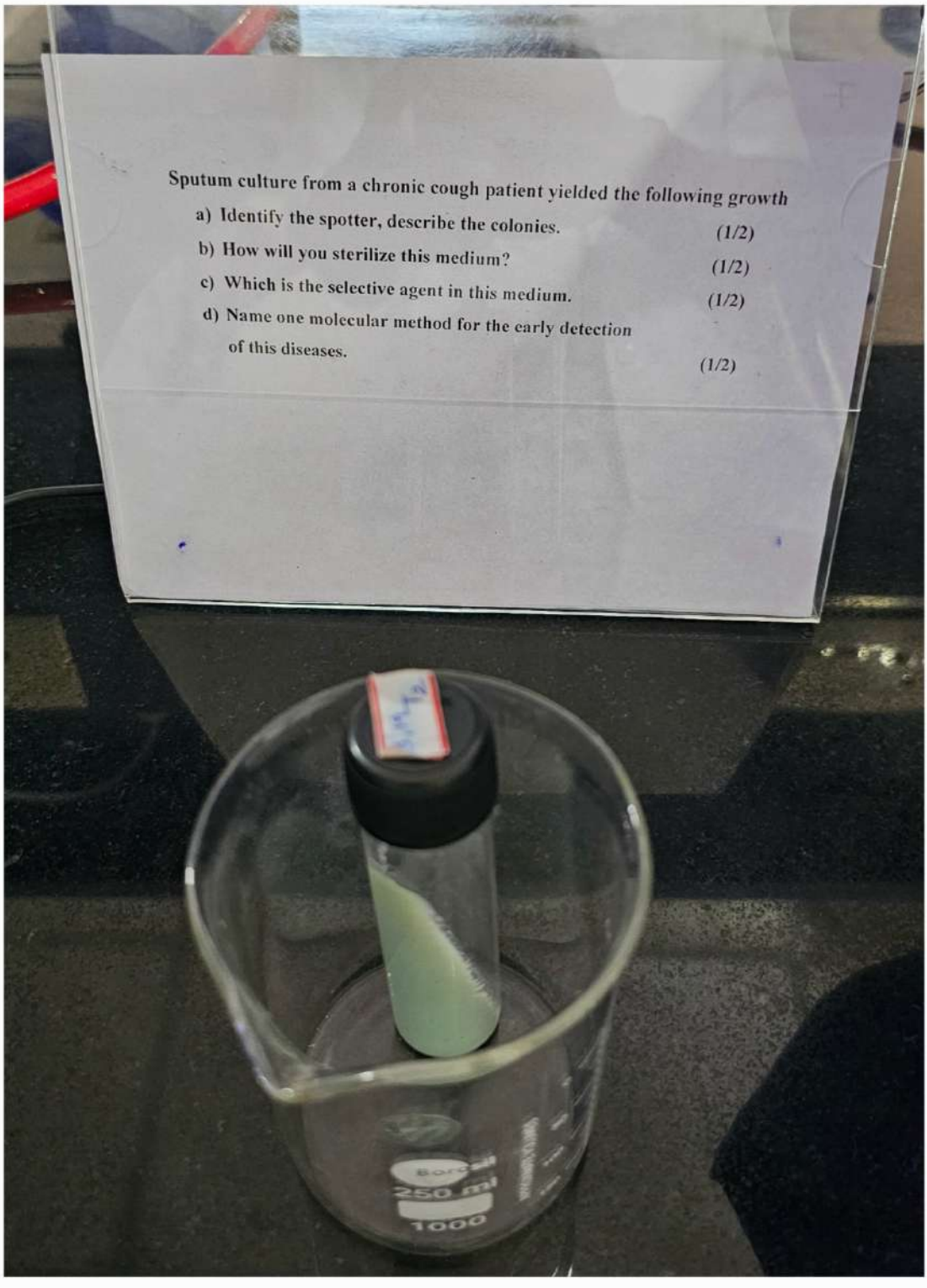
a) Blood Agar, Narrow zone of β-Hemolysis

b) Coagulase test

c) Folliculitis
Impetigo

d) MSSA — Cloxacillin
MRSA — Vancomycin


Staphylococcus aureus
Blood Agar
Narrow zone of
hemolysis

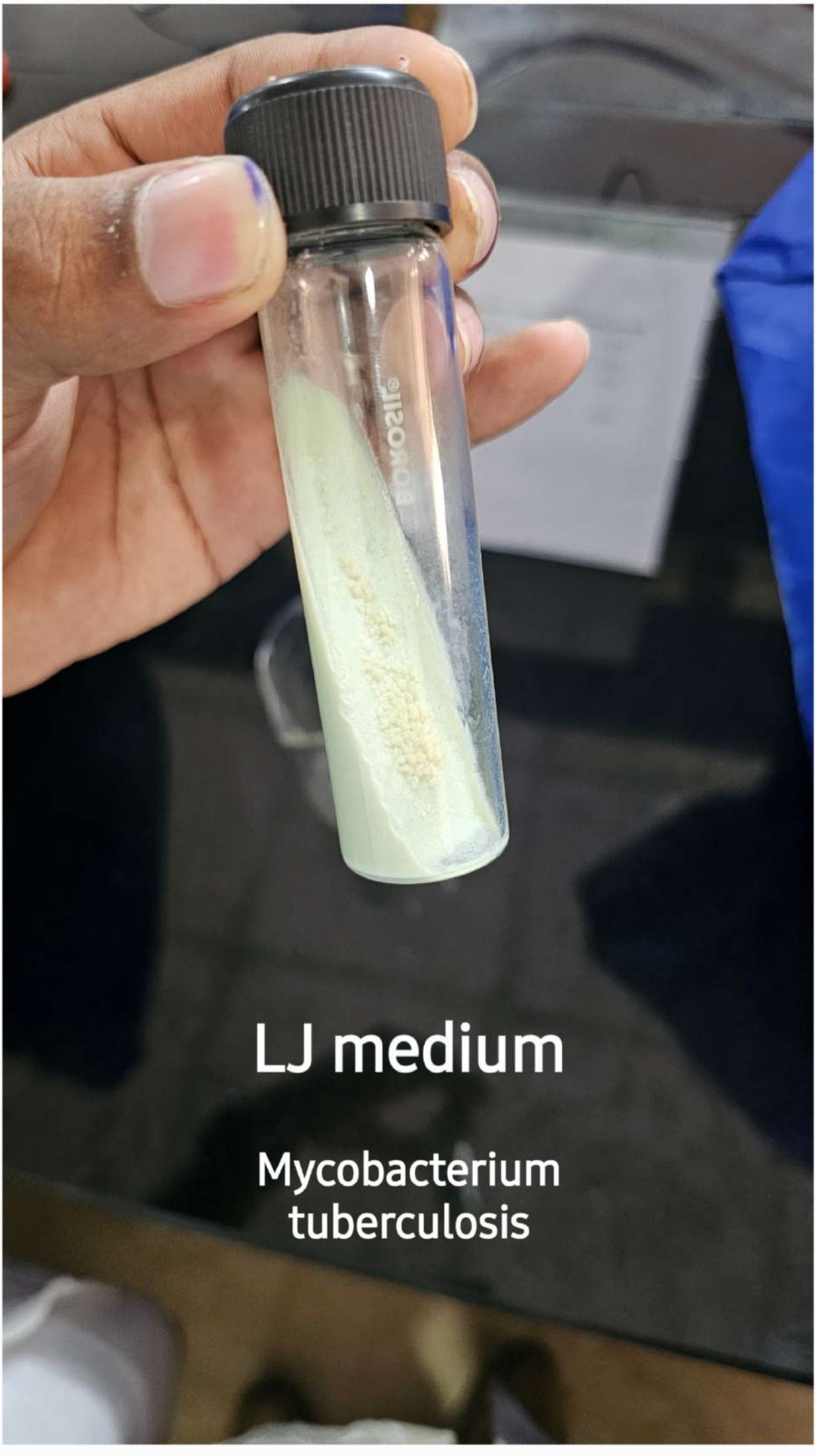


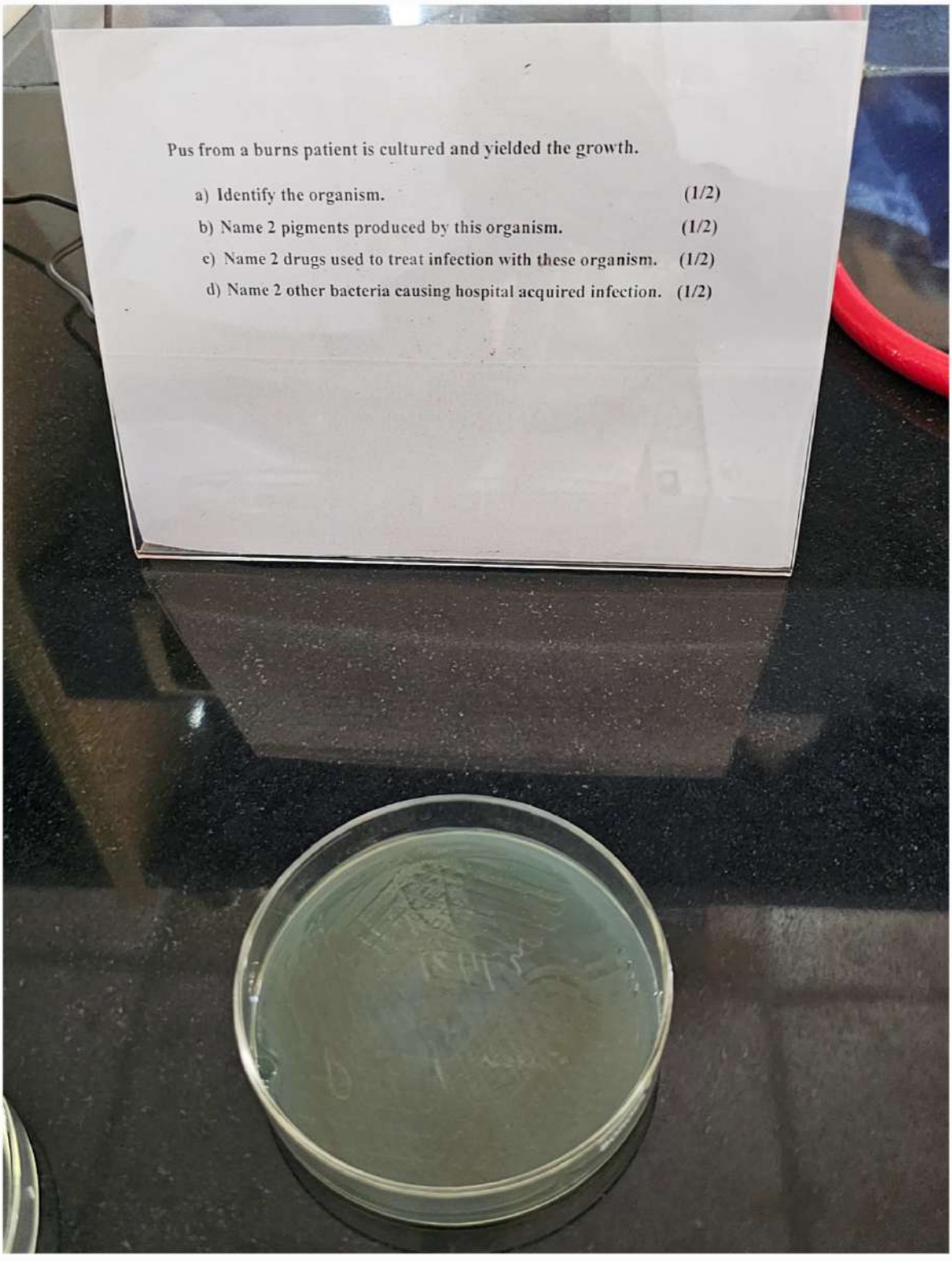
7,a) Lowenstein Jensen Medium, Rough, tough and buff coloured colonies

b) Inspissation

c) Malachite green

d) CBNAAT


LJ medium
Mycobacterium
tuberculosis



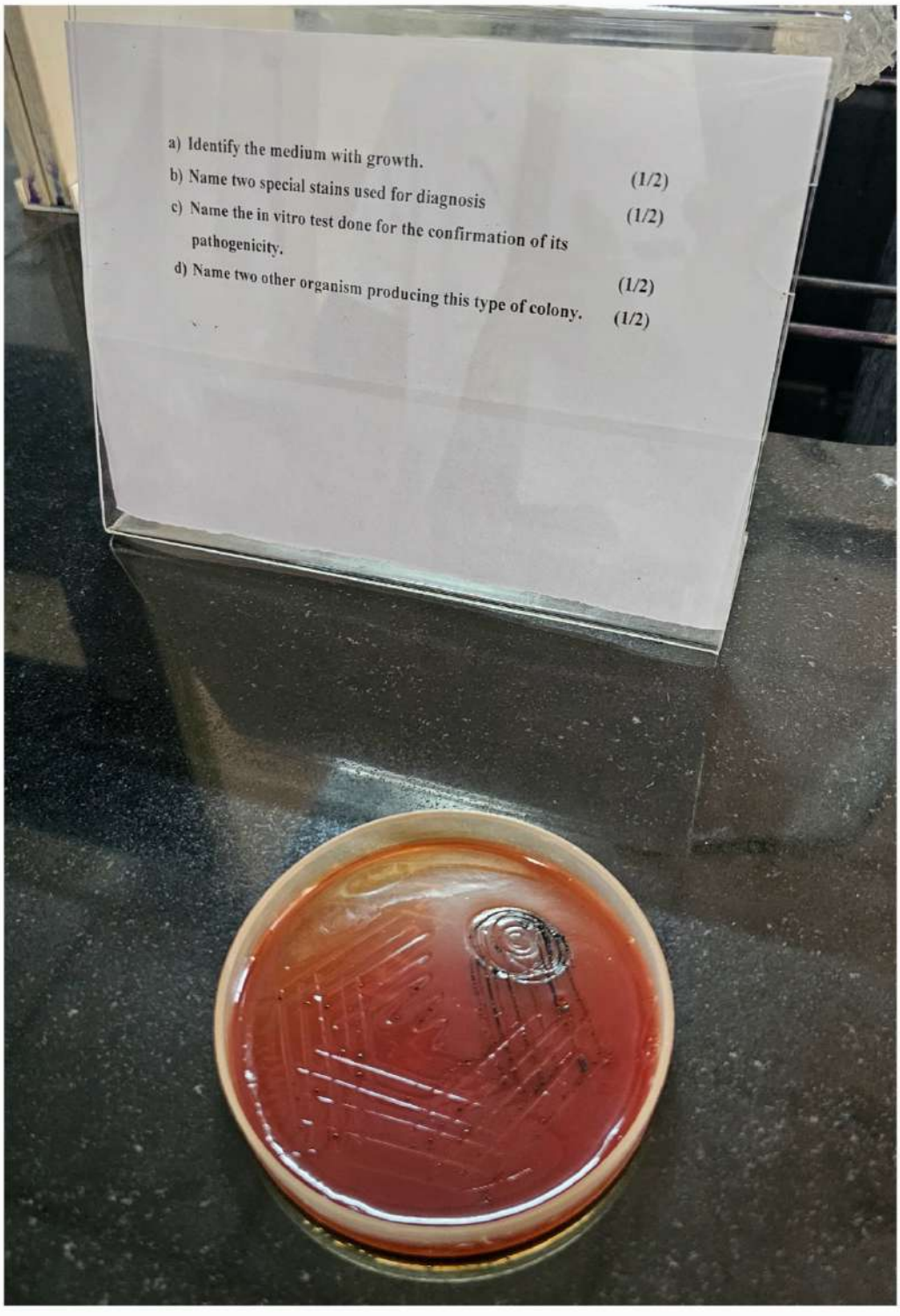
8) a) Pseudomonas

b) Pyocyanin
Pyoverdin

c) Ceftazidime
Piperacillin

d) Enterobacter
S. Aureus


Nutrient Agar
Pseudomonas

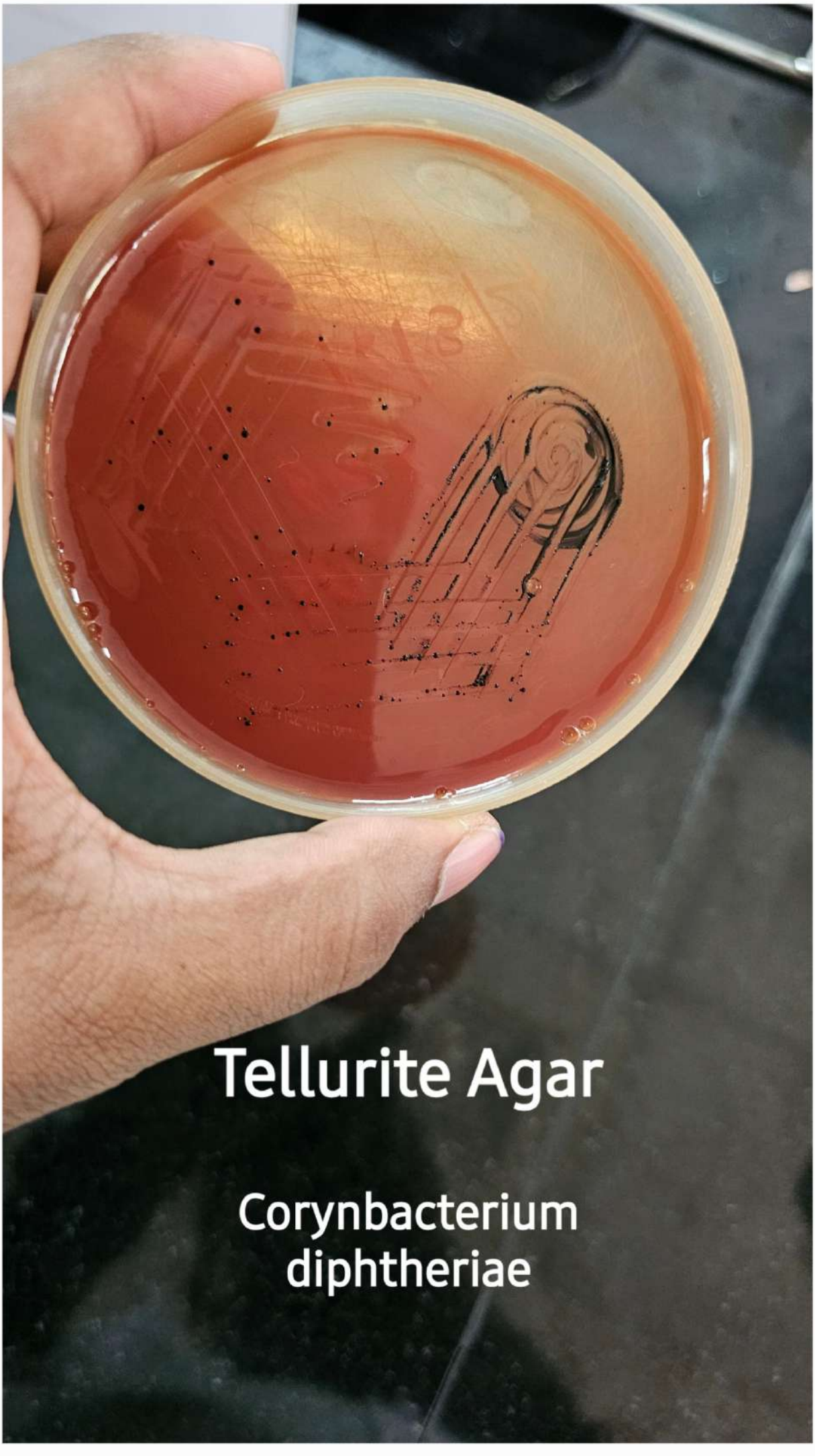


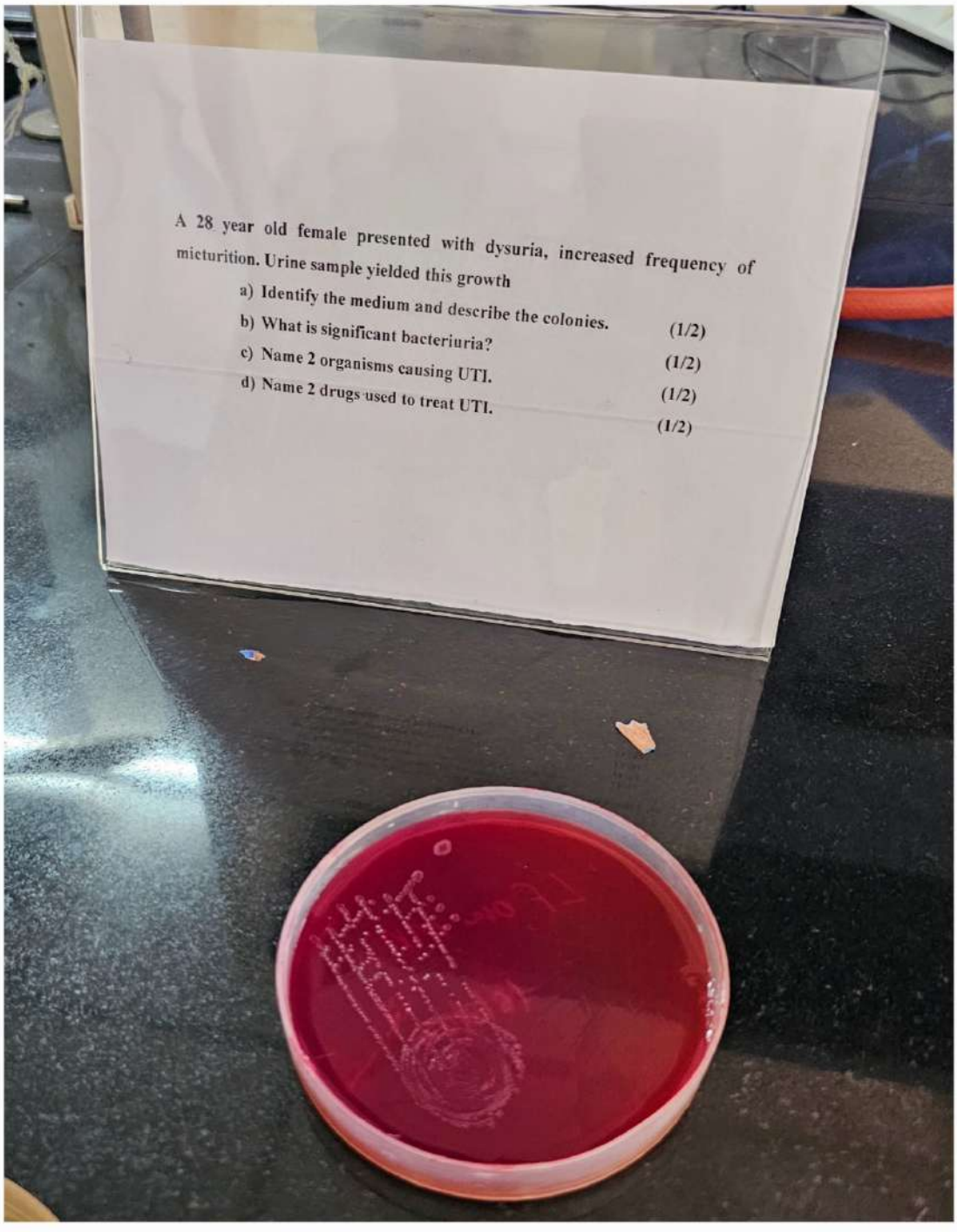
9) a) Potassium tellurite agar, Corynebacterium Diphtheria
(Black coloured colonies)

b) Albert's stain
Neisser's stain

c) Elek's Gel Precipitation test

d) C. ulcerans
C. Pseudotuberculosis


Tellurite Agar
Corynbacterium
diphtheriae

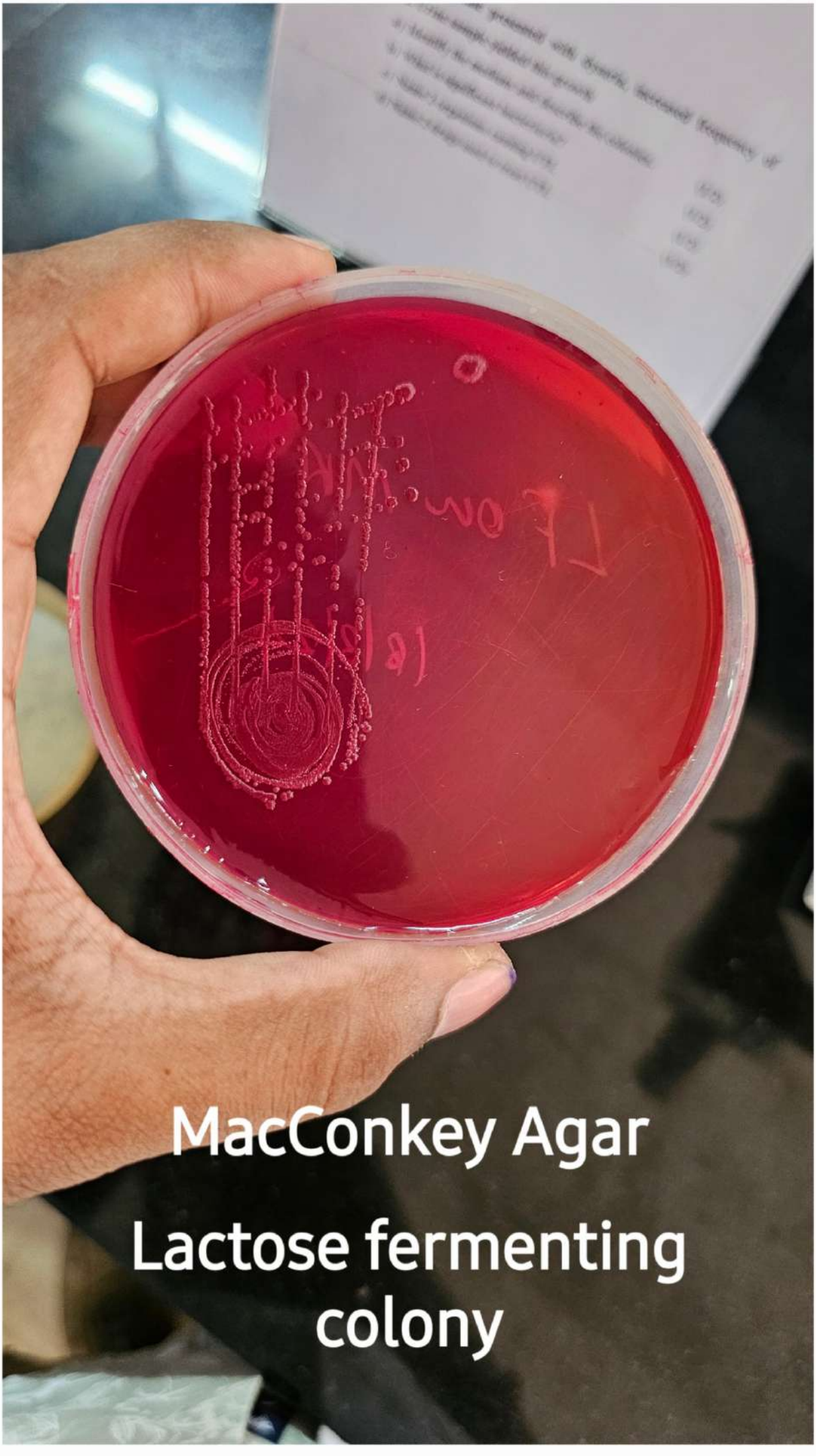


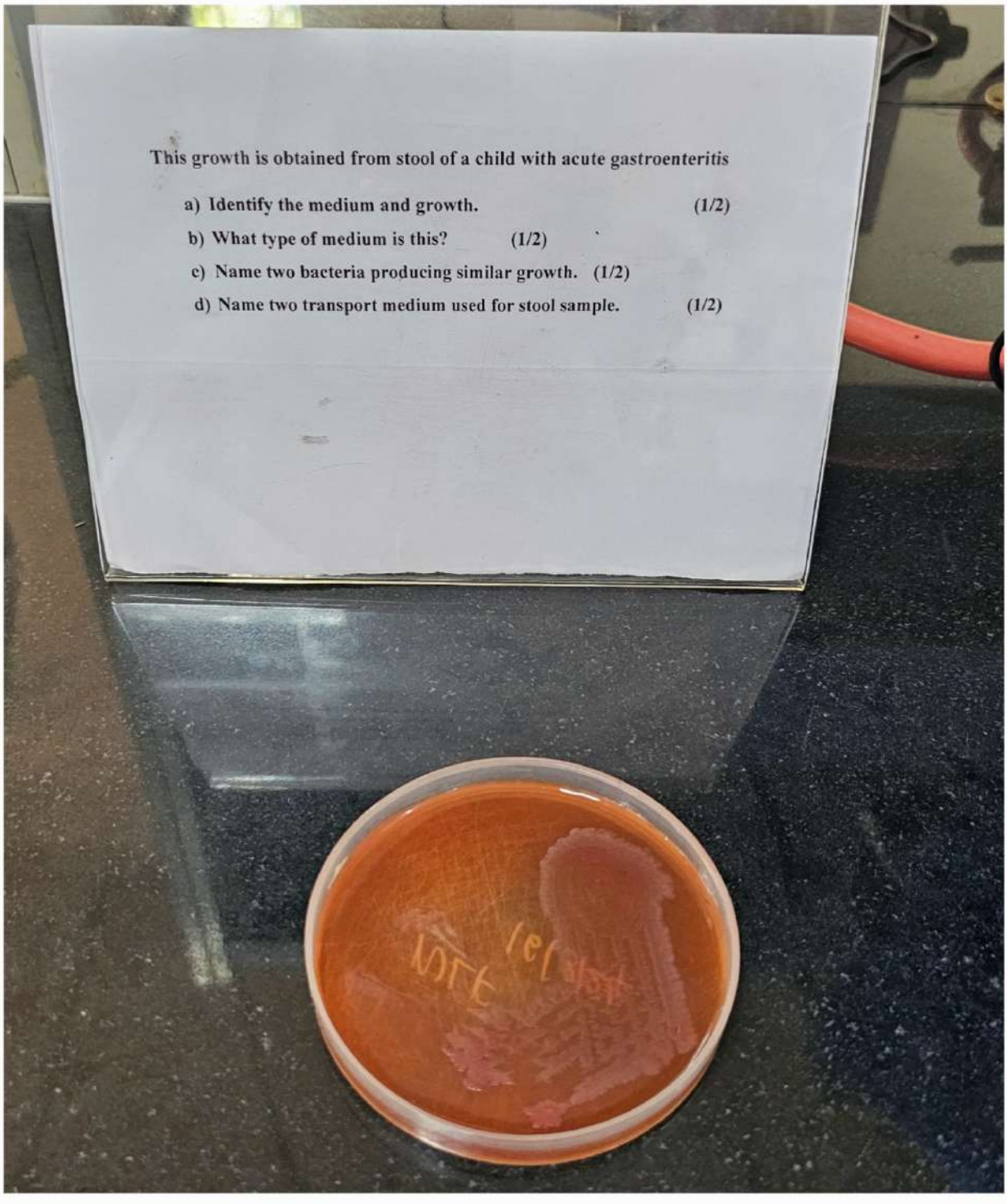
10) a) Mac Conkey Agar, Lactose fermenting, flat, pink colonies

b) Count of $\geq 10^5$ Colony forming units

c) Ecoli
Proteus
klebsiella

d) Piperacillin - tazobactam
Meropenem


MacConkey Agar
Lactose fermenting
colony

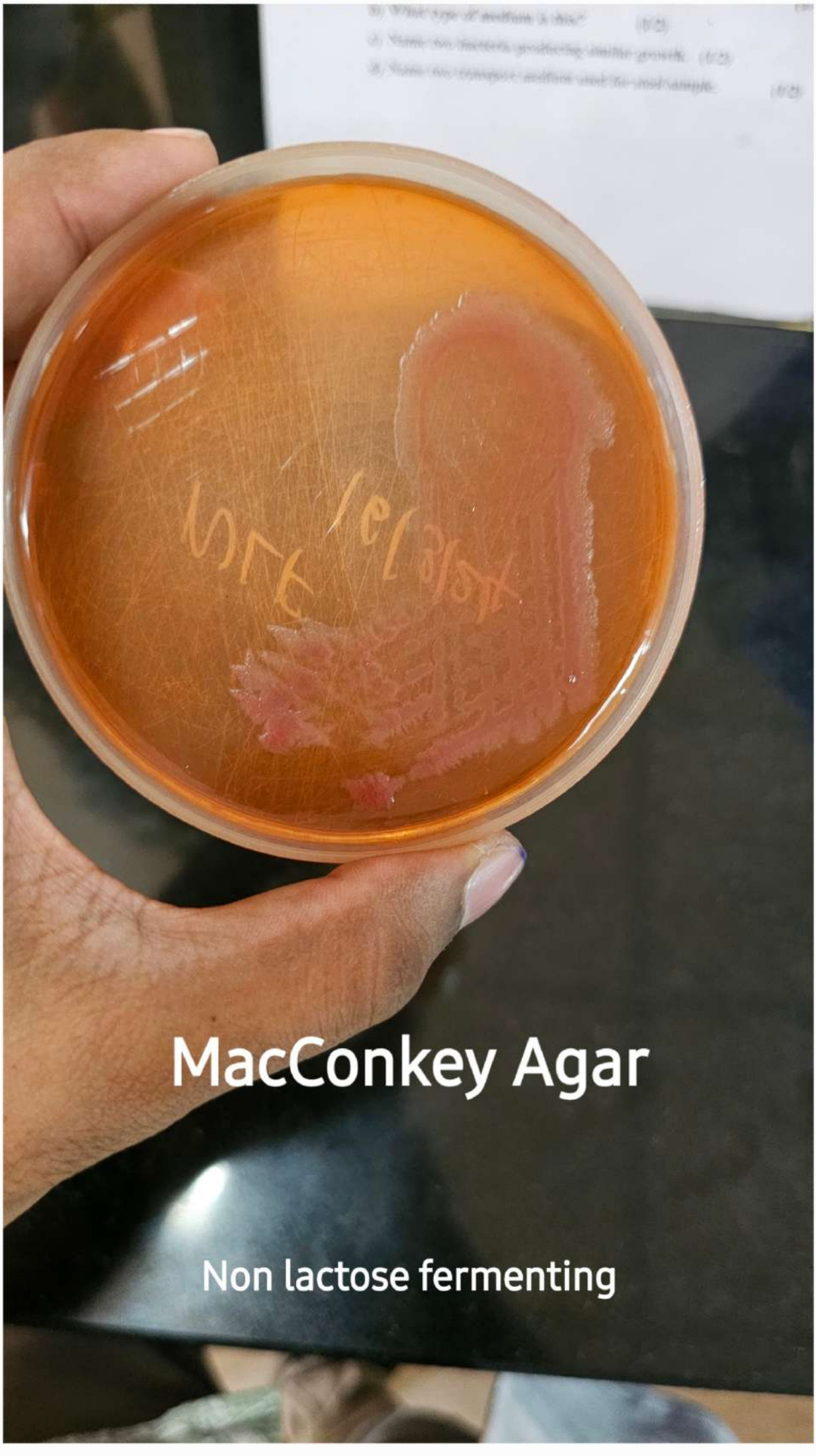


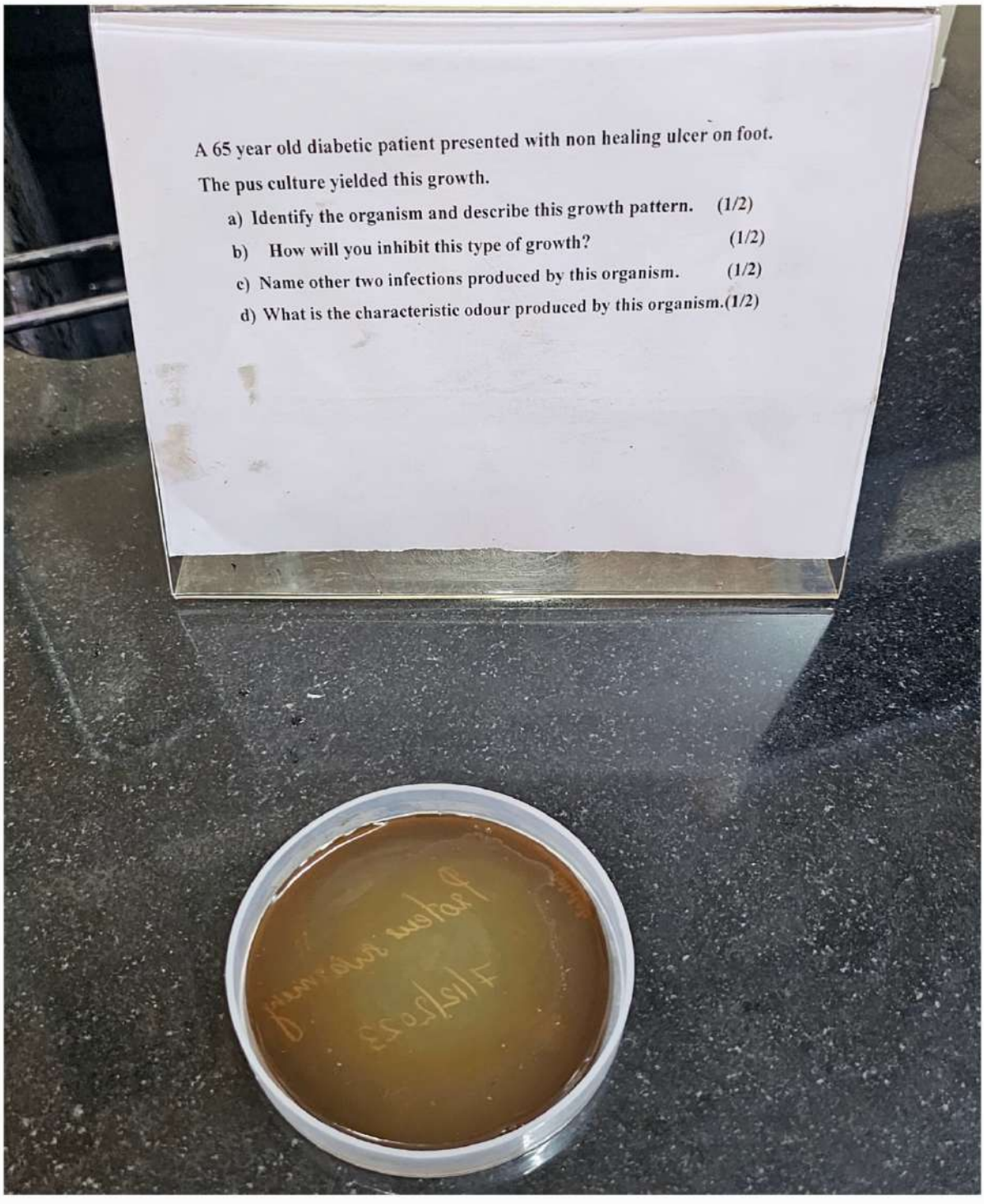
11) a) Mac Conkey Agar, Non-lactose fermenting Colonies

b) Differential Medium

c) Salmonella
V. cholera

d) VR Medium, Cary-Blair Medium


MacConkey Agar
Non lactose fermenting

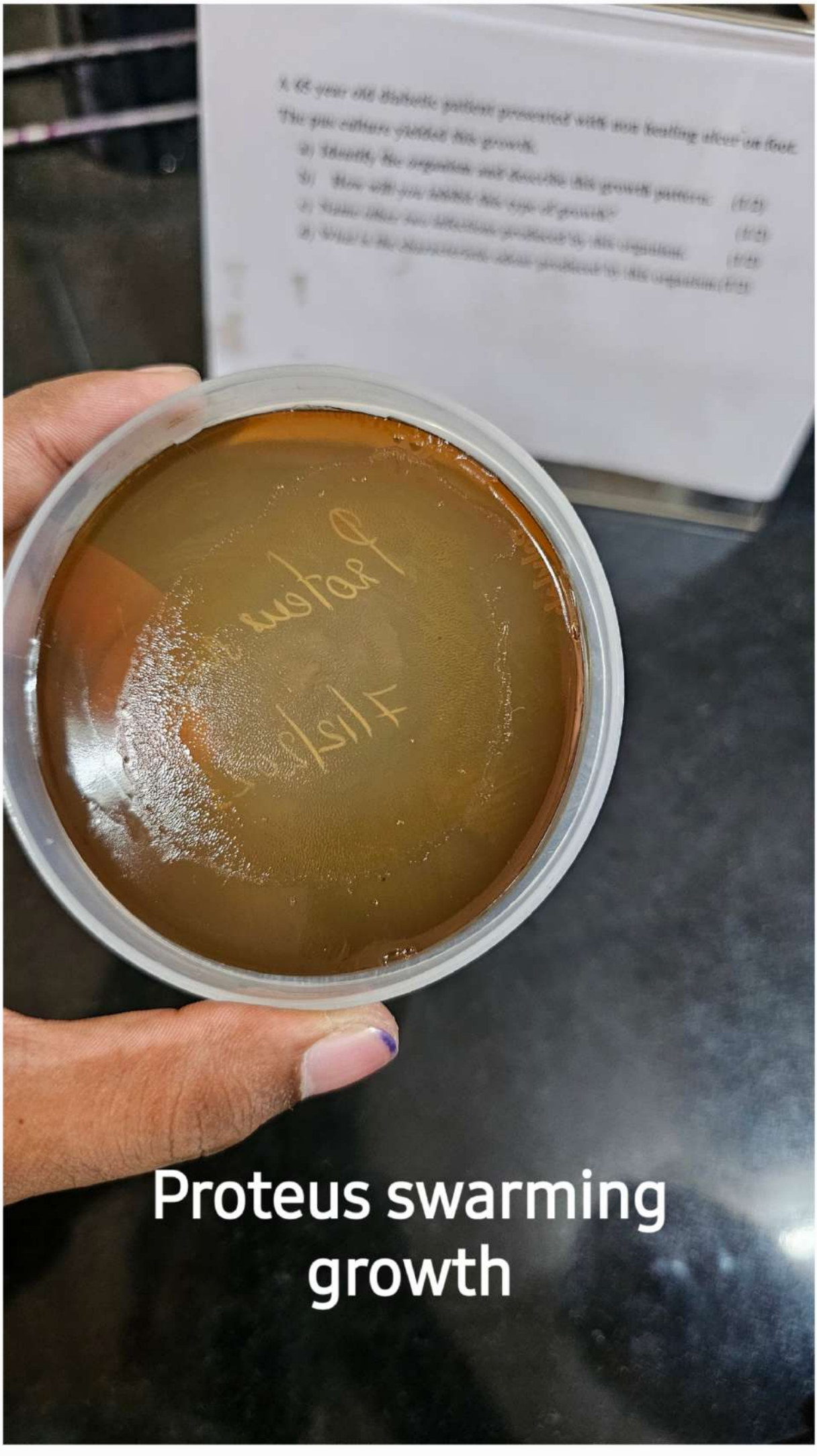


12) a) Proteus, swarming

b) MacConkey Agar containing bile salt

c) UTI
Septicemia

d) Odour - putrid fishy / Seminal odour


Proteus swarming
growth

13, a) Anto-microbial Susceptibility Test

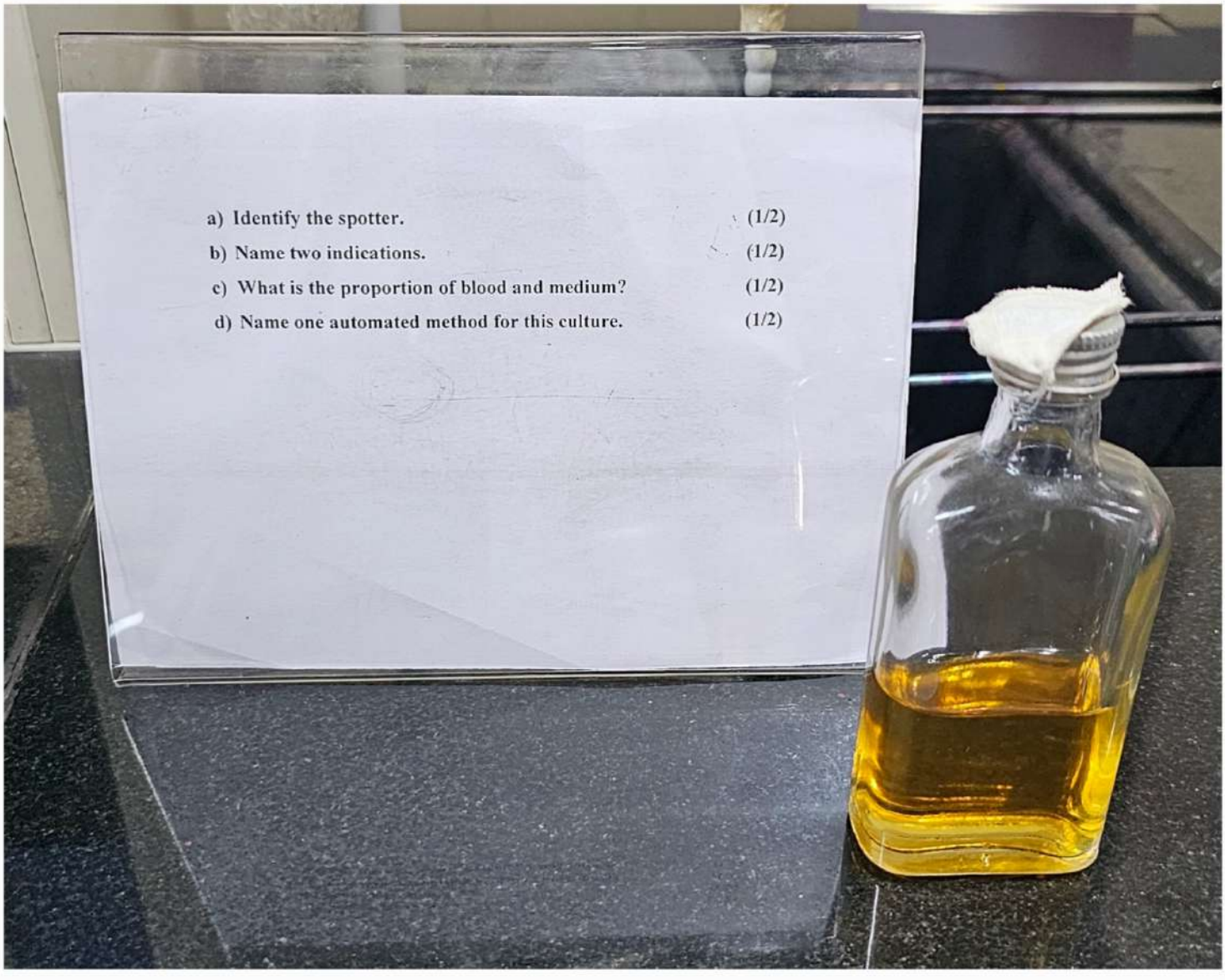
b) Muller - Hinton Agar

c) Lawn culture

d) Epsilometer


LZ
30
COT
25
VA
30
RIF
5
Mueller Hinton Agar
Stoke's method

Mueller Hinton Agar

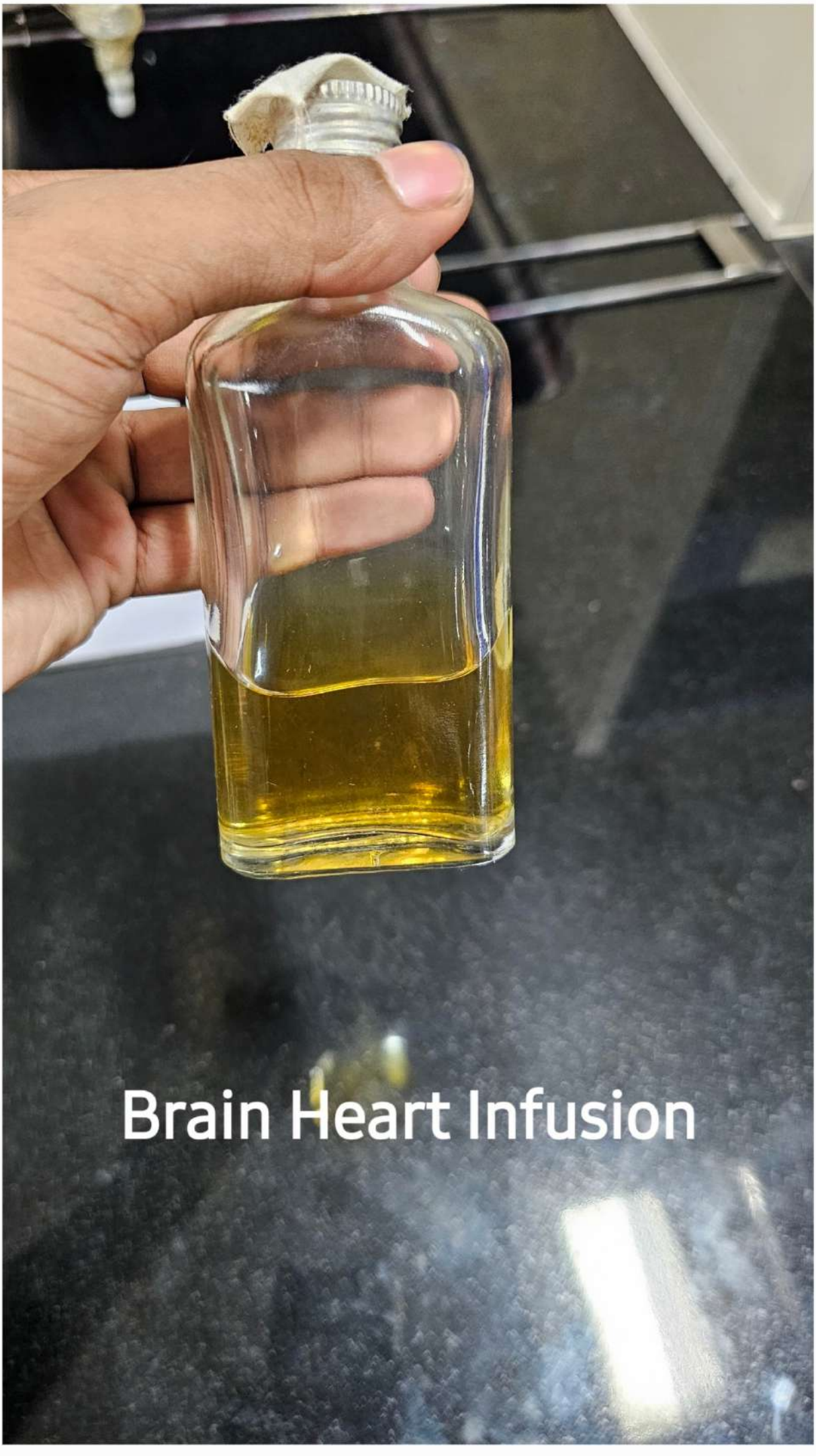


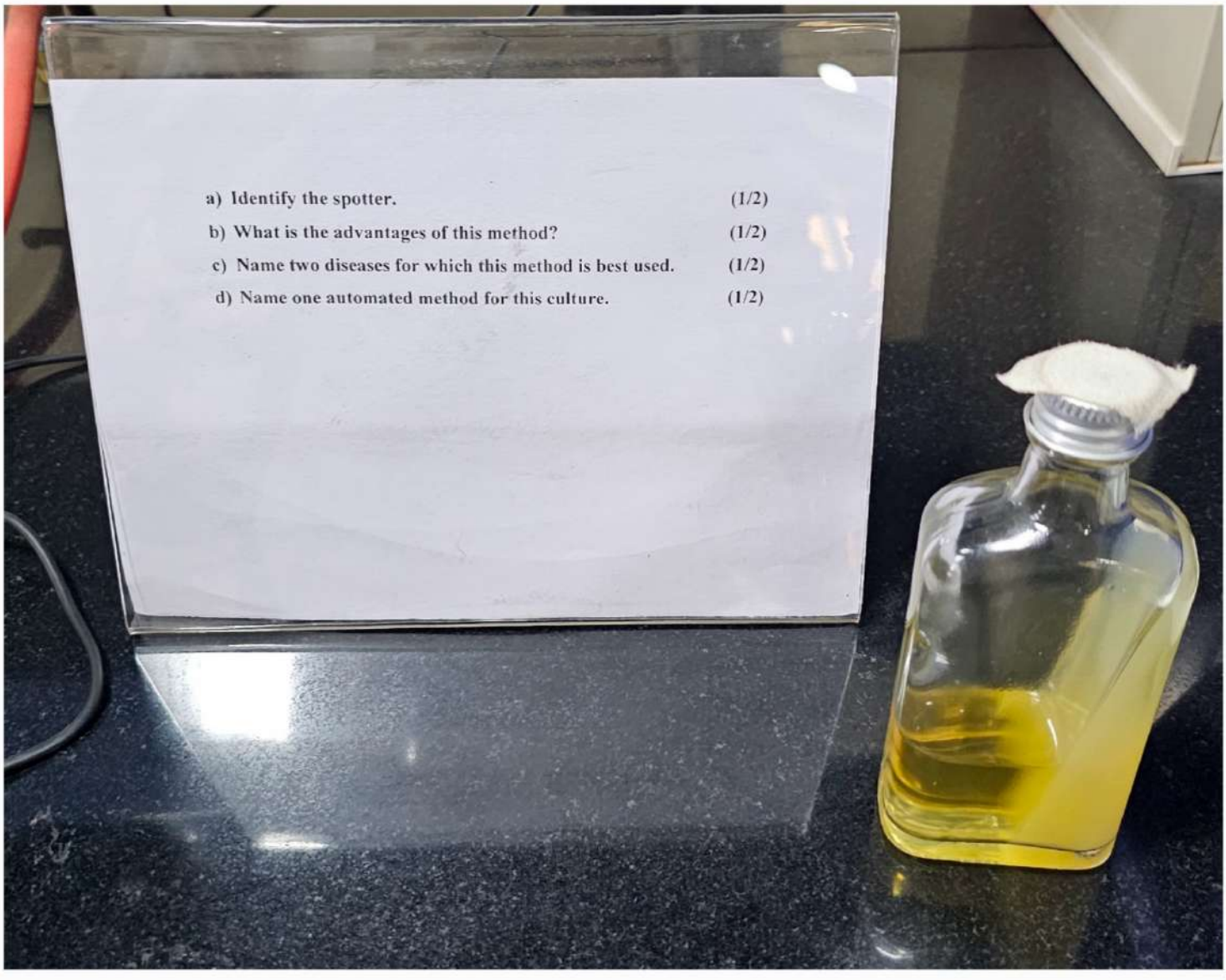
14) a) BHI broth

b) → Isolation of organisms from blood
→ Maintenance, cultivation

c) 1:10

d) BACTEC or BacT/ALERT


Brain Heart Infusion

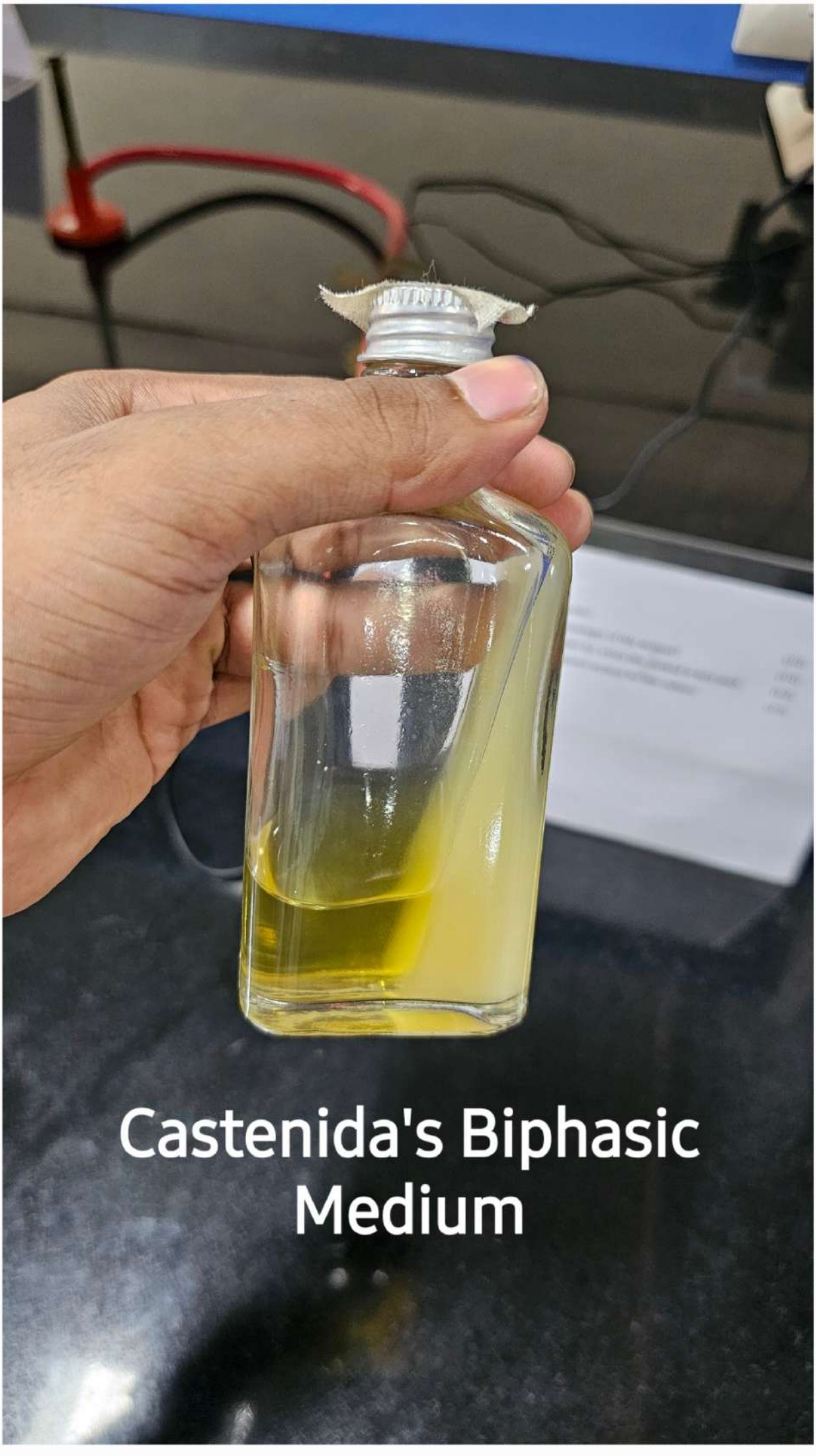


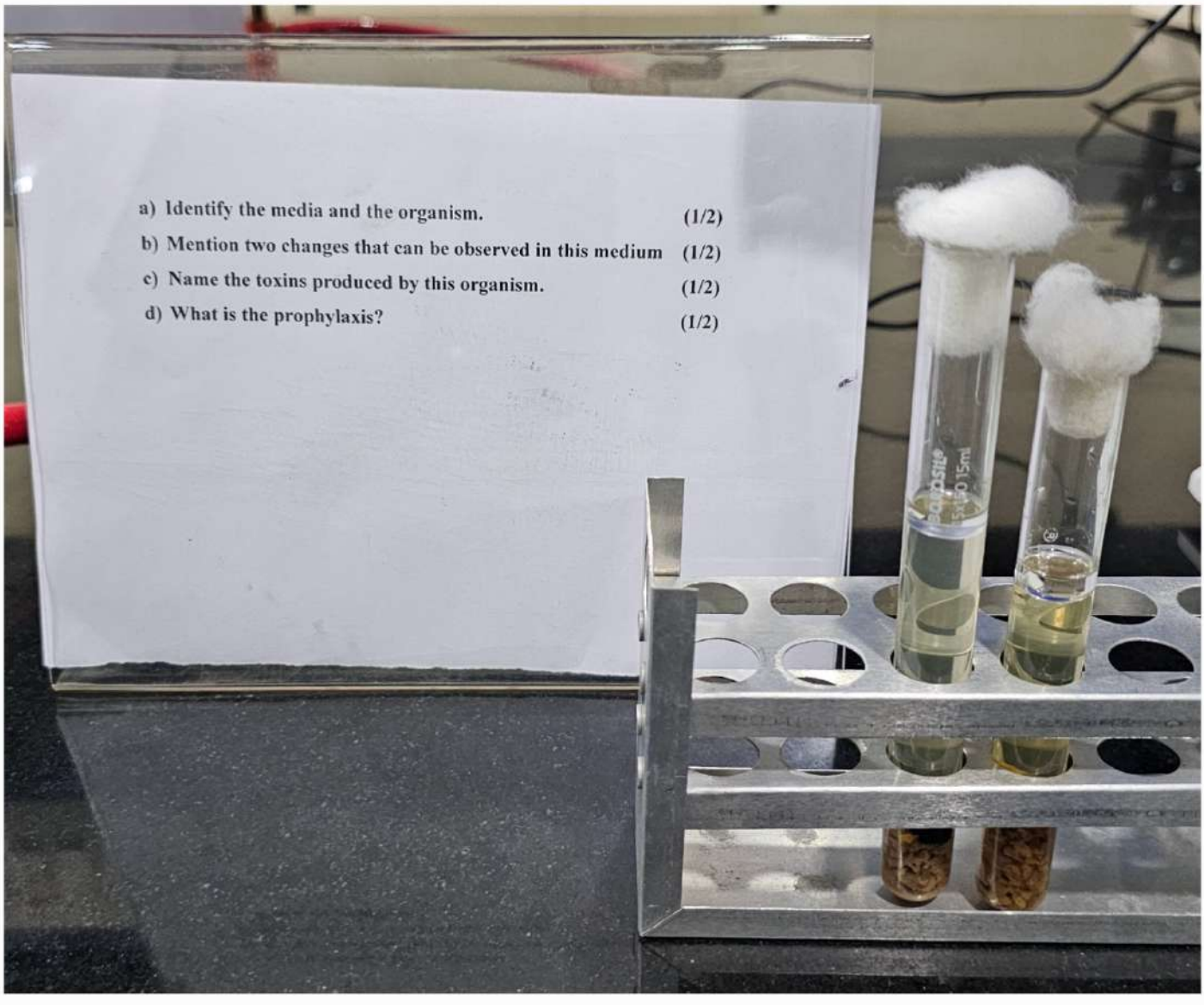
5) a) Castaneda's Biphasic Medium

b) → Prevent risk of external contamination

c) ~~Salm~~ Enteric fever, Brucellosis

d) BACT/ALERT or BACTEC


Castenida's Biphasic
Medium



16) a) Robertson Cooked Meat Broth,
Clostridium Tetani

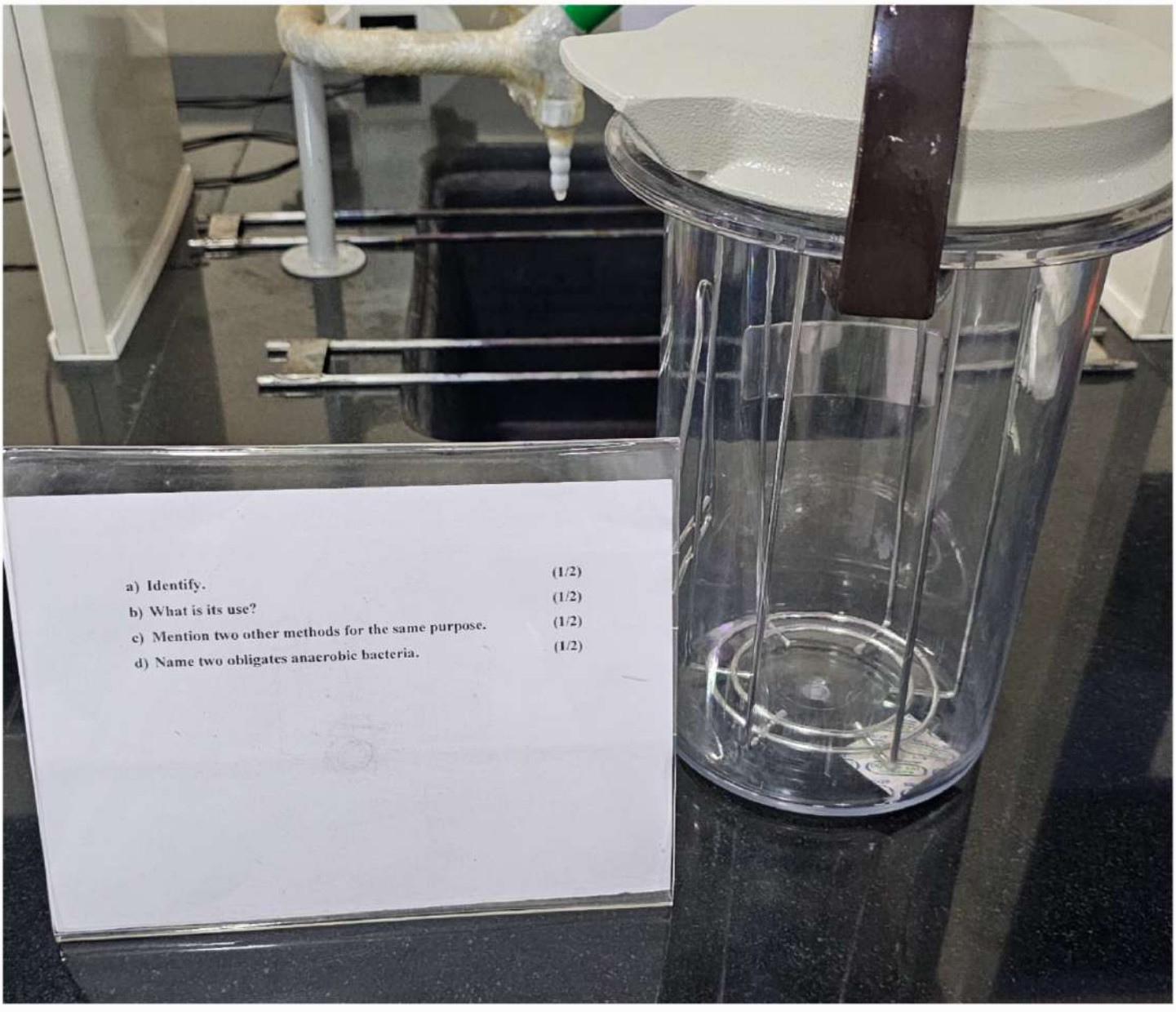
b) Proteolytic - black coloured colonies
Saccharolytic - Pink coloured colonies

c) Tetanolysin, Tetanospasmin

d) TT

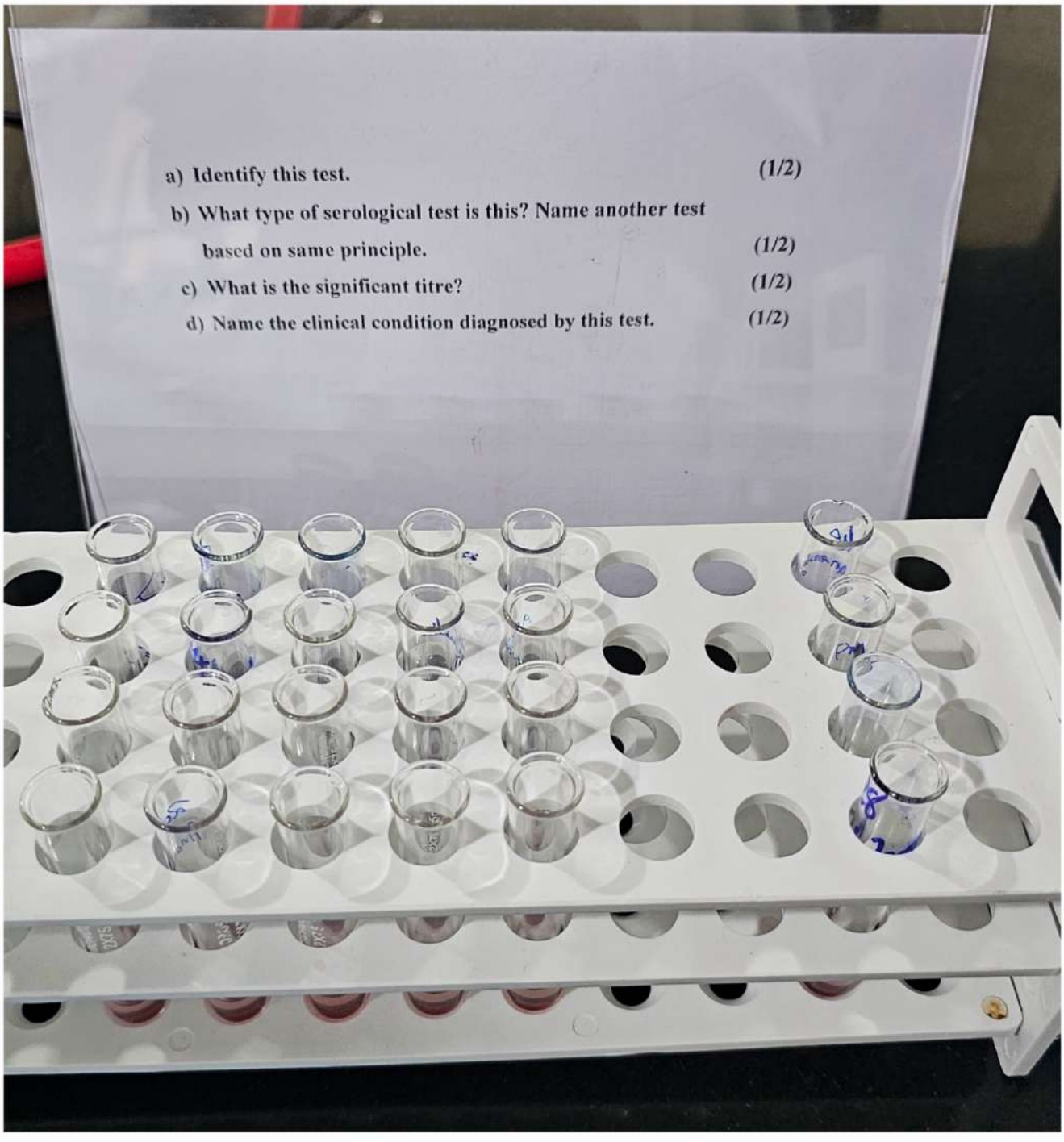
DPT
Td
Pentavalent vaccine


Robertson's Cooked
Meat (RCM) Broth



a) Gas Pak Anaerobic System
b) Anaerobic Culture Method
c) Anoxomat
Mc Intosh & Fildes jar
d) C-tetani
C. Perfringens


Gas Pak Anaerobic System



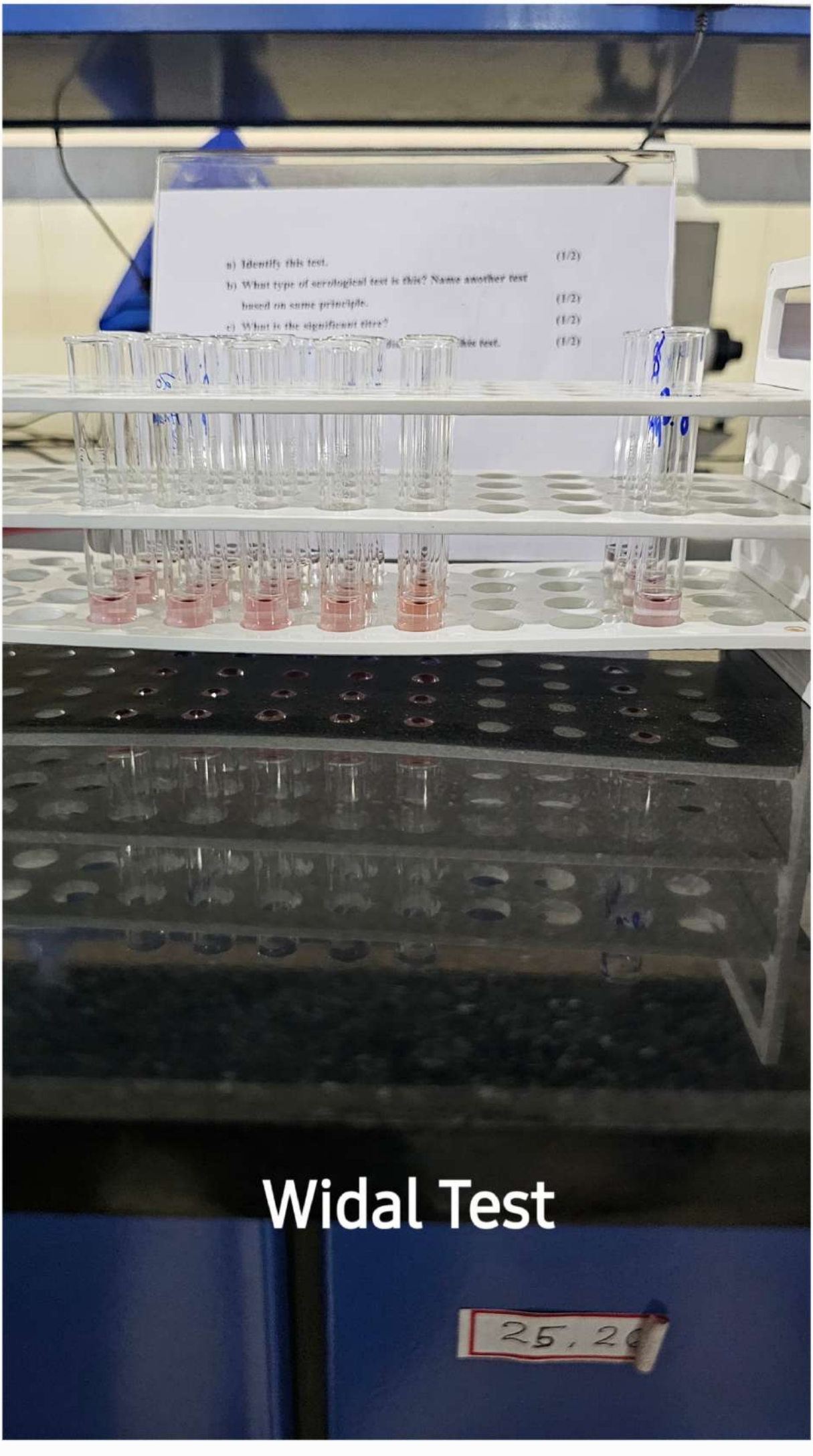
18) a) Widal test

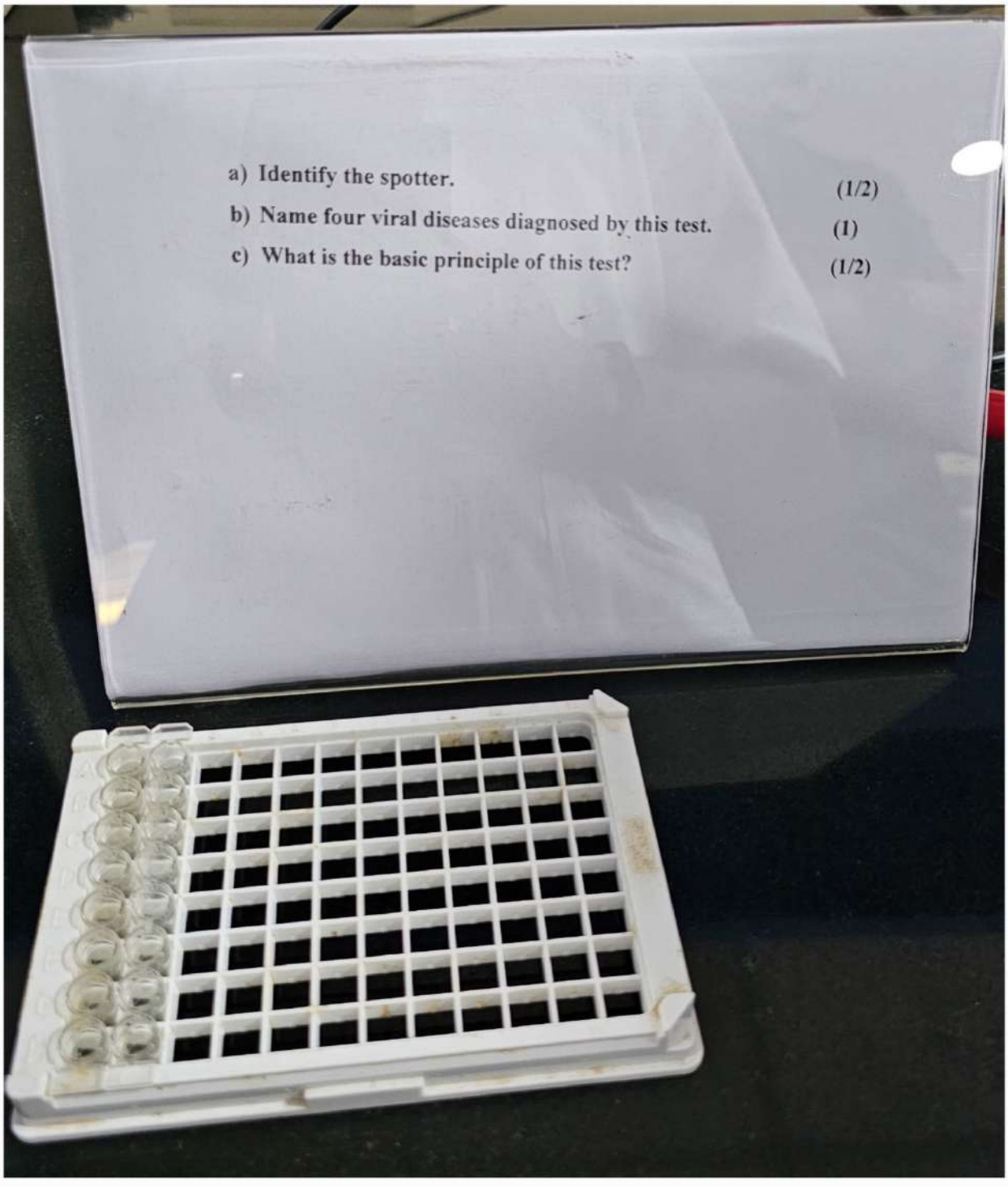
b) Tube Agglutination test, Standard Agglutination Test

c) H Antibodies - 1:200

O Antibodies - 1:100

d) Enteric fever


a) Identify this test. (1/2)
b) What type of serological test is this? Name another test based on same principle. (1/2)
c) What is the significant titre? (1/2)
(1/2)
Widal Test
25, 2



19) a) Microtitre plate

b) (HIV) AIDS
Hepatitis B
Hepatitis C
IMN

c) Enzyme – substrate – chromogen system

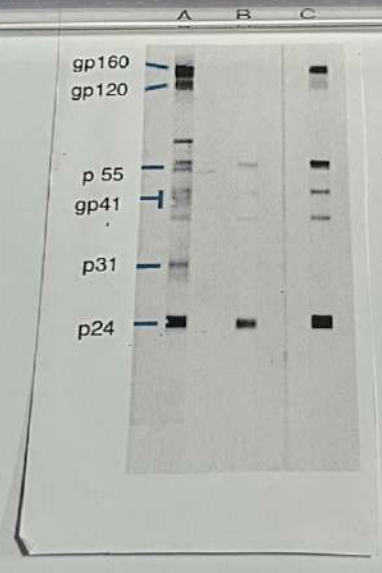

Microtitre Plate

a) Name the disease diagnosed by this test. (1/2)

b) Which is the viral marker used for early diagnosis. (1/2)

c) What is window period and its significance? (1/2)

d) Name two rapid tests for detecting this disease. (1/2)



20, a) Western blot

~~b)~~ AIDs

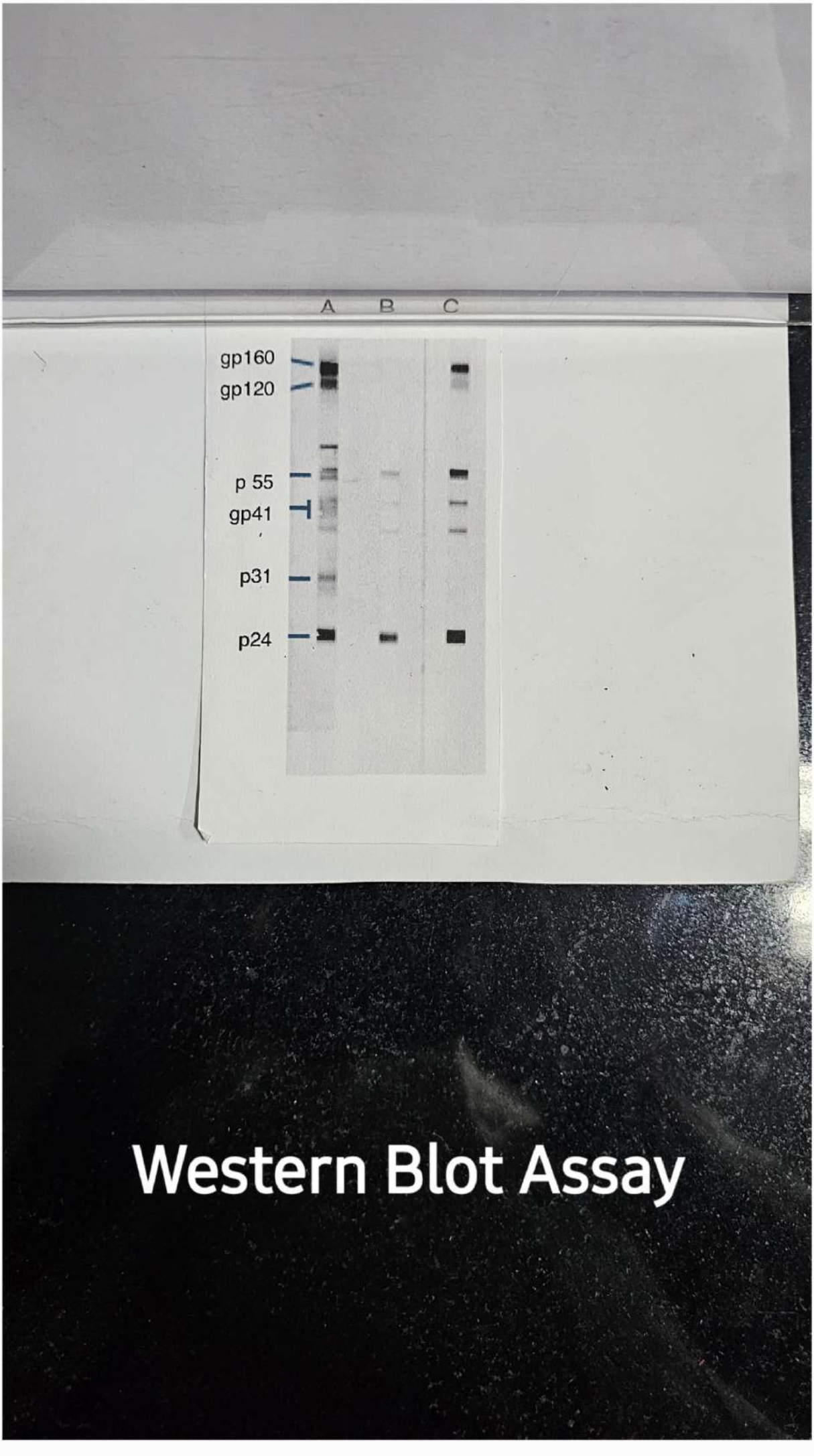
b) ~~c)~~ p^{24} Antigen

c) ~~b)~~ → Following infection, antibodies appear in serum only after a period of interval

→ Antibodies are absent

∴ Tests are negative

d) ~~Dot blot~~ Teldot, Dipstick


A
B
C
gp160
gp120
p 55
gp41
p31
p24
Western Blot Assay

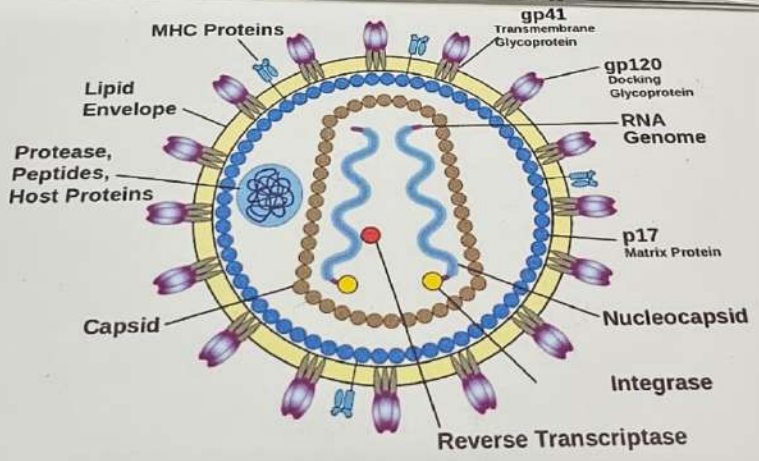
A commercial sex worker presented with chronic fever, weight loss, and diarrhoea. Her blood sample showed this organism.

a) Identify (1/2)

b) Which are the important envelope antigens? (1/2)

c) Name the best disinfectant used for destroying this virus following blood spill. (1/2)

d) Name two antiretroviral drugs. (1/2)

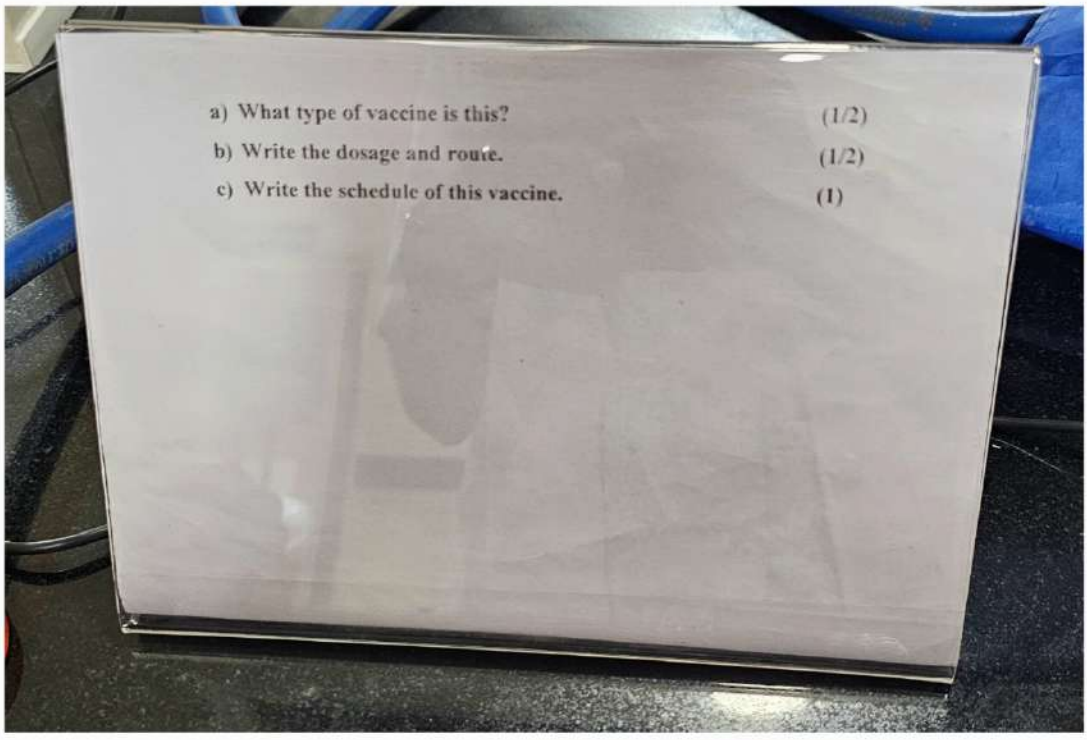


21) a) HIV

b) gp 41
gp 120

c) Sodium Hypochlorite

d) Zidovudin
Stavudin


a) What type of vaccine is this? (1/2)
b) Write the dosage and route. (1/2)
c) Write the schedule of this vaccine. (1)

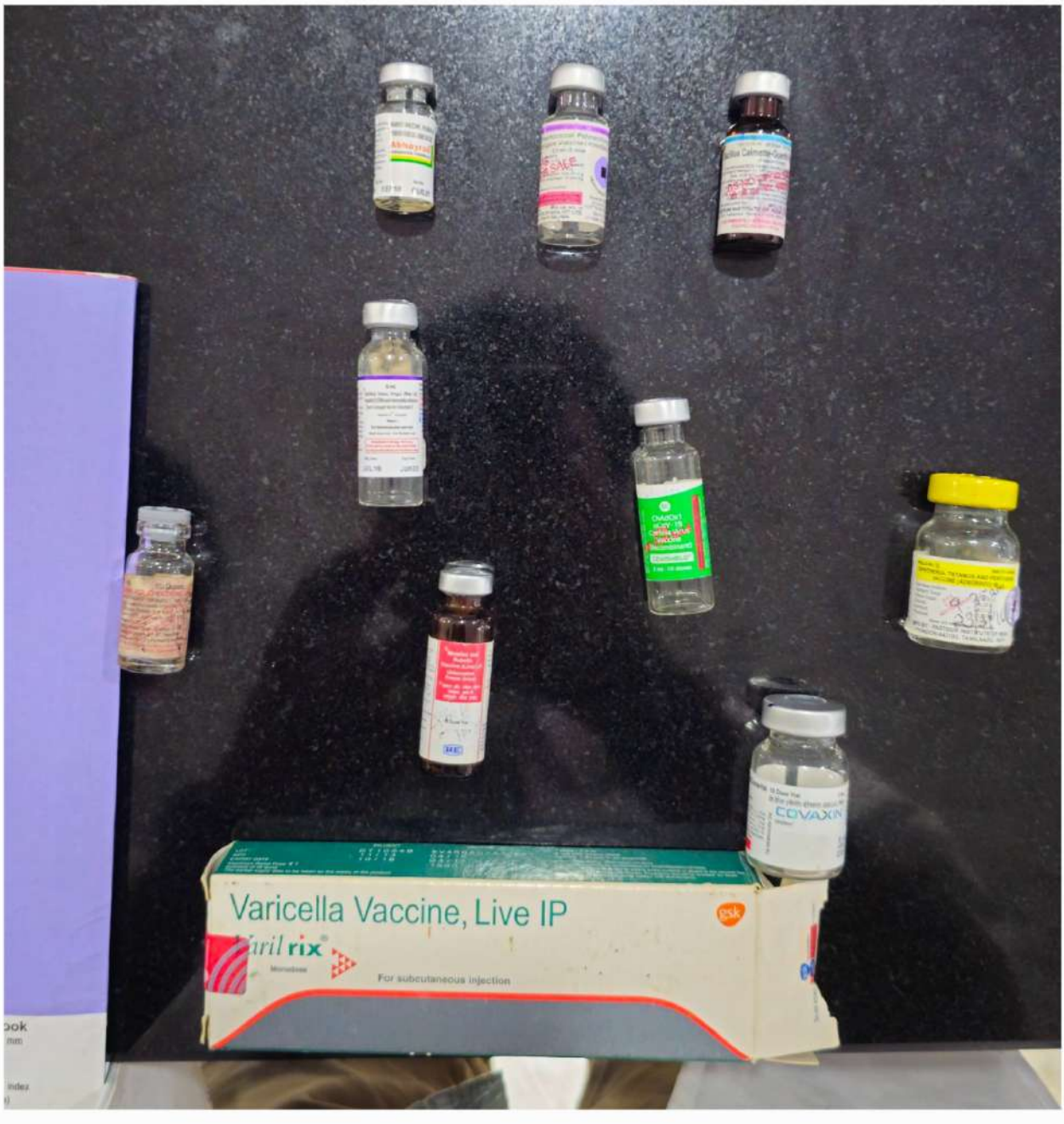

Varicella Vaccine, Live IP
Varilrix
For subcutaneous injection
COVAXIN

Table 2.5.7: National Immunization Schedule (NIS) for infants, children and pregnant women (India)

Vaccine	When to give	Dose	Route	Site
For Pregnant Women				
TT-1	Early in pregnancy	0.5 ml	Intramuscular	Upper arm
TT-2	4 weeks after TT-1*	0.5 ml	Intramuscular	Upper arm
TT-Booster	If received 2 TTdoses in a pregnancy within the last 3 years*	0.5 ml	Intramuscular	Upper arm
For Infants				
BCG	At birth or as early as possible till one year of age	0.1 ml (0.05 ml until 1 month age)	Intradermal	Left upper arm
Hepatitis B	At birth or as early as possible within 24 hours	0.5 ml	Intramuscular	Anterolateral side of mid thigh
OPV-0	At birth or as early as possible within the first 15 days	2 drops	Oral	Oral
OPV 1, 2 and 3	At 6 weeks, 10 weeks and 14 weeks	2 drops	Oral	Oral
DPT1, 2 and 3	At 6 weeks, 10 weeks and 14 weeks	0.5 ml	Intramuscular	Anterolateral side of mid thigh
Hepatitis B 1, 2 and 3	At 6 weeks, 10 weeks and 14 weeks	0.5 ml	Intramuscular	Anterolateral side of mid thigh
Measles	9 completed months-12 months (give up to 5 years if not received at 9-12 months age)	0.5 ml	Subcutaneous	Right upper arm
Vitamin A (1st dose)	At 9 months with measles	1 ml (1 lakh IU)	Oral	Oral
For Children				
DPT booster	16–24 months	0.5 ml	Intramuscular	Anterolateral side of mid thigh
OPV Booster	16–24 months	2 drops	Oral	Oral
Measles (2nd dose)	16–24 months	0.5 ml	Subcutaneous	Right upper arm
Japanese Encephalitis**	16–24 months with DPT/OPV booster	0.5 ml	Subcutaneous	Left upper arm
VitaminA*** (2nd to 9th dose)	16 months with DPT/OPV booster. Then one dose every 6 months up to the age of 5 years	2 ml (2 lakh IU)	Oral	Oral
DPT Booster	5–6 years	0.5 ml	Intramuscular	Upper arm
TT	10 years and 16 years	0.5 ml	Intramuscular	Upper arm

* Give TT-2 or Booster doses before 36 weeks of pregnancy. However, give these even if more than 36 weeks have passed. Give TT to a woman in labor, if she has not previously received TT.

** SA 14-14-2 Vaccine, in selected endemic districts of Uttarpradesh, Karnataka, West Bengal and Assam

*** The 2nd to 9th doses of Vitamin A can be administered to children 1–5 years old.

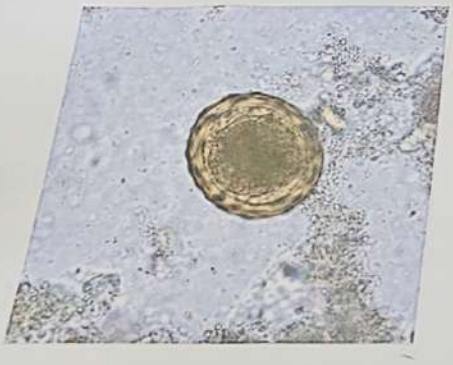

Ascaris lumbricoides
eggs (Unfertilized)

a) Identify. (1/2)

b) Give two identifying features. (1/2)

c) What is the mode of transmission? (1/2)

d) What is the infective stage of this parasite? (1/2)



Round worm

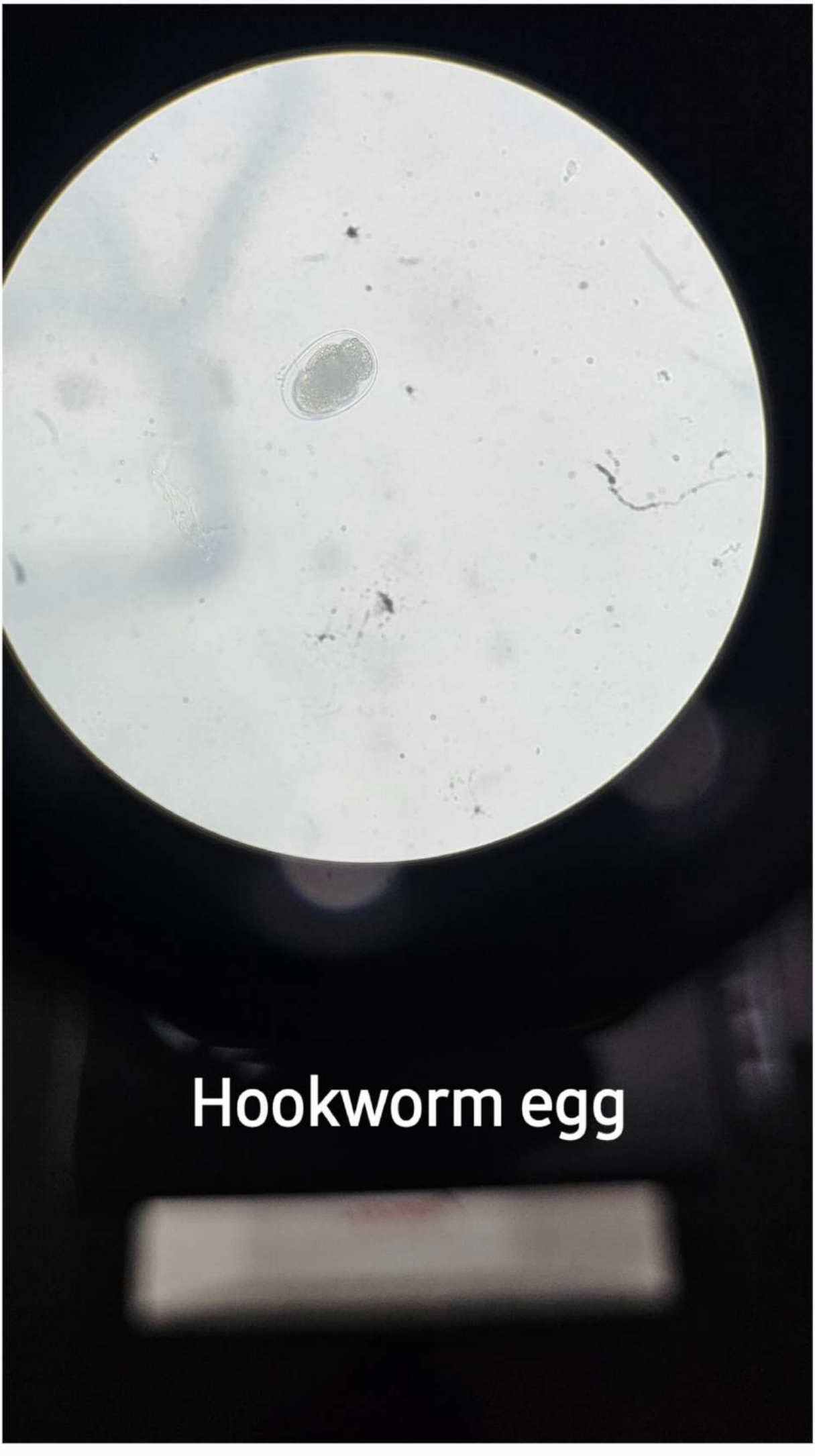
(a).

	Fertilized egg	Unfertilized egg
Shape	Round to oval	Elongated
Size	50-70 μm × 40-50 μm	90 μm × 45 μm
Covering	Surrounded by a thick mamillated albuminous coat	Albuminous coat is thin, distorted and scanty
Cresentic space at poles.	Present	Absent.
Saturated saline ~~Bile~~ staining.	Floats	Doesn't float
Bile staining	Yes, Golden brown.	Yes, golden brown.
Ovum	Egg contains large unsegmented ovum of granular mass with clear space at both the end.	Egg contains unsegmented small atrophied ovum with a mass of disorganised highly refractile granules.

(b) Infective stage → Embryonated eggs containing L2 larvae.

(c) Mode of transmission – Ingestion of embryonated eggs from soil, food and water.

(d) Complication – Perforation
Small bowel obstruction
Intussusception.


Hookworm egg

a) Identify this ova with two identifying features. *(1)*

b) Name two ova that float in saturated salt solution. *(1)*

2) a) Oval shaped
Non-bile stained
Ovum segmented with four blastomeres

b) Fertilised eggs of Ascaris Lumbricoides
Enterobius Vermicularis

a) Give two identifying features. (1/2)

b) Which is the infective form of the parasite? (1/2)

c) What is its mode of transmission? (1/2)

d) Name one method for collection of specimen. (1/2)

Entrobius vermicularis

Enterobius vermicularis. (Pin worm)

Ova.

(a) Identifying feature - Planoconvex eggs.
50-60µ long x 20-30µ wide.
Double layered egg shell.
Non bile stained.

(b) Infective form - Embryonated eggs.

(c) Mode of transmission - Man acquire infection by ingestion of embryonated eggs containing larvae with fingers due to inadequate handwashing or nail biting habit.
Autoinfection.

(d) Collection of specimen - cellophane tape.
NIH swab method.


Trichuris trichuria
(Whipworm)
Bile stained egg with
mucus plugs at both
ends

a. Give two identifying features. (1/2)

b. Which is the infective form? (1/2)

c. What is its mode of transmission? (1/2)

d. Name two eggs that float in saturated salt solution. (1/2)

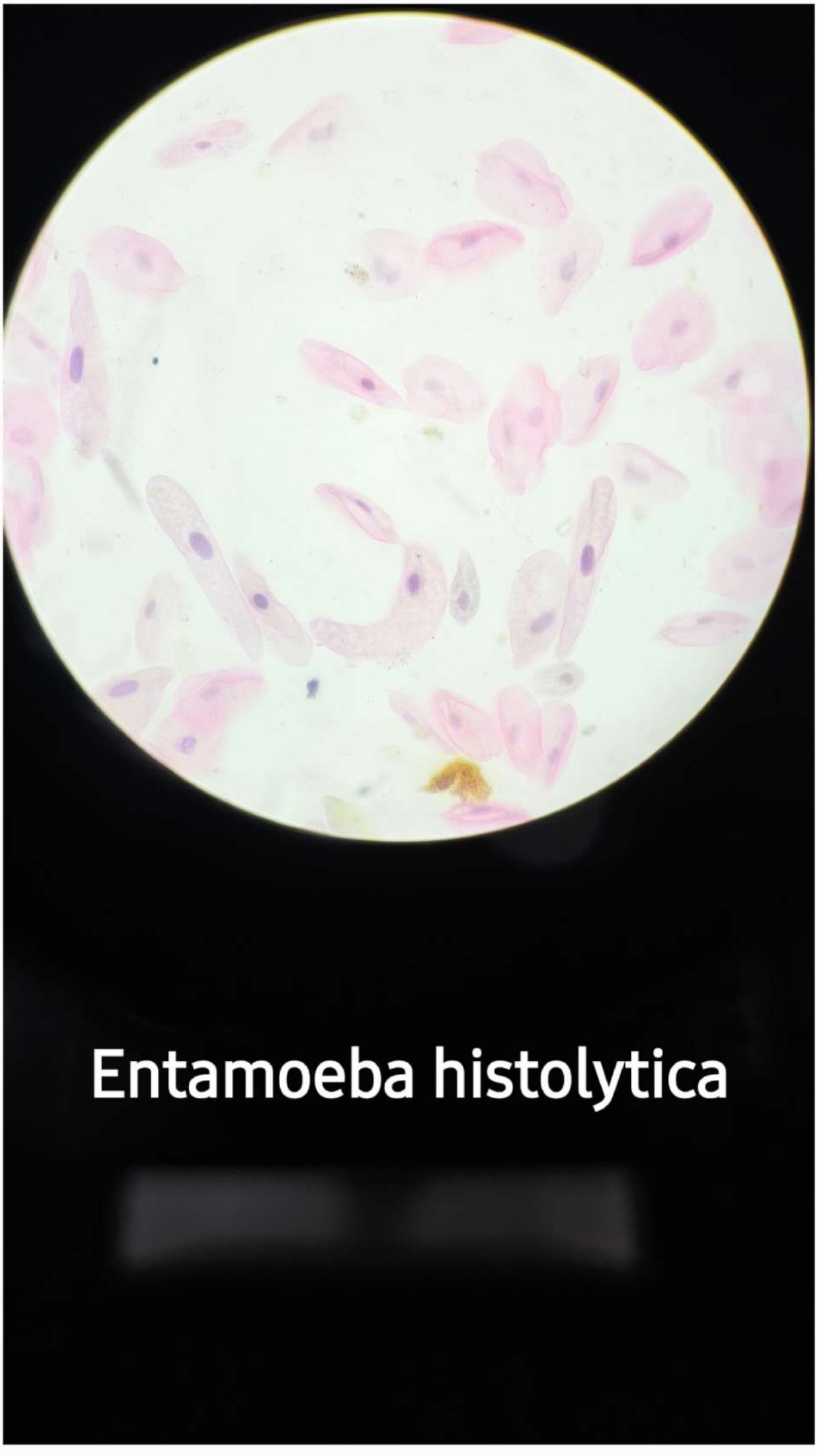
Whipworm - Ova.

(a) Eggs - Barrel shaped surrounded by a shell bear mucus plugs at both poles. Elongated measures 50-54 μm long and 22-23 μm wide. Bile stained.

(b) Infective worms - Embryonated eggs

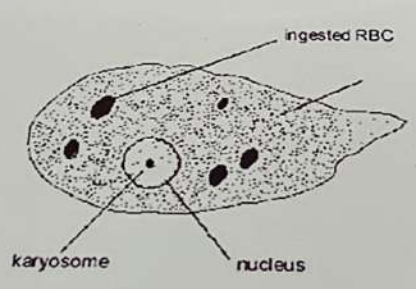
(c) Mode of transmission - Ingestion of contaminated food and water containing embryonated egg.

(d) Fertilized egg of roundworm.
Whip worm.


Entamoeba histolytica

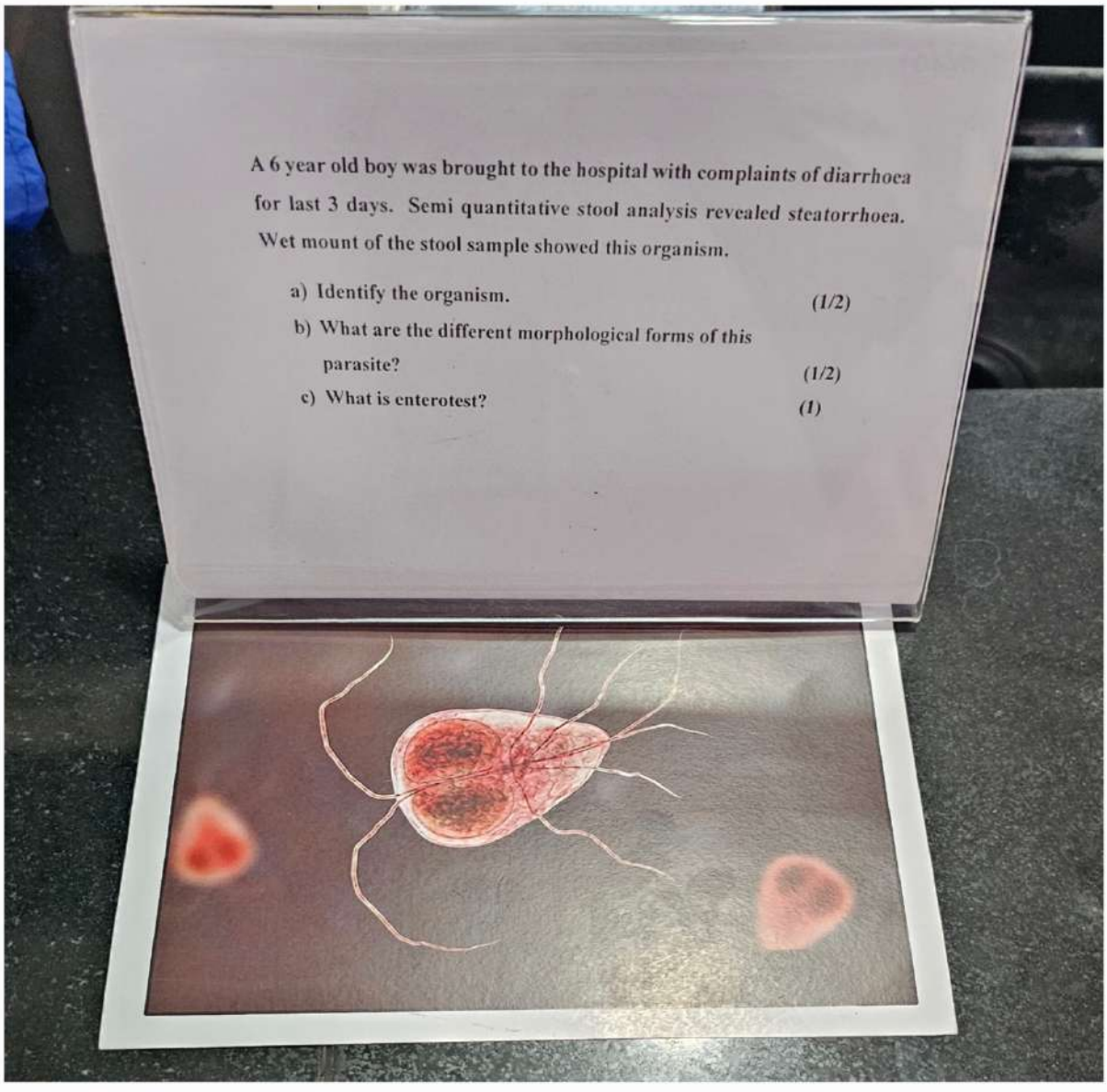
A 25 year old patient presented with complaints of 6 to 8 episodes of loose stools, foul smelling along with blood and mucous. He had history of food consumption from a street vendor. Stool and wet film examination showed this organism.

a) Identify the organism. (1/2)
b) What is the infective form? (1/2)
c) What are the two extra intestinal complications of the disease? (1/2)
d) What is the drug of choice? (1/2)



Entamoeba histolytica

a) Entamoeba Histolytica (Trophozoite)
b) Mature Quadrinucleate cyst
c) Hepatic amoebiasis
Pulmonary amoebiasis
d) Metronidazole
Tinidazole



a) Giardia Lamblia

b) Trophozoite
Cyst

c) Duodenal sample

d) Metronidazole
Tinidazole

A 64 year old women from Bihar presented to hospital with fever, massive hepatosplenomegaly and blackish pigmentation of skin. Blood smear showed this organism.

a) Identify the organism. (1/2)

b) Which is the vector for transmission? (1/2)

c) Which is the culture media used to cultivate this organism? (1/2)

d) Name the drug used to treat the disease. (1/2)

a) Leishmania donovani (Kala azar)

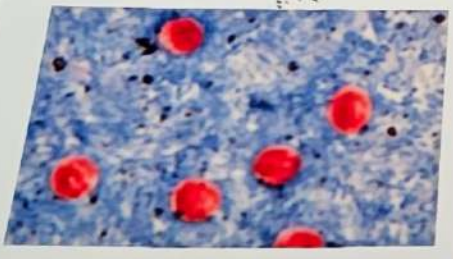
b) Female sandfly

c) NNN Medium

d) Liposomal Amphotericin B

Photo micrograph of stool sample from HIV patient presented with profuse diarrhoea anorexia and severe weight loss

1. Identify the parasite. (½)
2. Which is the staining method used? (½)
3. What is the CD4 count below which these infection occur? (½)
4. Name other similar parasites causing opportunistic intestinal infection (½)



Cryptosporidium

Isospora

a) Cryptosporidium parvum

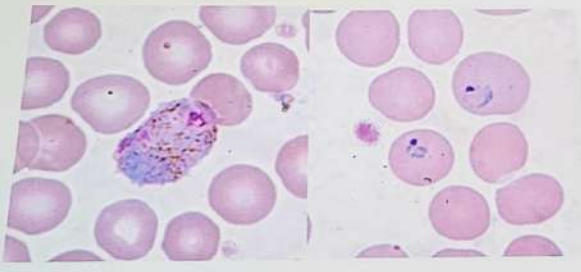
b) AFB stain

c) <100/μL

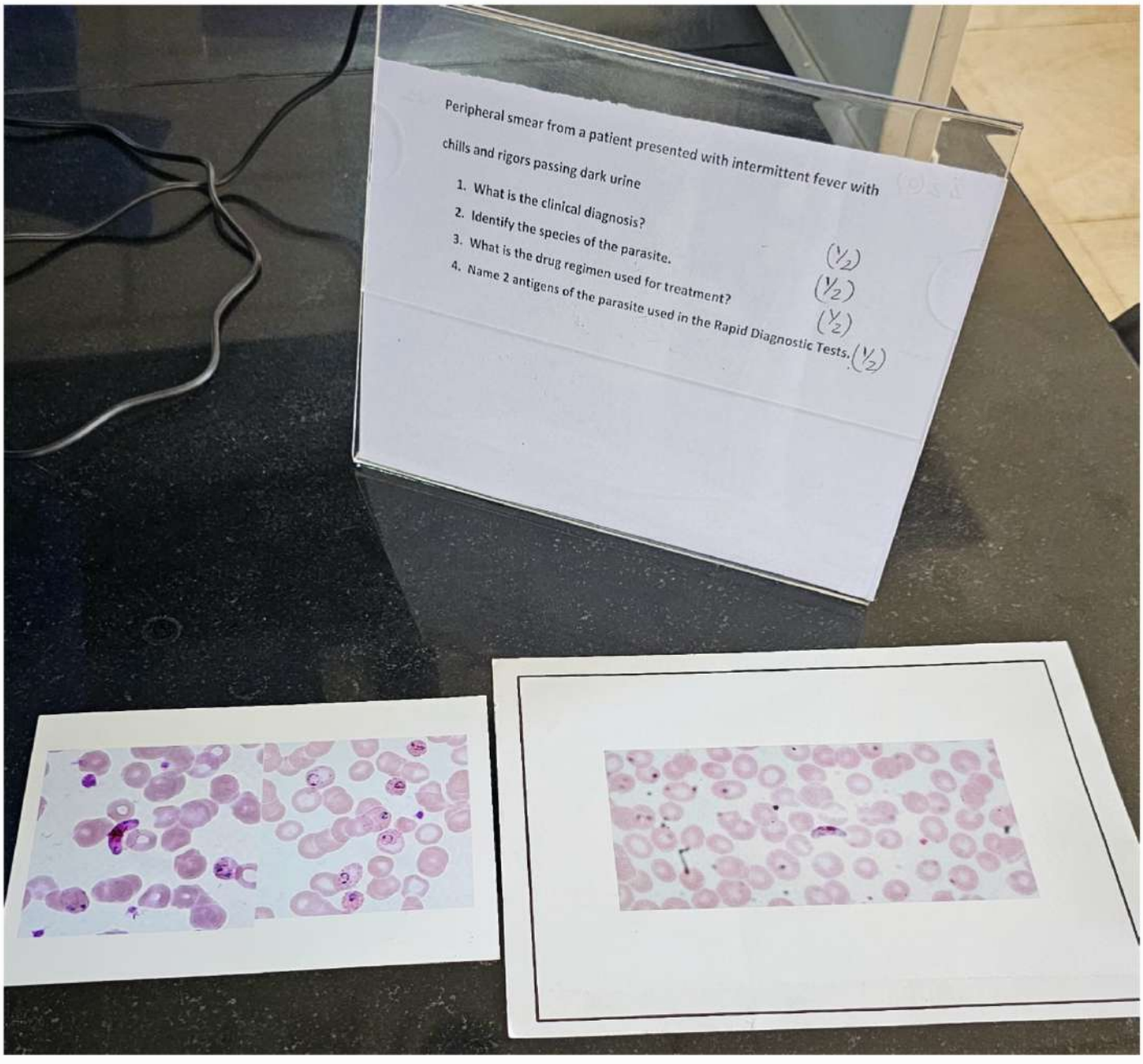
d) Isospora belli, Cyclospora

A 25 year old migrant labourer presented with intermittent episodes of fever, chills, rigor followed by profuse sweating. His blood smear showed this organism.

a) Identify the pathogen. (1/2)
b) Name the four species. (1/2)
c) Name the vector transmitting the disease. (1/2)
d) Two complications of the disease. (1/2)



a) Plasmodium vivax (Ring form)
b) P. falciparum
P. malariae
P. ovale
P. vivax
c) Female Anopheles mosquito
d) Cerebral Malaria
Blackwater fever



a) Malaeda

b) Plasmodium falciparum (Gametocyte)

c) ACT + Sulfadoxine - Pyrimethamine + PQ

d) LDH, Aldolase, HRP-2 Ag

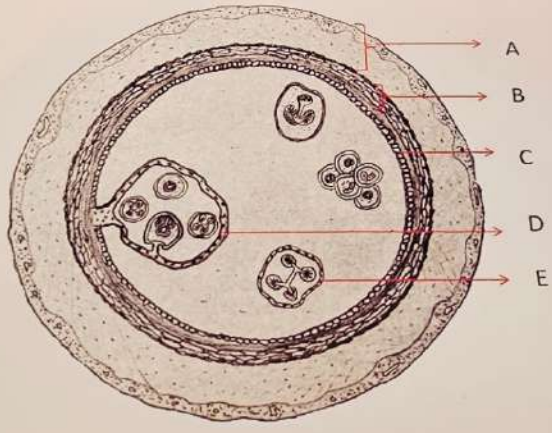
A dog handler developed abdominal pain. USG of abdomen showed a huge cystic lesion in the liver, which was surgically removed. The cystic fluid had scolices, brood capsules and hooklets.

a) What is the diagnosis? (1/2)

b) Identify the parasite and give two identifying features of the parasite. (1/2)

c) Name the definitive host and intermediate hosts. (1/2)

d) Name one test used to identify this. (1/2)

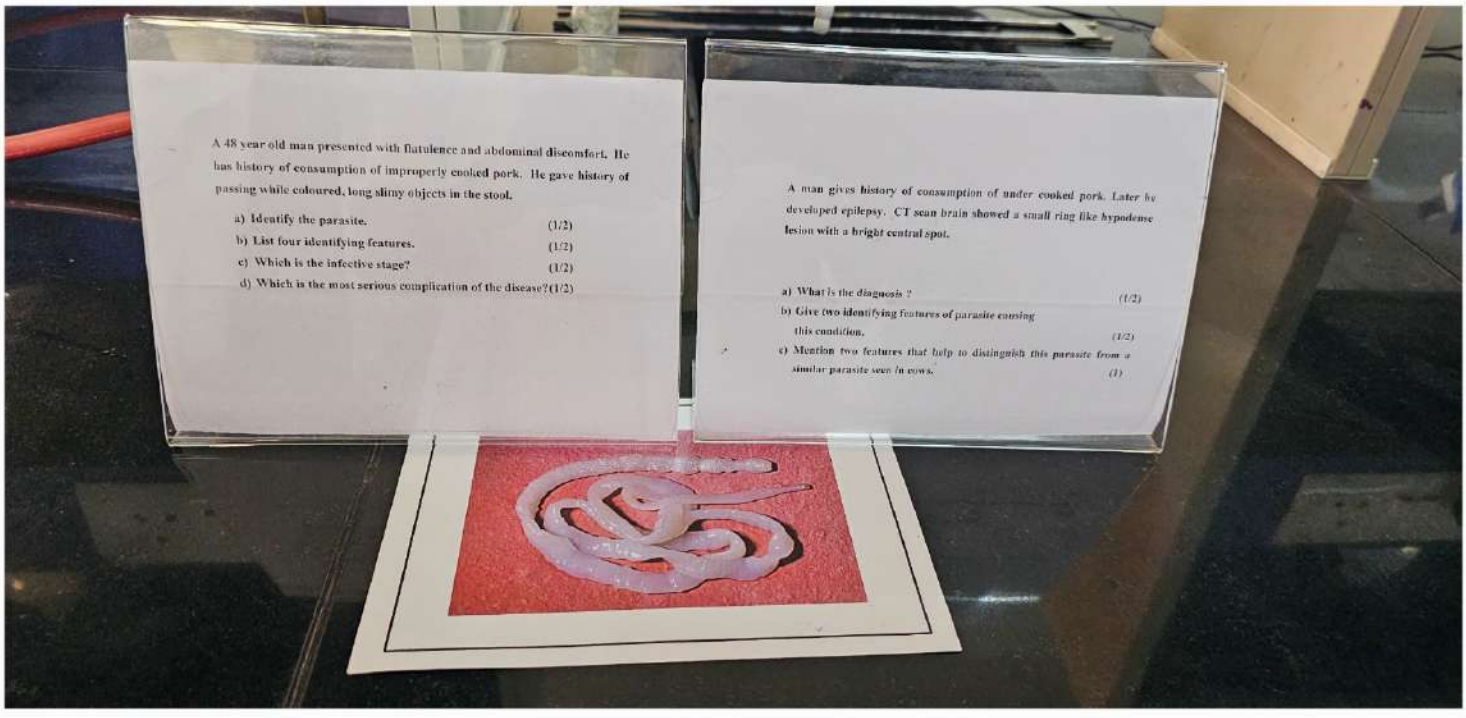


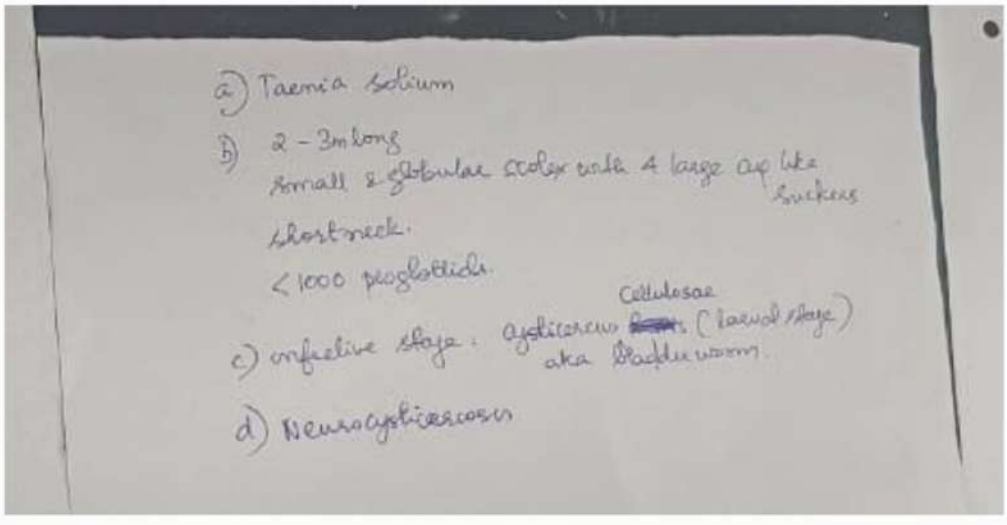
6) A) cystic hydatid disease or
cystic Echinococcosis

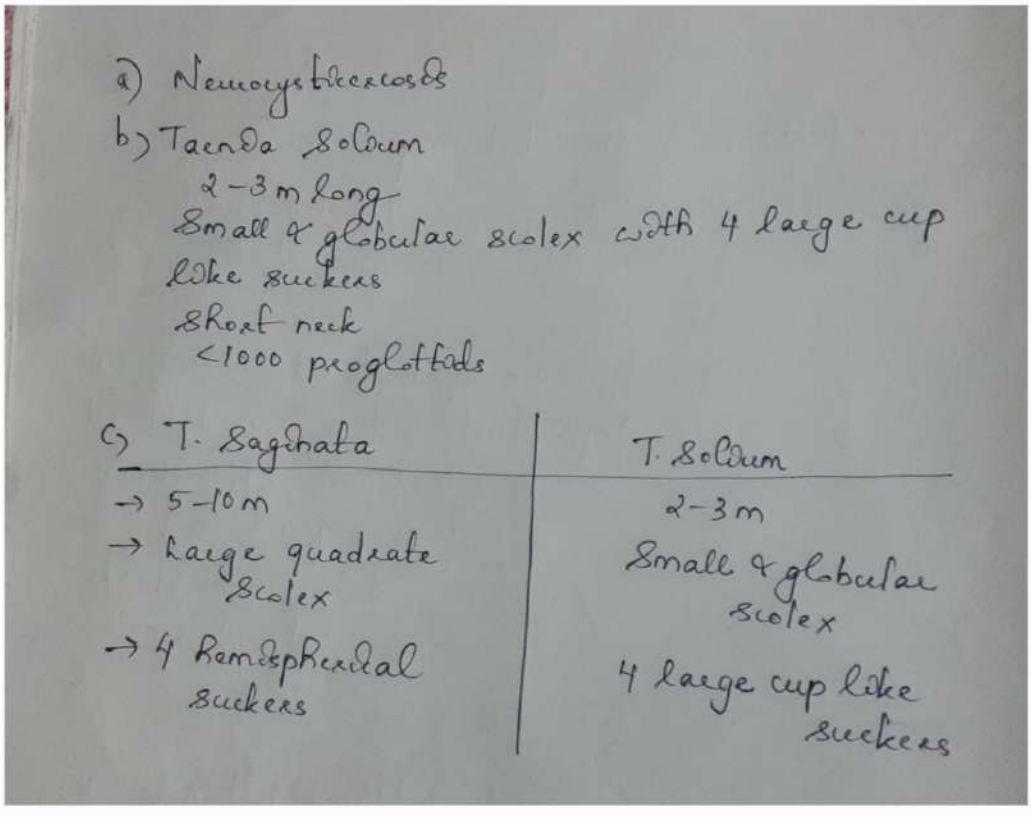
B) Echinococcus granulosus
→ 3-6mm long, consist of head, neck and strobila

C) Definitive host: Dogs & canine animals
Intermediate host: sheep & herbivores
Man: Accidental intermediate host

d) Skin test - Casoni test
→ immediate hypersensitivity reaction (wheal and flare) develops following injection by hydatid fluid antigen


A 48 year old man presented with flatulence and abdominal discomfort. He has history of consumption of improperly cooked pork. He gave history of passing white coloured, long slimy objects in the stool.
a) Identify the parasite. (1/2)
b) List four identifying features. (1/2)
c) Which is the infective stage? (1/2)
d) Which is the most serious complication of the disease? (1/2)
A man gives history of consumption of under cooked pork. Later he developed epilepsy. CT scan brain showed a small ring like hypodense lesion with a bright central spot.
a) What is the diagnosis ? (1/2)
b) Give two identifying features of parasite causing this condition. (1/2)
c) Mention two features that help to distinguish this parasite from a similar parasite seen in cows. (1)


a) Taenia solium
b) 2 - 3m long
small & globular scolex with 4 large cup like suckers
short neck.
< 1000 proglottids
c) infective stage: cysticercus Cellulosae (larval stage)
aka Bladderworm.
d) Neurocysticercosis


a) Neurocysticercosis
b) Taenia Solium
2 - 3 m long
Small & globular scolex with 4 large cup like suckers
Short neck
< 1000 proglottids
c)
T. Saginata
→ 5 - 10 m
→ Large quadrate Scolex
→ 4 Hemispherical suckers
T. Solium
2 - 3 m
Small & globular scolex
4 large cup like suckers

a) Identify and describe the adult worm. (1/2)

b) Name the definitive host and intermediate host. (1/2)

c) How man gets infection? (1/2)

d) Name the larval form. (1/2)

11) A → Echinococcus Granulosus

→ 3-6mm long, consist of head, neck and strobila

B) Definitive host :- Dogs and canine animals

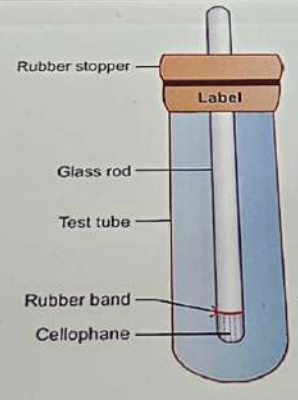
Intermediate host :- sheep and herbivores

Accidental intermediate host :- Man

c) Man acquires infection by ingestion of food contaminated with dog's feces containing E. granulosus eggs.

D) Hydatid cyst

1. Identify the Spotter. (1/2)
2. Which parasite is identified using this method? (1/2)
3. Explain the procedure. (1)



13) a) NIH swab (National Institute of Health)

b) used to detect Eggs of Enterobius Vermicularis

c) → consist of glass rod attached to cellophane tape by a rubber band

→ the other end of glass rod is fixed by a rubber stopper & kept in a test tube.

→ cellophane part of glass rod is rolled over the perined & perianal skin area to collect the sample

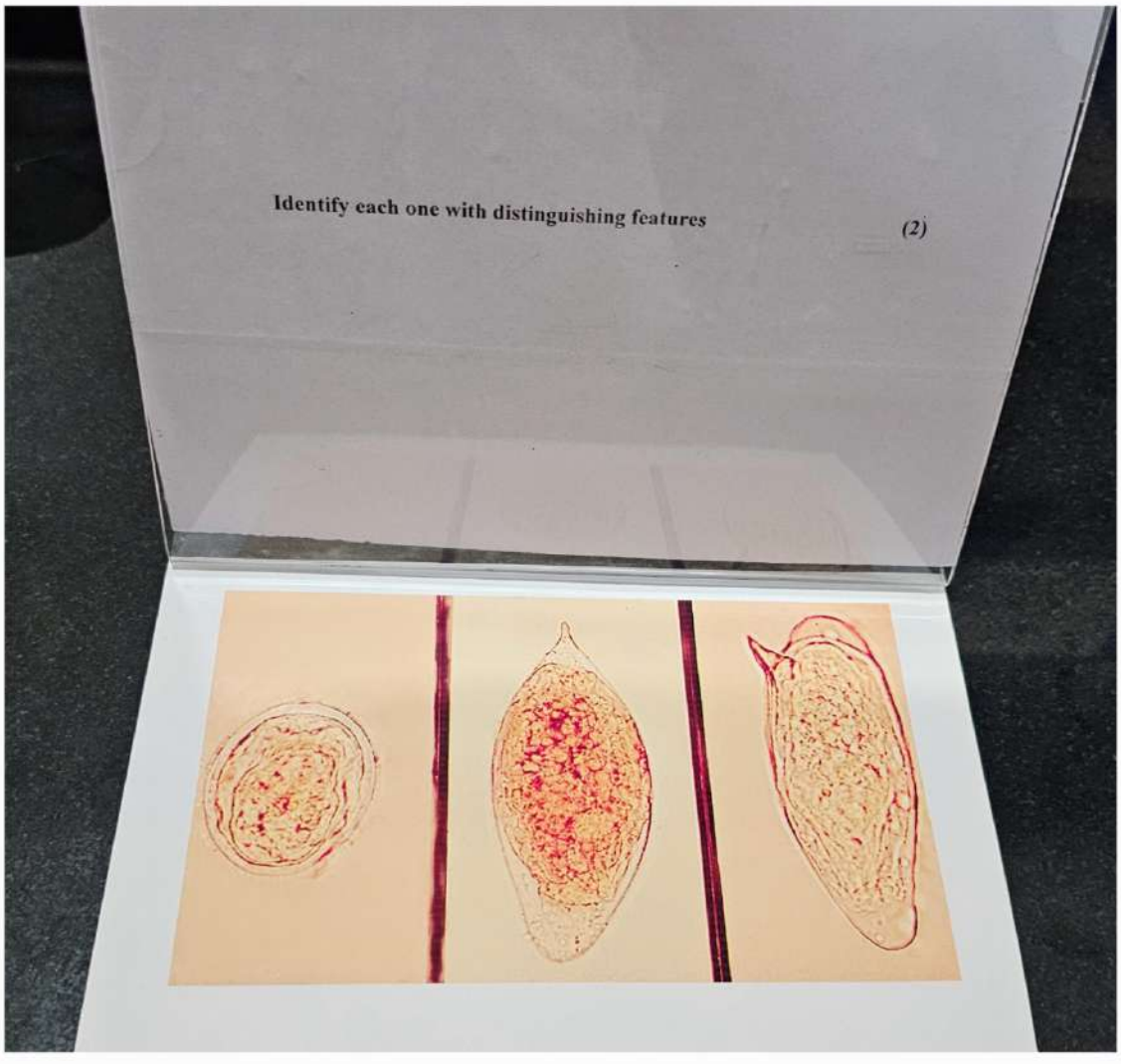
→ the tape is transferred to slide for microscopic examination

A 40 year man from Africa came to OPD with abdominal pain terminal hematuria and dysuria. Urine culture was sterile. Urine wet mount showed the following .

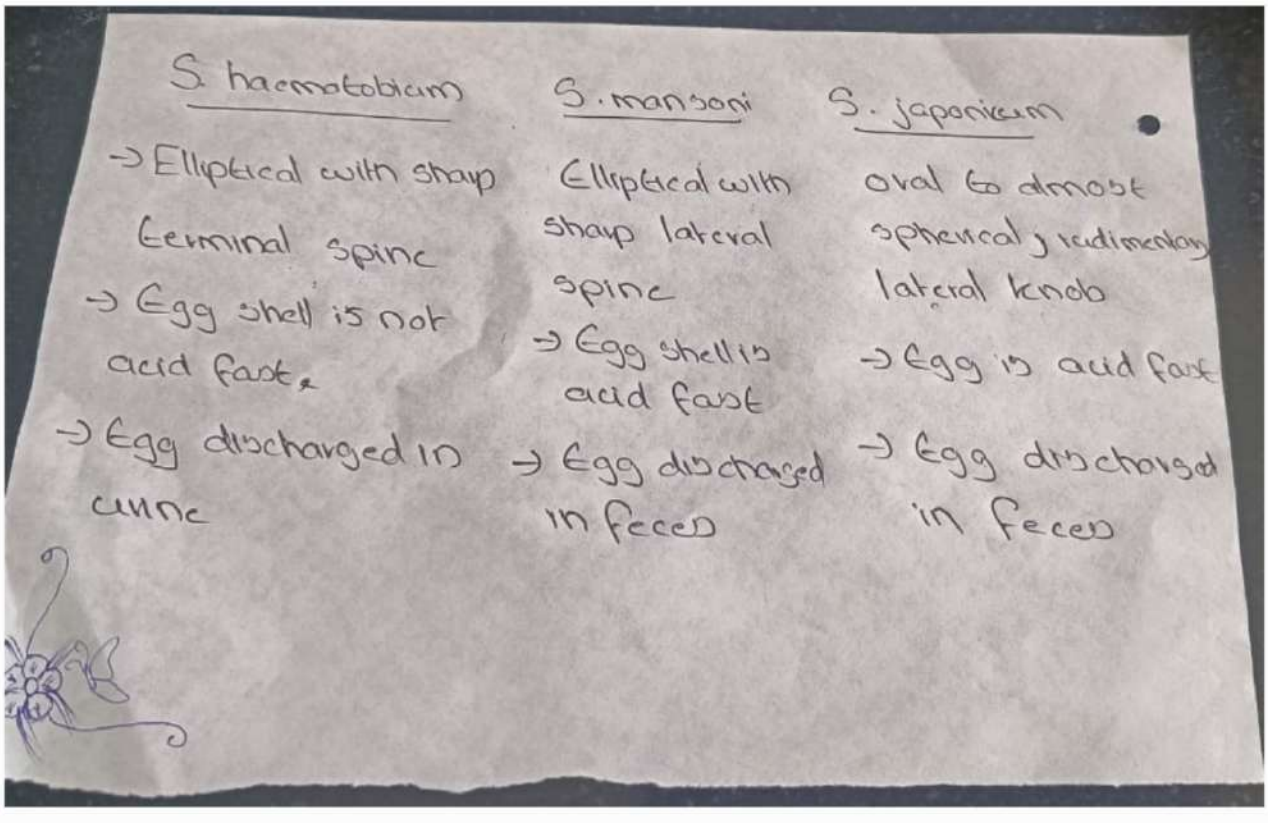
a) What is the likely causative agent? (1/2)
b) What is its mode of transmission? (1/2)
c) What is its definitive and intermediate host? (1/2)
d) What does it cause ? (1/2)

14)
A) Schistosoma haematobium
B) Man acquires infection by penetration of skin by infective form present in contaminated water.
C) Definitive host: Man
Intermediate host: fresh water snails of genus Bulinus

D) Acute Schistosomiasis
chronic Schistosomiasis
→ Urogenital disease
→ obstructive uropathies
→ Bladder carcinoma.

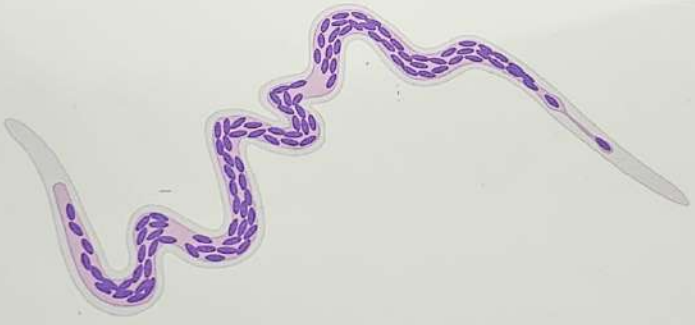


Schistosoma



A 45 year old man from coastal area presented with swelling of right leg upto the foot. Blood peripheral smear examination revealed the organism.

a) Identify the spotter and disease caused. (1/2)
b) Give two identifying features. (1/2)
c) What is the vector and infective stage? (1/2)
d) Name two species prevalent in Kerala (1/2)



Brugai malayi
(Malayan filaria)

a) spotter - microfilaria of Brugai malayi
disease: Brugian filariasis

b) 2 identifying features
tail tip - 2 distinct nuclei
(one terminal & one subterminal)
cephalic space - twice as long as broad

c) Vector: Mansonia, Anopheles, Aedes
Infective stage:

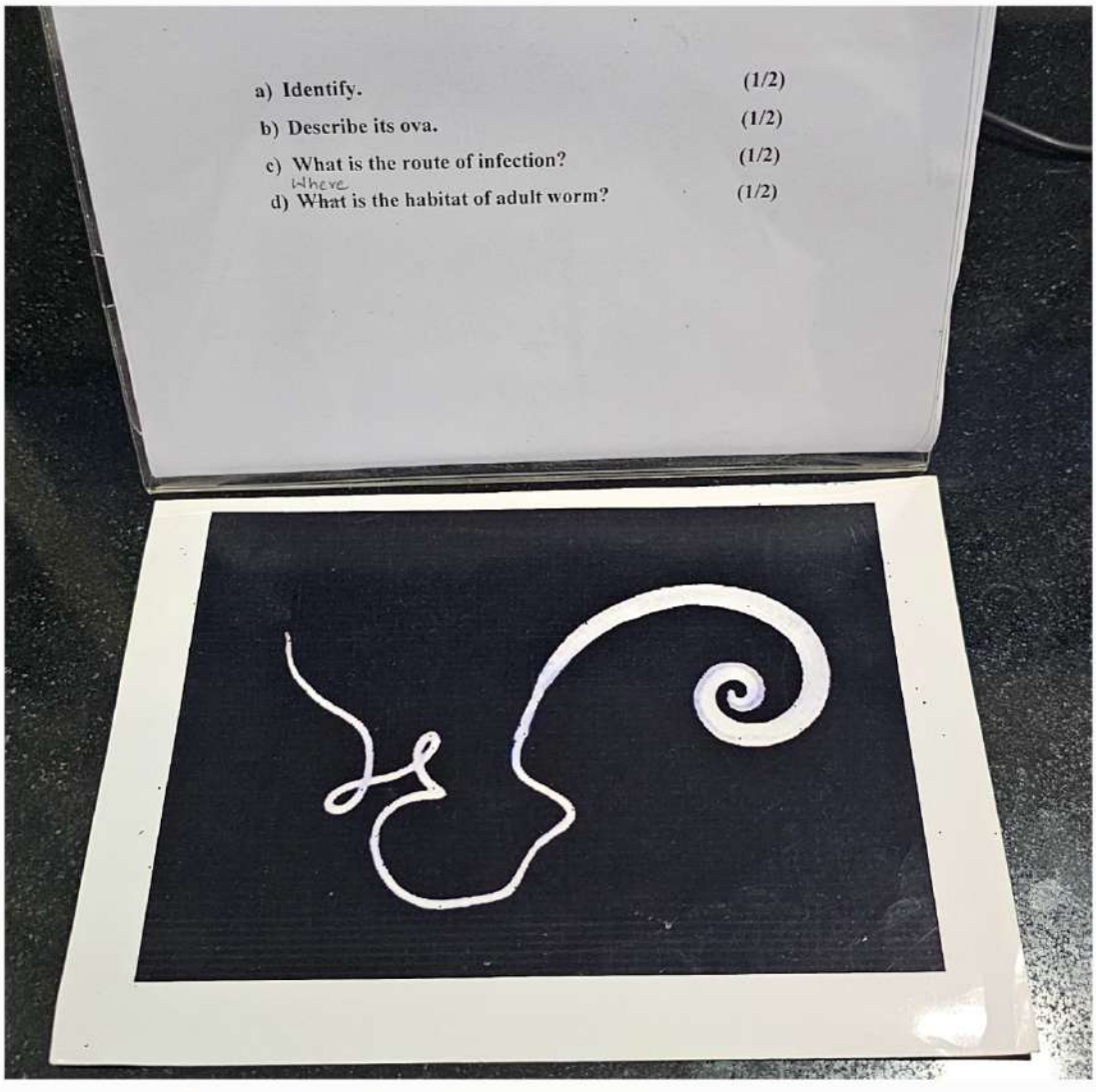
d) 2 species in Kerala: W. ?

a) Identify. (1/2)

b) Describe its ova. (1/2)

c) What is the route of infection? (1/2)

d) ~~What~~ Where is the habitat of adult worm? (1/2)



Trichuris trichuria
(Adult worm)

a) Adult worm of trichuris trichuria.

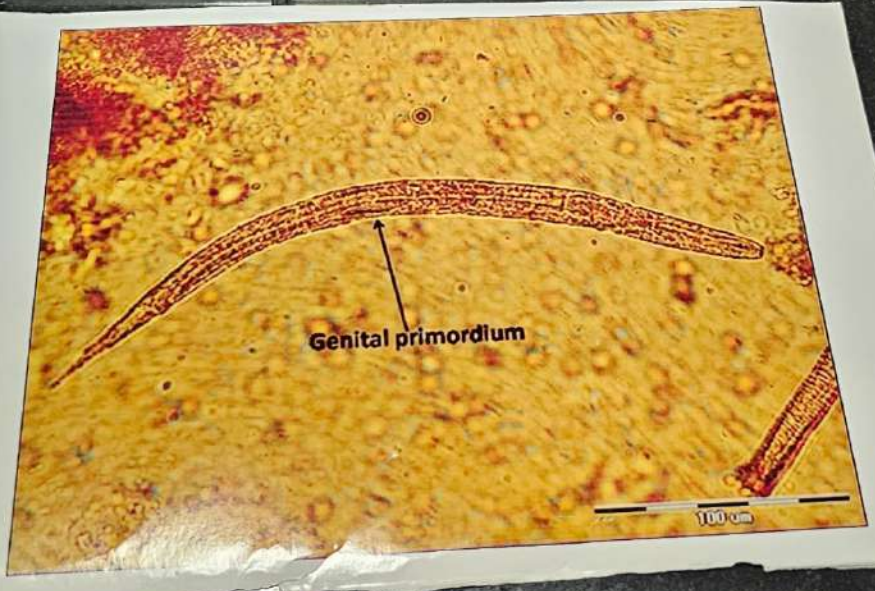
b) Ova - Bile stained (yellow-brown coloured) triple shelled ~~egg~~ barrel shaped egg with projecting mucous plugs that are colourless floats in saturated salt solution.

c) Route of infection: Contaminated food & water containing embryonated eggs.

d) Habitat of adult worm: large intestine with anterior portion embedded in mucosa.

HIV positive patient presented with diarrhoea. Stool microscopy revealed this organism.

a) Identify. (1/2)
b) What are the different modes of infection? (1/2)
c) What is larva currens? (1)



Strongyloides stercoralis

(Larvae)

- different modes of infection:
  (i) penetration of skin by 3rd stage filariform larva when a person walks barefoot
  (ii) Autoinfection.
- Parasitic dermatitis caused by intradermal migration of filariform larva in perianal / gluteal & abdominal skin is named larva currens

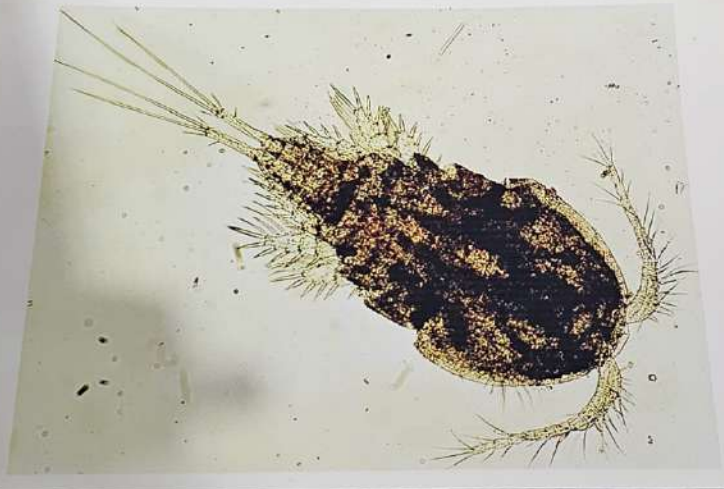

Cyclops

a) Identify the organism. (1/2)

b) Write two identifying features . (1/2)

c) Mention the natural habitat . (1/2)

d) Name two diseases in which this organism act as intermediate host (1/2)



a) Cyclops

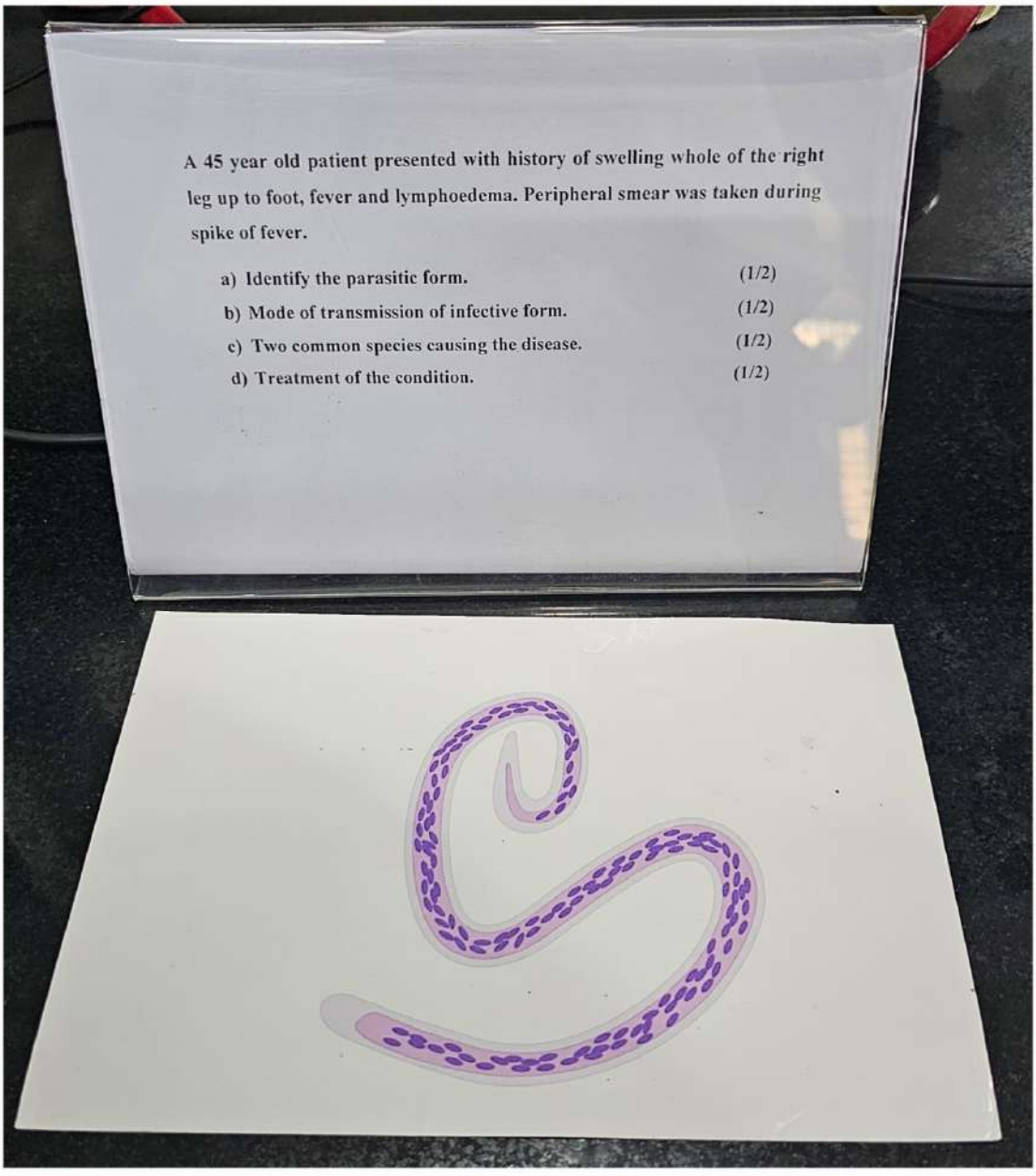
b) Single eye
5 pairs of legs

c) Freshwater

d) Sparganosis
Dracunculosis

A 45 year old patient presented with history of swelling whole of the right leg up to foot, fever and lymphoedema. Peripheral smear was taken during spike of fever.

a) Identify the parasitic form. (1/2)
b) Mode of transmission of infective form. (1/2)
c) Two common species causing the disease. (1/2)
d) Treatment of the condition. (1/2)



a) Microfilaria - Wuchereria bancrofti
b) Mosquito bite (Culex)
c) W. bancrofti
B. malayi
d) DEC

A 55 year old lady presented with painless edema of eyelids, granulomatous lesion in bulbar conjunctiva and proptosis. A worm has been removed from the conjunctiva.

a) Identify the parasite. (1/2)
b) What is the intermediate host? (1/2)
c) Name another worm found in conjunctiva. (1/2)
d) What is the treatment? (1/2)

a) Loa Loa
b) Mango flies
c) Onchocerca Volvulus
d) DEC


Mucor

65 year old diabetic patient presented with blackish discharge from the nose and severe pain over the sinuses. He has history of COVID- 19 one organism which is focussed.

a) Identify the organism. (1/2)

b) Name two identifying features. (1/2)

c) Name two other infections produced by this agent. (1/2)

d) What is the drug of choice? (1/2)

A) Mucor

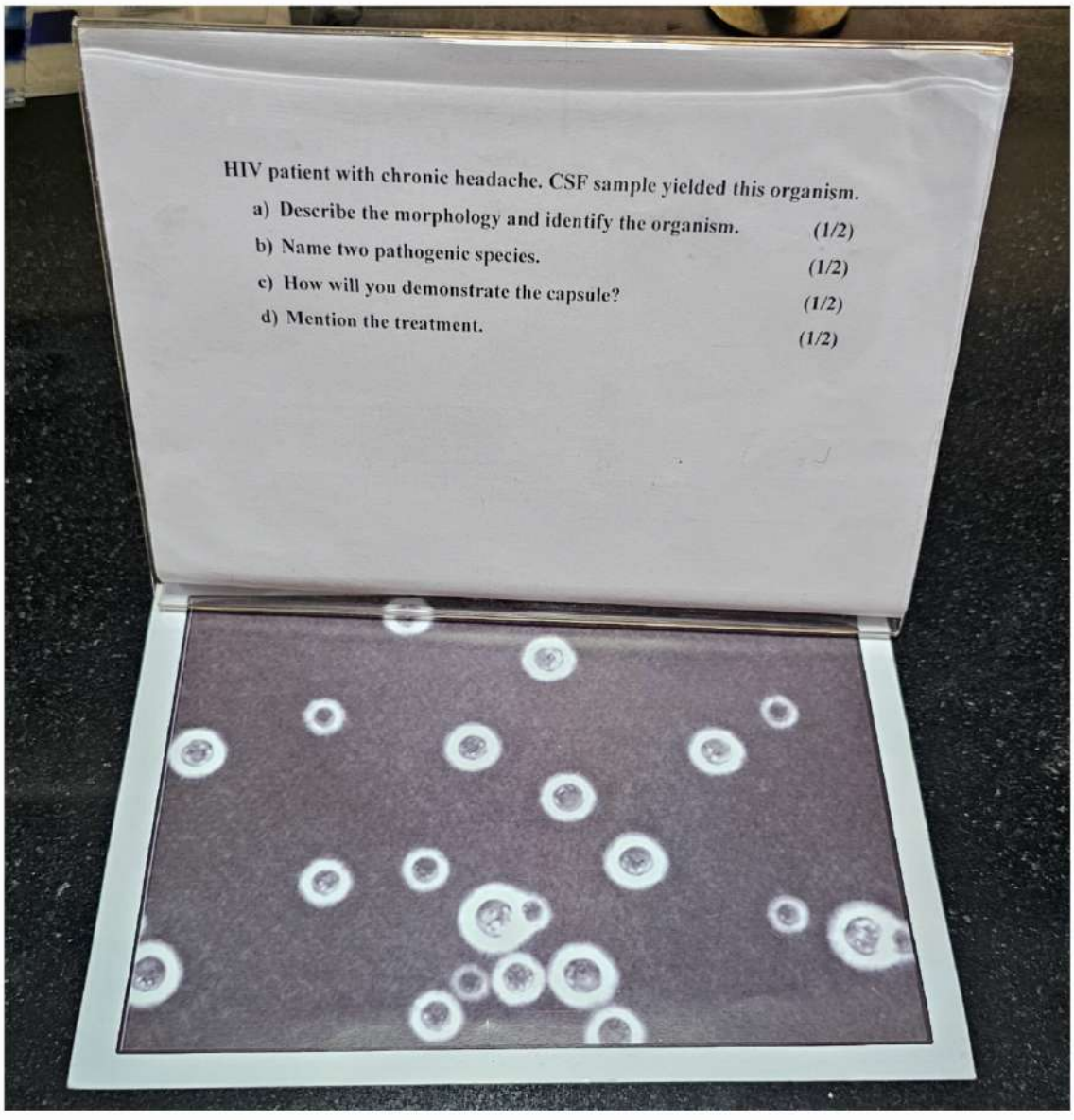
B) Macroscopy: Grey white with a thick cottony, fluffy surface

Microscopy: Non septate, broad hyaline hyphae with aerial sporangiophores which end in a sporangium, no rhizoids.

Rhinocerebral Mucormycosis

C) 1) Pulmonary Zygomycosis
2) Gastrointestinal Zygomycosis
3) Cutaneous Zygomycosis
4) Disseminated Zygomycosis

D) Intravenous Amphotericin B ~~combined with surgical drainage~~.



HIV patient with chronic headache. CSF sample yielded the organism.

Cryptococcus

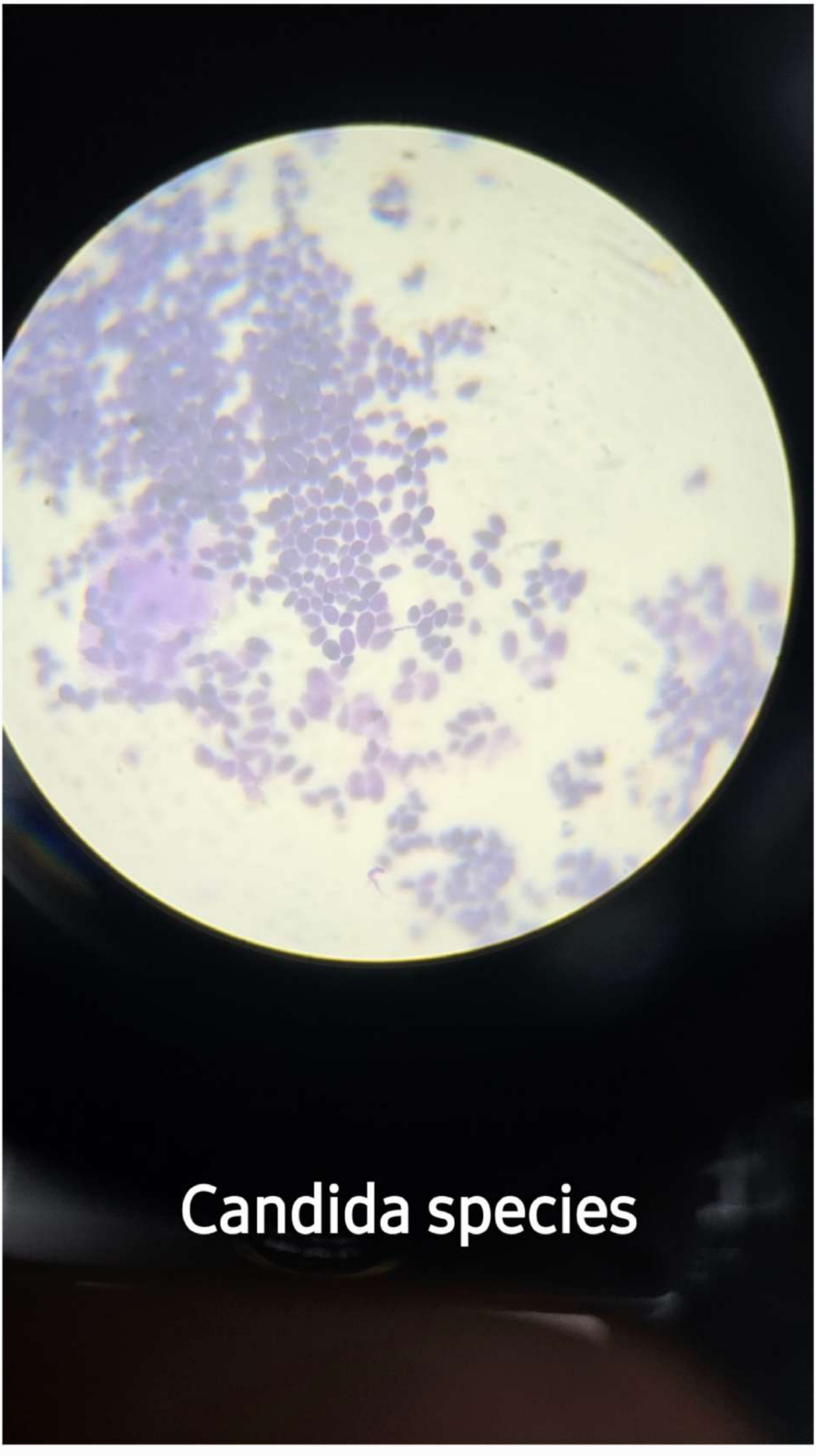
a) Capsulated budding yeast cells - Cryptococcus

b) Cryptococcus neoformans, Cryptococcus gattii, Cryptococcus gattii

c) India Ink,

d) Amphotericin B. with Flucytosine → CNS.

without CNS → fluconazole.


Candida species

40 year old HIV patient presented with white coating of the tongue; smear of the organism is focused

a) Identify the smear with features. (1/2)

b) Name two predisposing factors for this infection. (1/2)

c) Name the test by which pathogenic species is identified; and name the pathogenic species. (1/2)

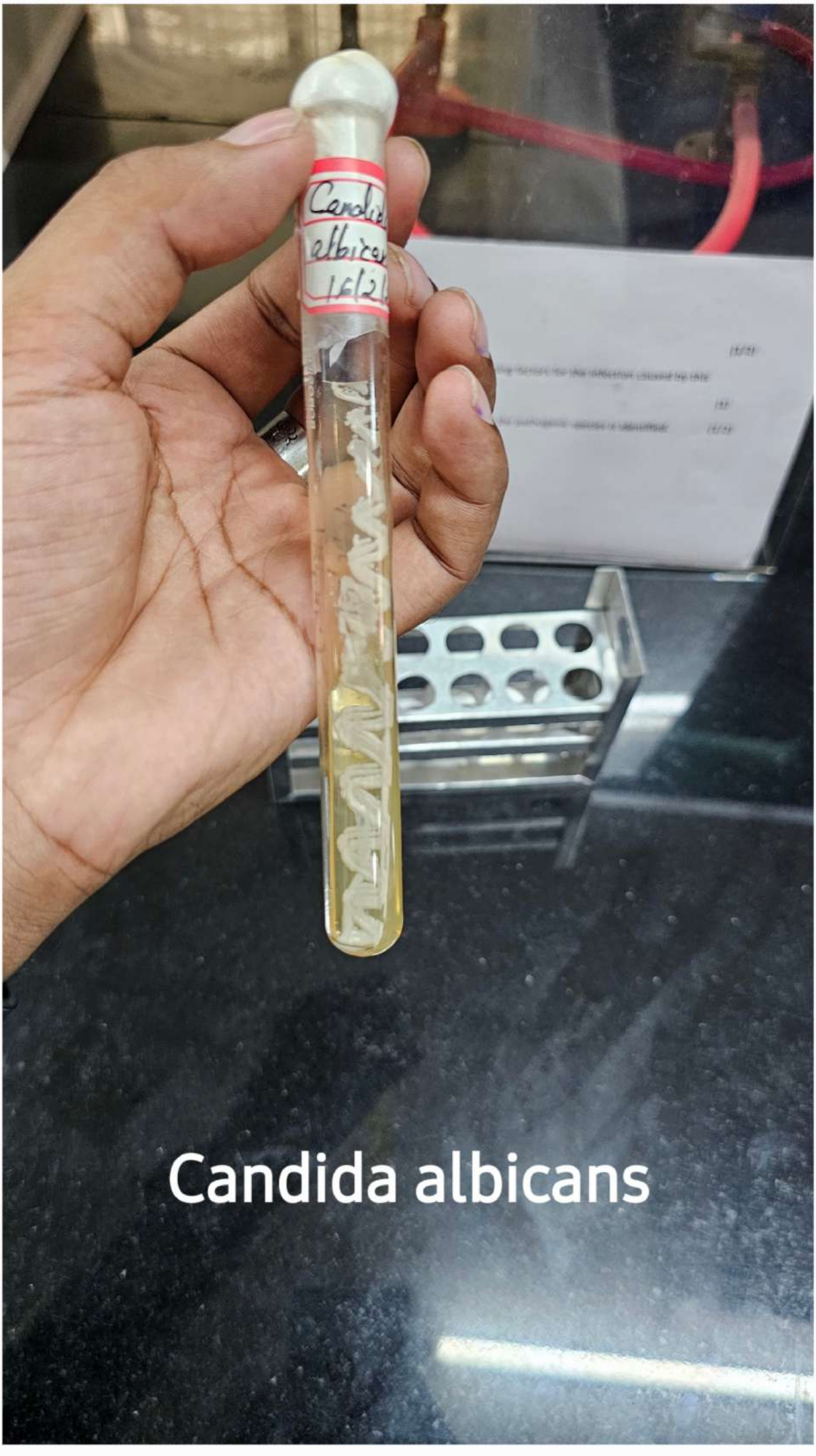
d) Name two more infections caused by this organism. (1/2)

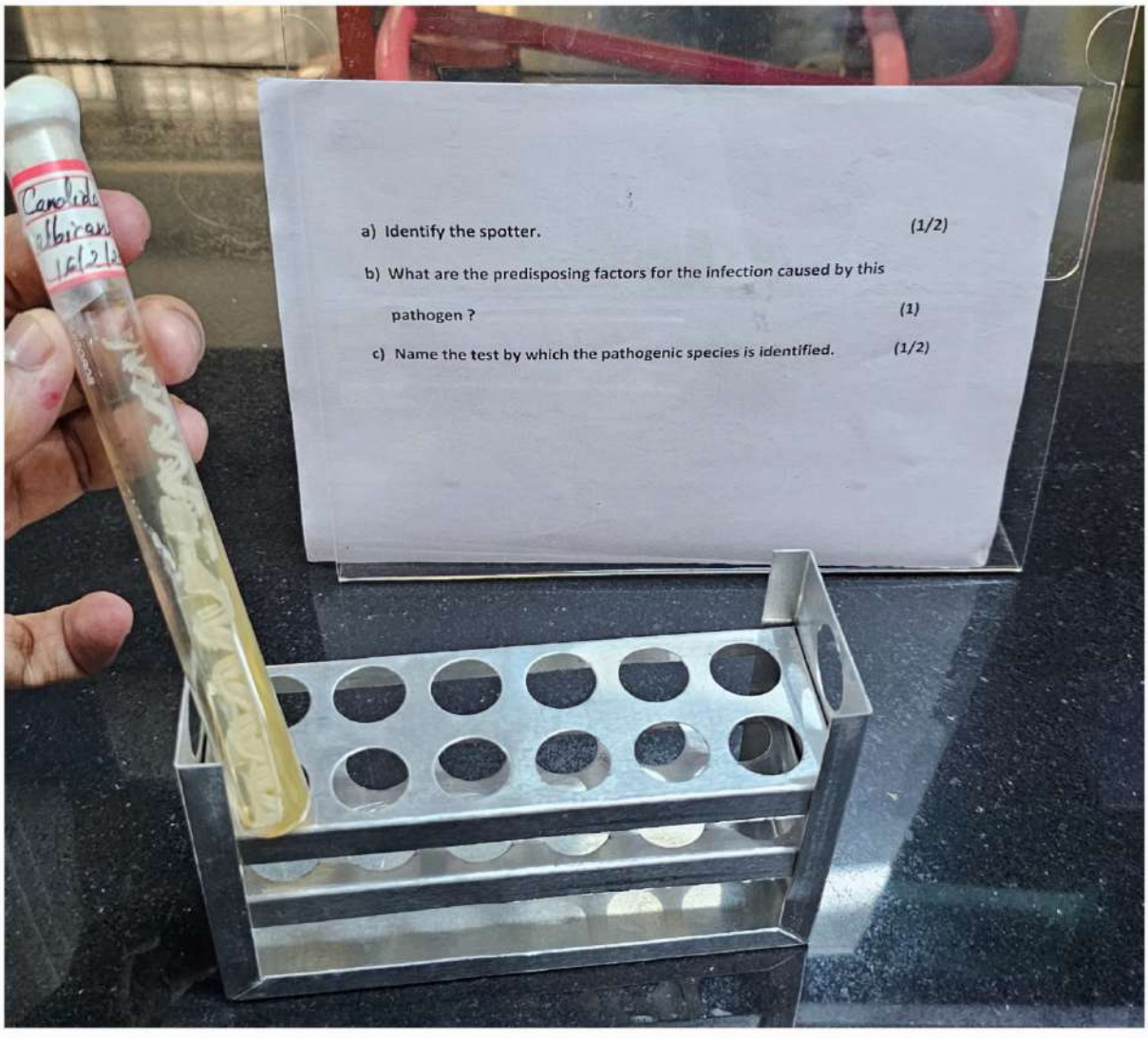
a) Gram positive budding yeast cells

b) (i) Diabetes
(ii) Immunocompromised.

c) Germ tube test
Candida albicans
(other candida - auris, tropicalis species.)

d) Vulvovaginal candidiasis, Oral thrush, Intestinal candidiasis
Paronychia
onychomycosis


Candida albicans



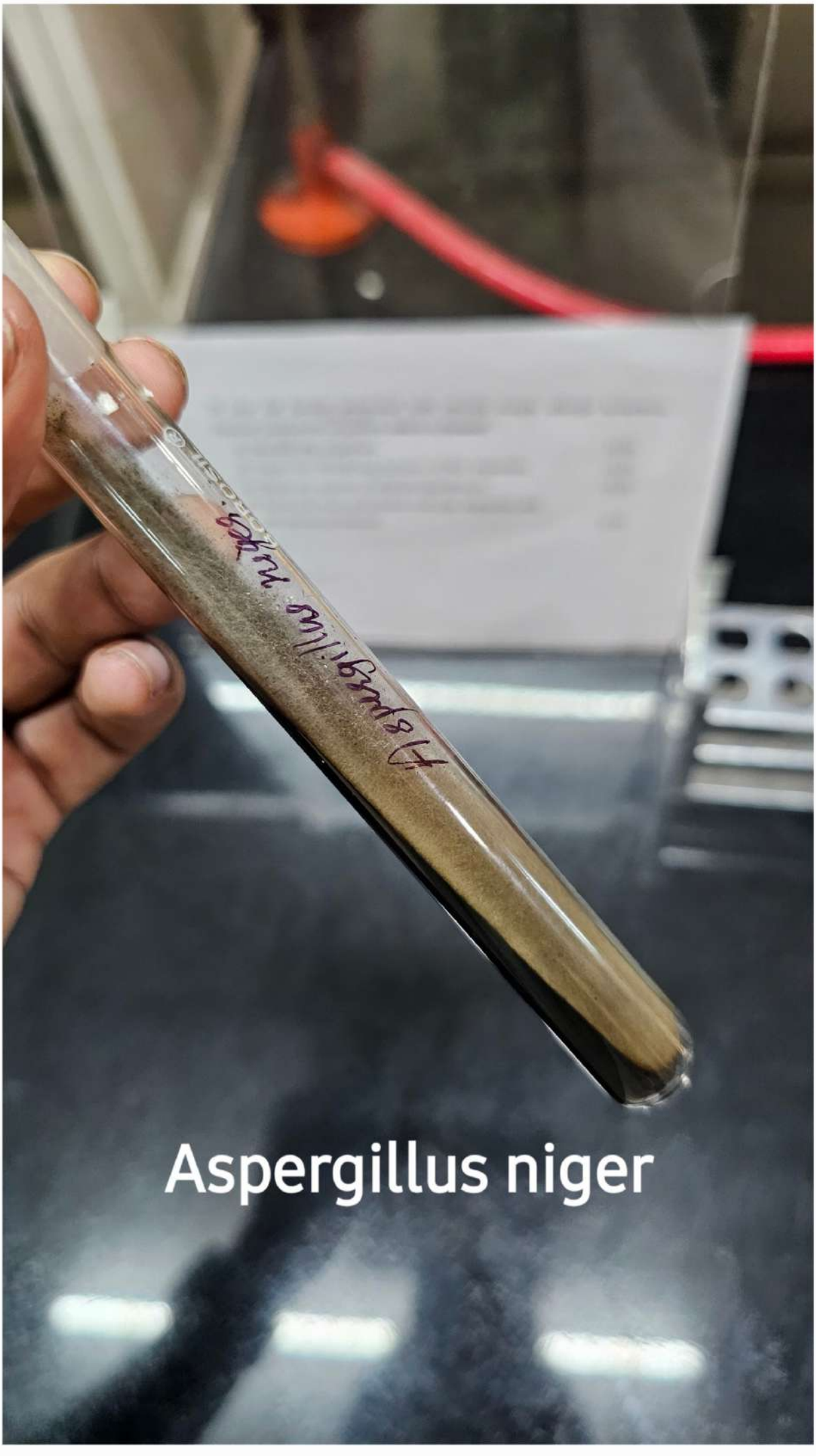
SDA – Candida

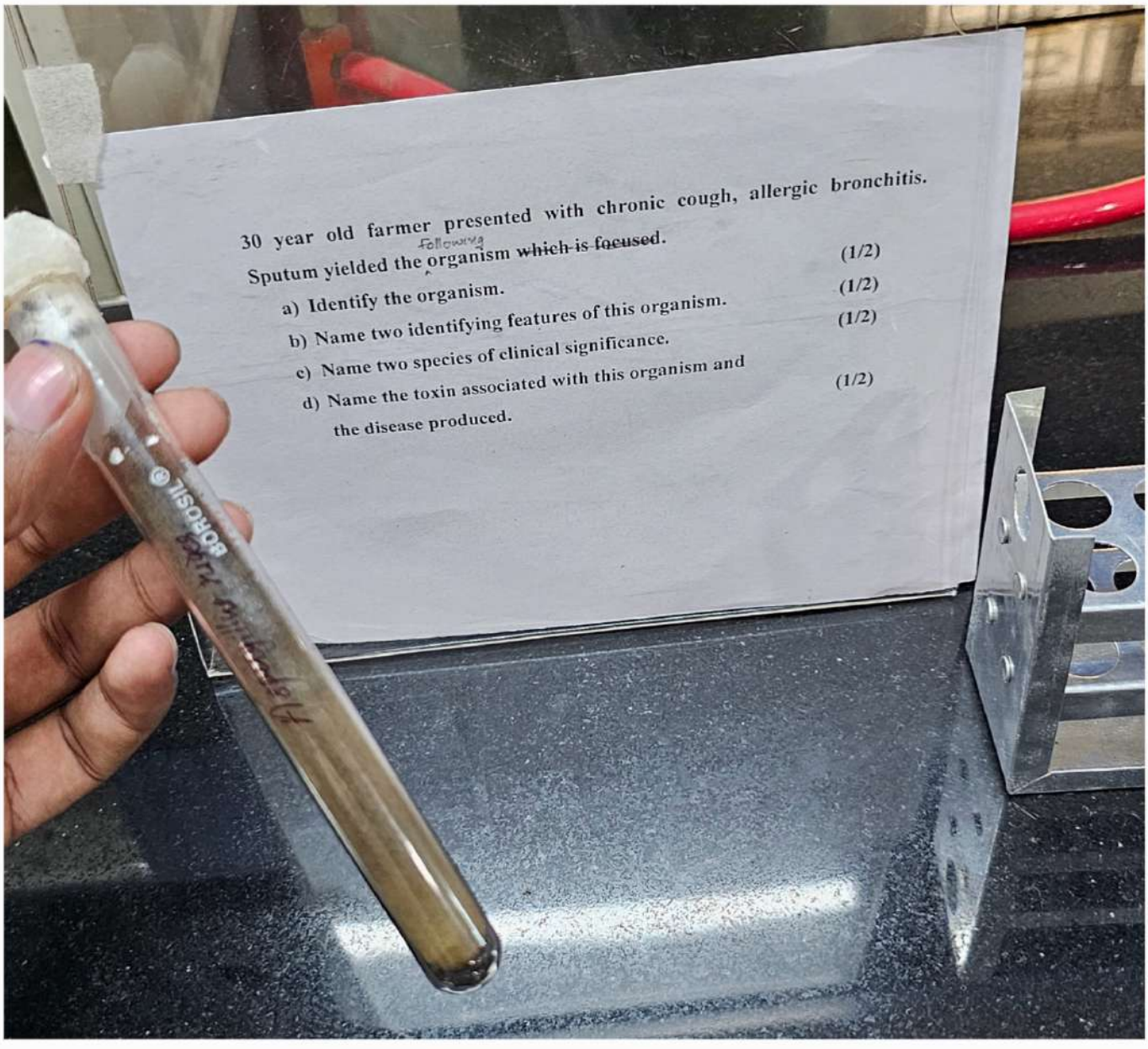
a) gross: creamy, white smooth colonies with a yeast odour
m/s : gram positive budding yeast cells

b) R/F : Diabetes
Patients on immunosuppressants, steroids
Malignancy
Post-Transplantation
febrile neutropenia

c) Germ tube test (~~Rayoaud~~ (Reynoldi Braude phenomenon)

Candida Pseudohyphae	True hyphae
constricted septa	not-constricted.
budding grows by	Apical elongation


Aspergillus niger



5 a) Aspergillus.niger

b) Macroscopy : Velvety to powdery surface and black coloured colonies.

Microscopy : with lactophenol cotton blue [LPCB]

Septate hyaline hyphae and conidiophores (specialised aerial hyphae that bear spores or conidia.

→ conidiophores have swollen rounded ends (vesicles) with chains of conidia borne on elongated cells called sterigmata

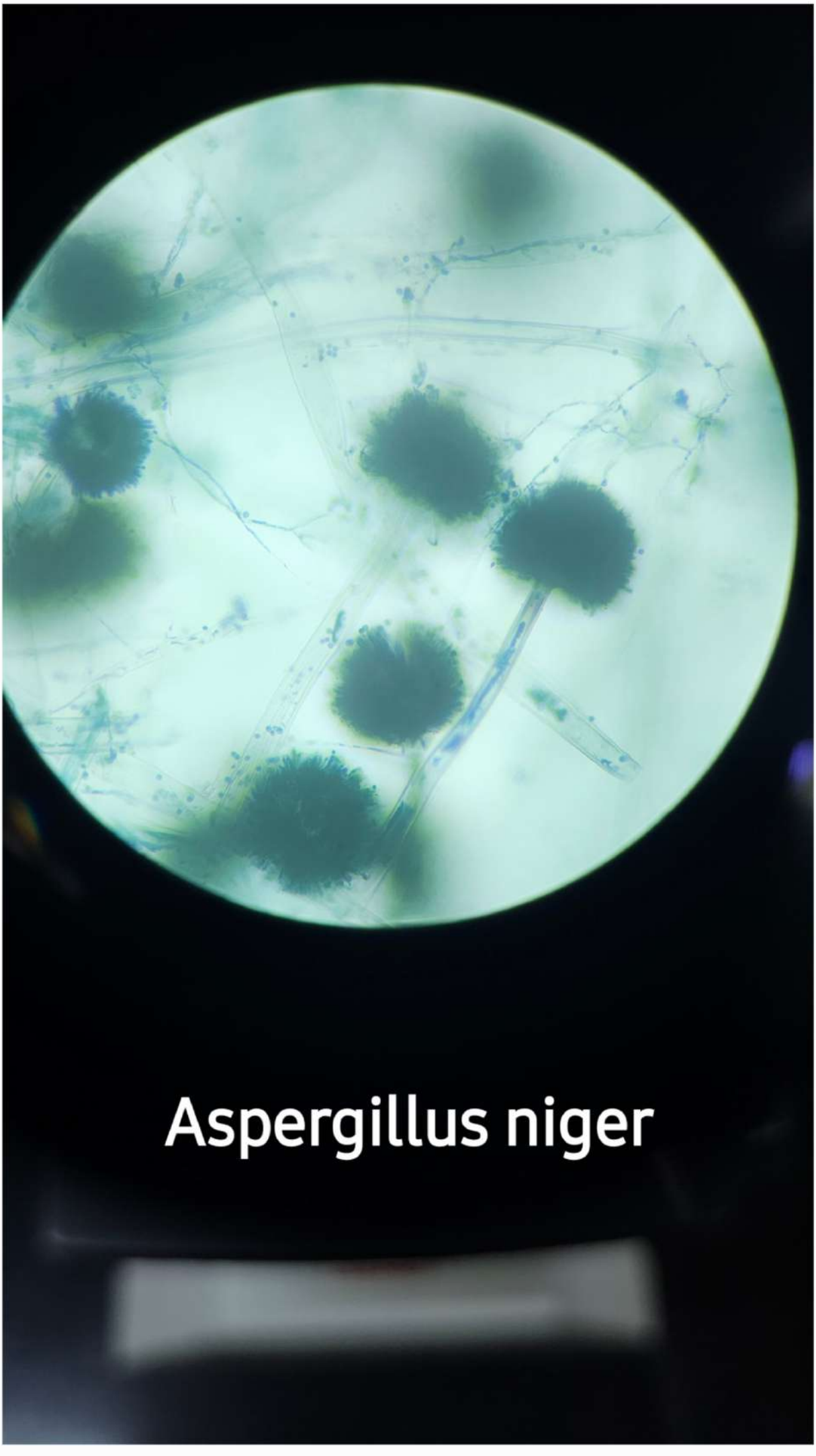
c) A. fumigatus, A. flavus

D) Aflatoxin : Allergic bronchopulmonary aspergillosis (ABPA)

Aspergilloma (fungal ball)

Acute angioinvasive pulmonary aspergillosis

chronic cavitatory pulmonary aspergillosis


Aspergillus niger

a) Identify the LPCB mount with features & draw the picture. (1)

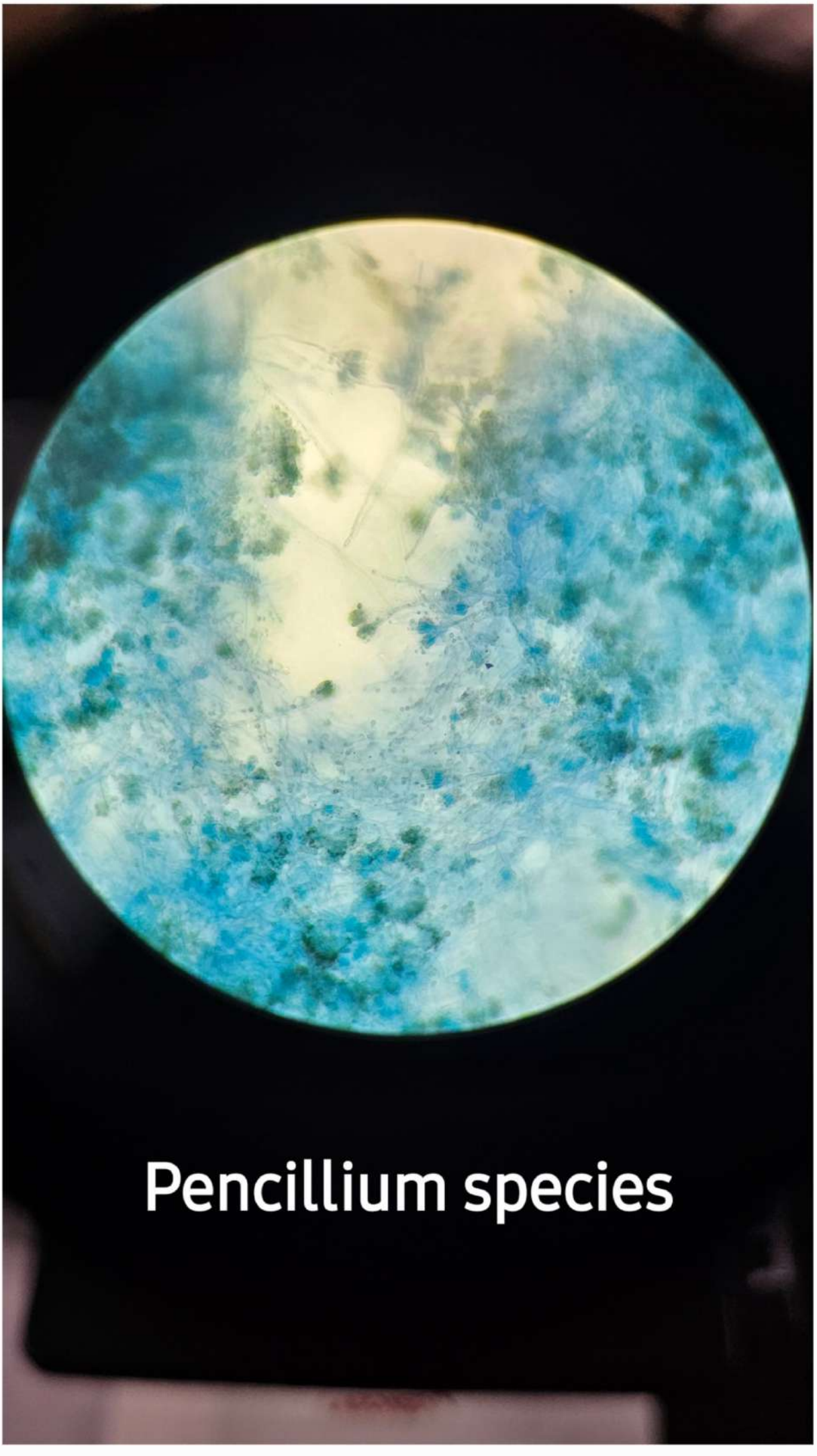
b) Mention one pulmonary manifestation produced by this agent. (1/2)

c) Name one species of this genus causing mycotic poisoning. (1/2)

b A) → Vesicle is globular-shaped
→ phialides in two rows
→ conidia arise from entire vesicle
→ conidia are black in colour

B) Allergic bronchopulmonary aspergillosis (ABPA)
Aspergilloma (fungal ball)

c) A. flavus : Aflatoxin


Pencillium species

a) Identify the LPCB mount with features & draw the picture. (1)

b) What is the method used to study the morphology of this group of organisms undisturbed? (1/2)

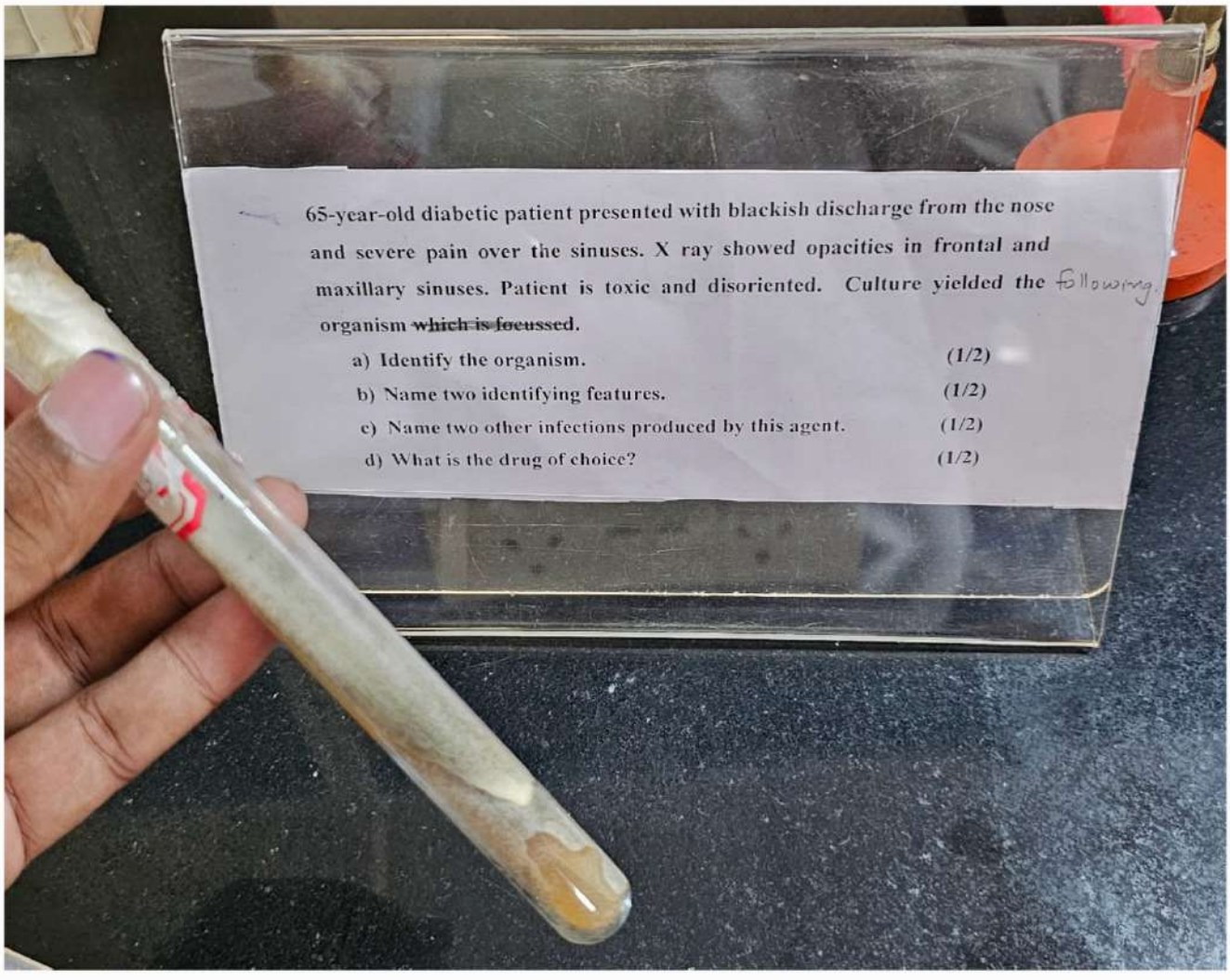
c) Name one dimorphic species in this genus causing opportunistic infections in immunocompromised patients. (1/2)

8 A) LPCB Mount shows Penicillium colonies reveals hyaline thin septate hyphae and vesicles are absent. the conidiophore and its branches give rise to elongated metulae, from which flask-shaped phialides originate which bear chain of conidia. Such arrangement is called brush border appearance.

B) Slide culture

C) P. marneffei


Rhizopus



SDA – Rhizopus

macroscopy : Grey-white with thick cottony, fluffy ~~soft~~ surface

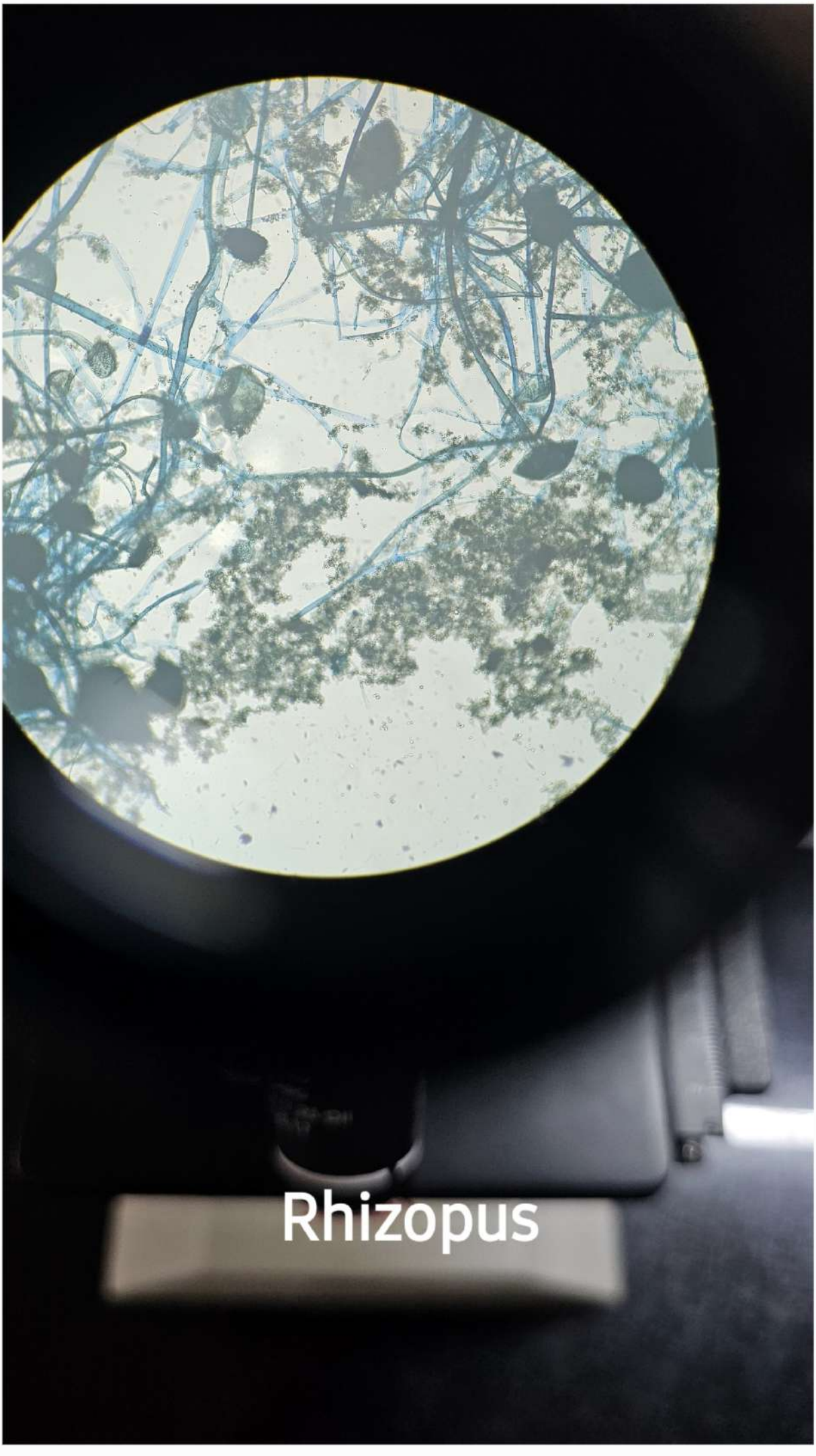
microscopy : non septate, broad hyphae with aerial sporangiophores arising in groups directly above the rhizoids

infections : Rhino-orbital cerebral mycosis

Pulmonary infection → causes thrombosis & infarction

DOC: Intravenous Amphotericin B

(+ surgical drainage, control of ~~DM~~ diabetes)


Rhizopus

a) Identify the LPCB mount with features. (1/2)

b) What is the method used to study the morphology of this group of organisms undisturbed? (1/2)

c) Name two diseases produced by this organism in diabetic patients. (1/2)

d) Name one organism which has similarity in morphology. (1/2)

SDA - Rhizopus

macroscopy : Grey-white with thick cottony, fluffy ~~surface~~ surface

microscopy : non septate, broad hyphae with aerial sporangiophores arising in groups directly above the rhizoids

infections : Rhino-orbital cerebral mycosis

Pulmonary infection → causes thrombosis & infarction

DOC: Intravenous Amphotericin B

(& surgical drainage, control of ~~DM~~ diabetes)

D - Mucor

Microsporum

Epidermophyton

Trichophyton

50 year old farmer presented with chronic itching and scaly lesion with raised edges over left foot. Culture of this skin scrapings from the lesion showed this organism.

a) Identify this organism. Give two identifying features. (1/2)

b) Name other species producing this type of infection. (1/2)

c) Name the fluorescent fungal stain. (1/2)

d) Mention the treatment. (1/2)

a) Microsporum./
large multicellular spindle shaped macroconidia born singly on edge of hyphae.

b) epidermophyton

c) Cal cofluor white stain

~~d) Clotrimazole (topical) ; Ketoconazole (oral)~~

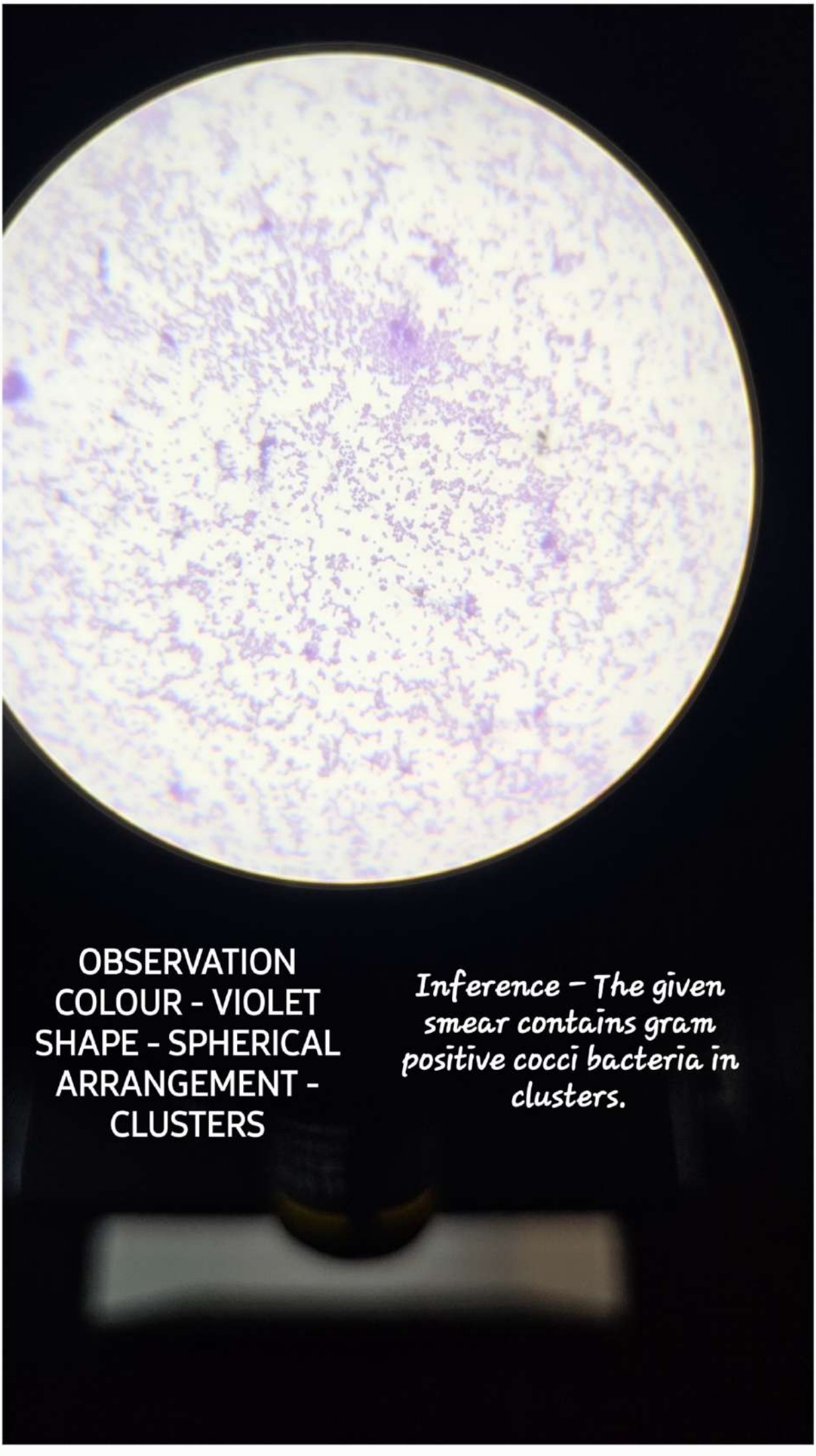
d) Oral terbinafine / ~~ket~~ itraconazole

Alternate - Oral griseofulvin & ketoconazole

Trichophyton - Skin, hair, Nails

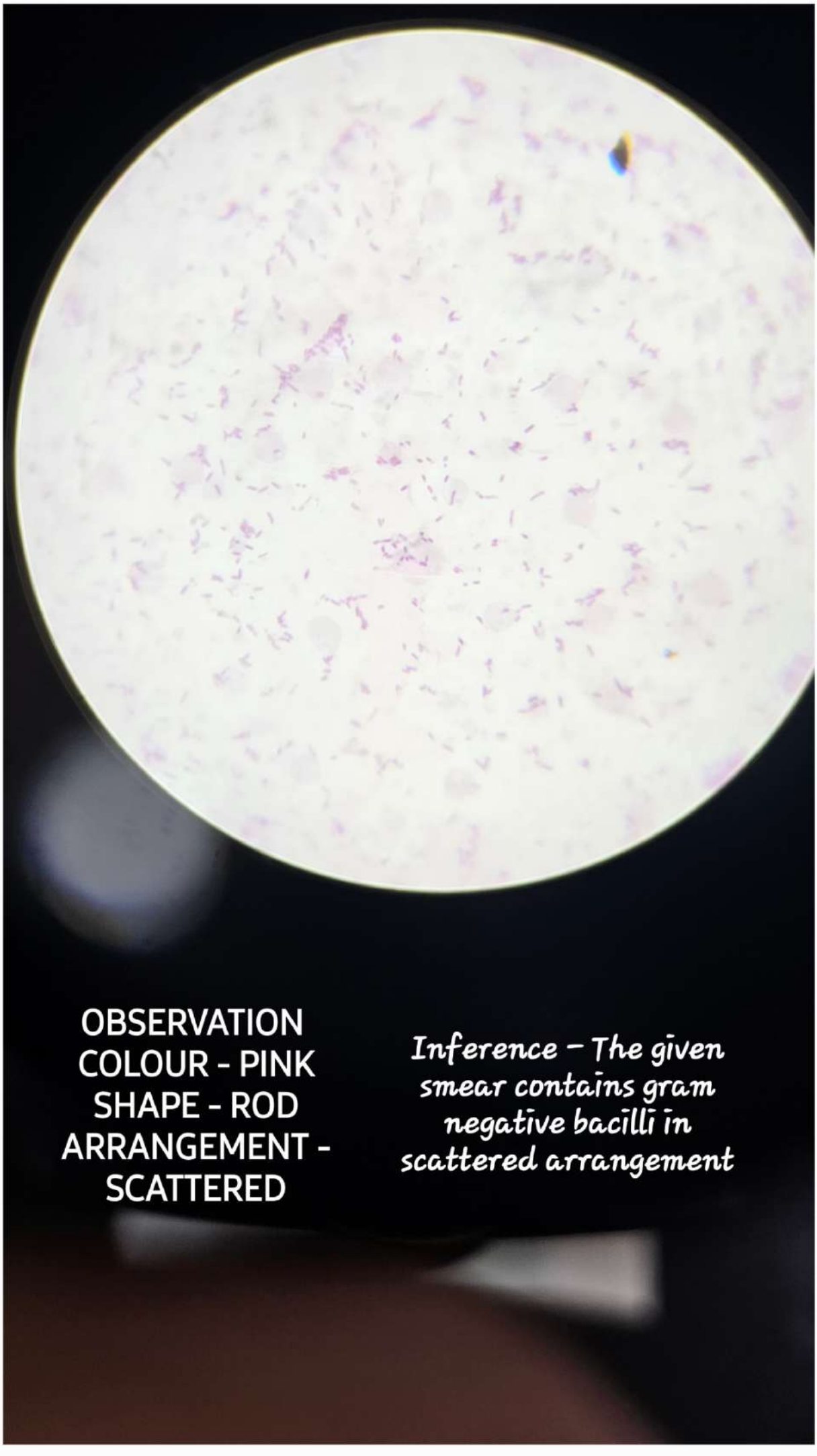
Microsporum - Hair, skin.

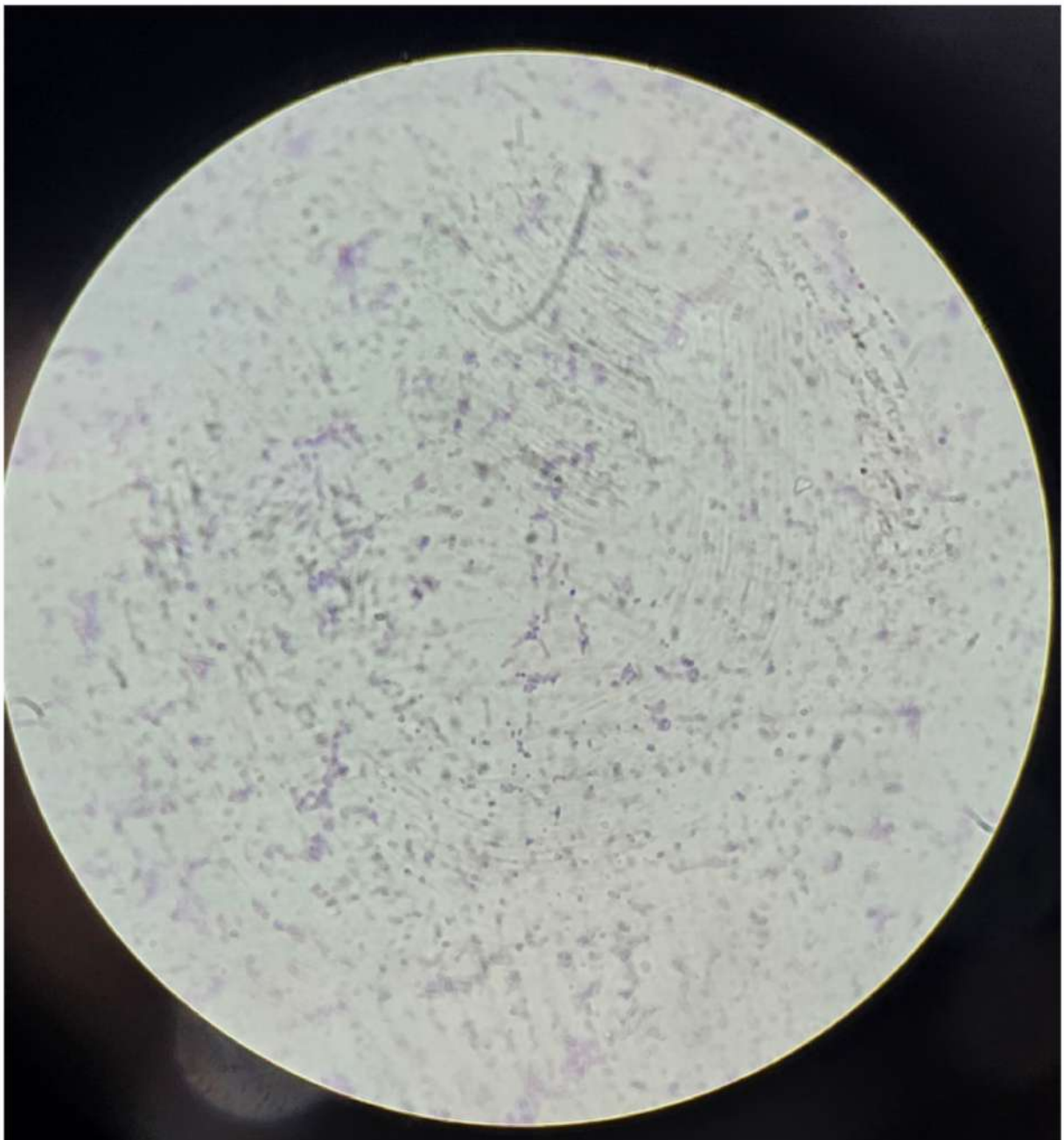
Epidermophyton - Skin, nails



OBSERVATION
COLOUR - VIOLET
SHAPE - SPHERICAL
ARRANGEMENT - CLUSTERS

Inference – The given smear contains gram positive cocci bacteria in clusters.

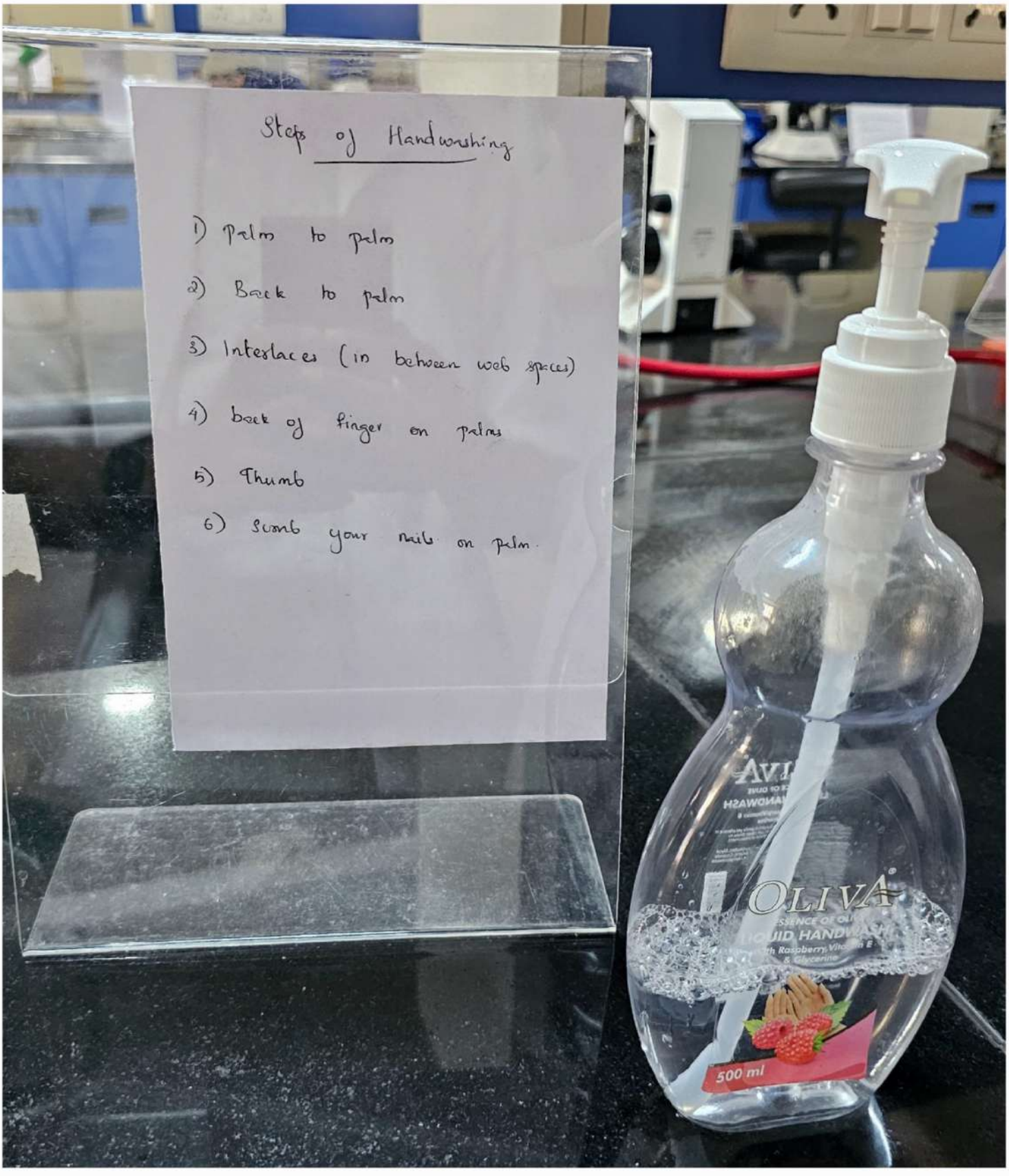

OBSERVATION
COLOUR - PINK
SHAPE - ROD
ARRANGEMENT - SCATTERED
Inference – The given smear contains gram negative bacilli in scattered arrangement



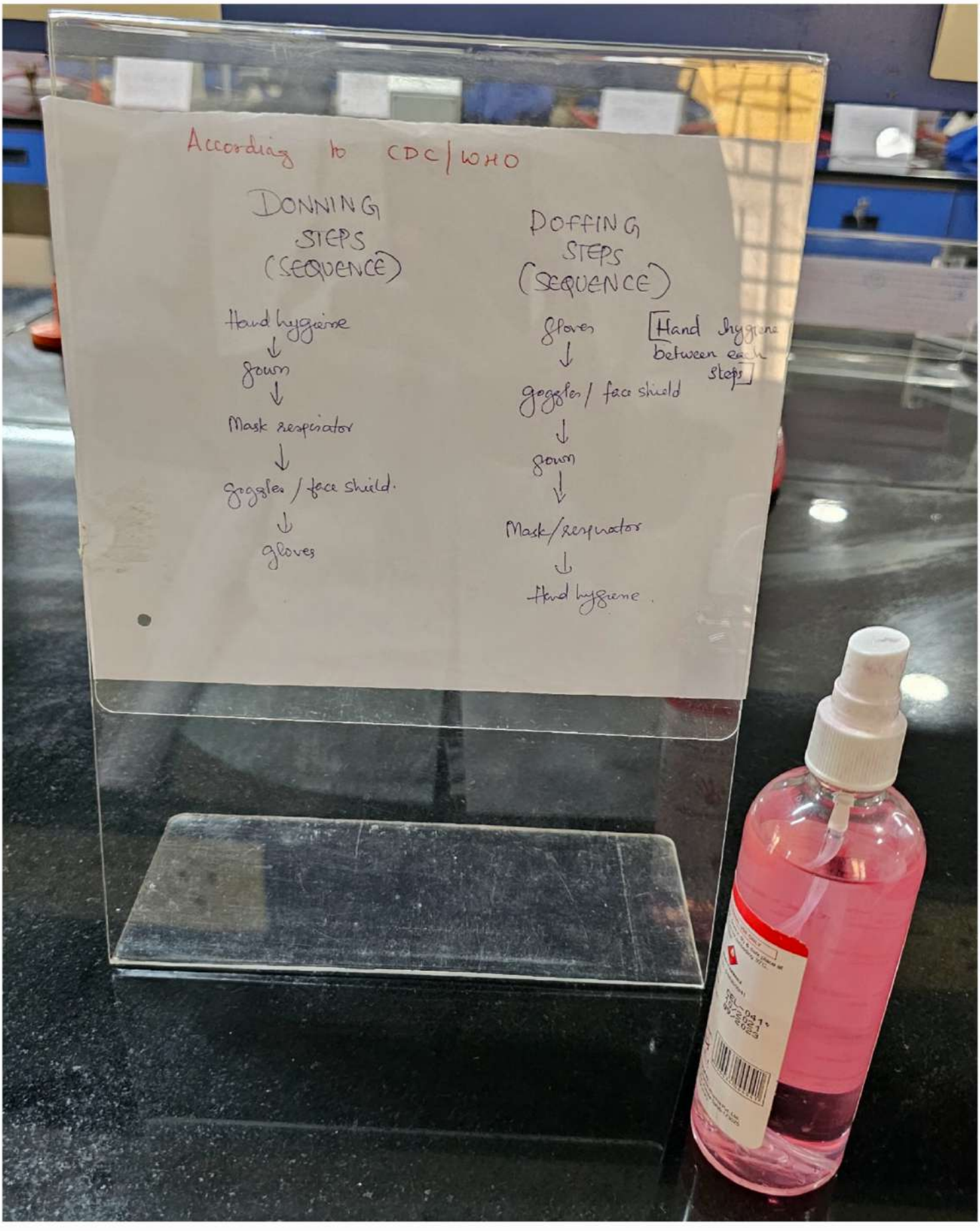
OBSERVATION

COLOUR -	VIOLET	PINK
SHAPE -	SPHERICAL	ROD SHAPE
ARRANGEMENT -	CLUSTERS	SCATTERED

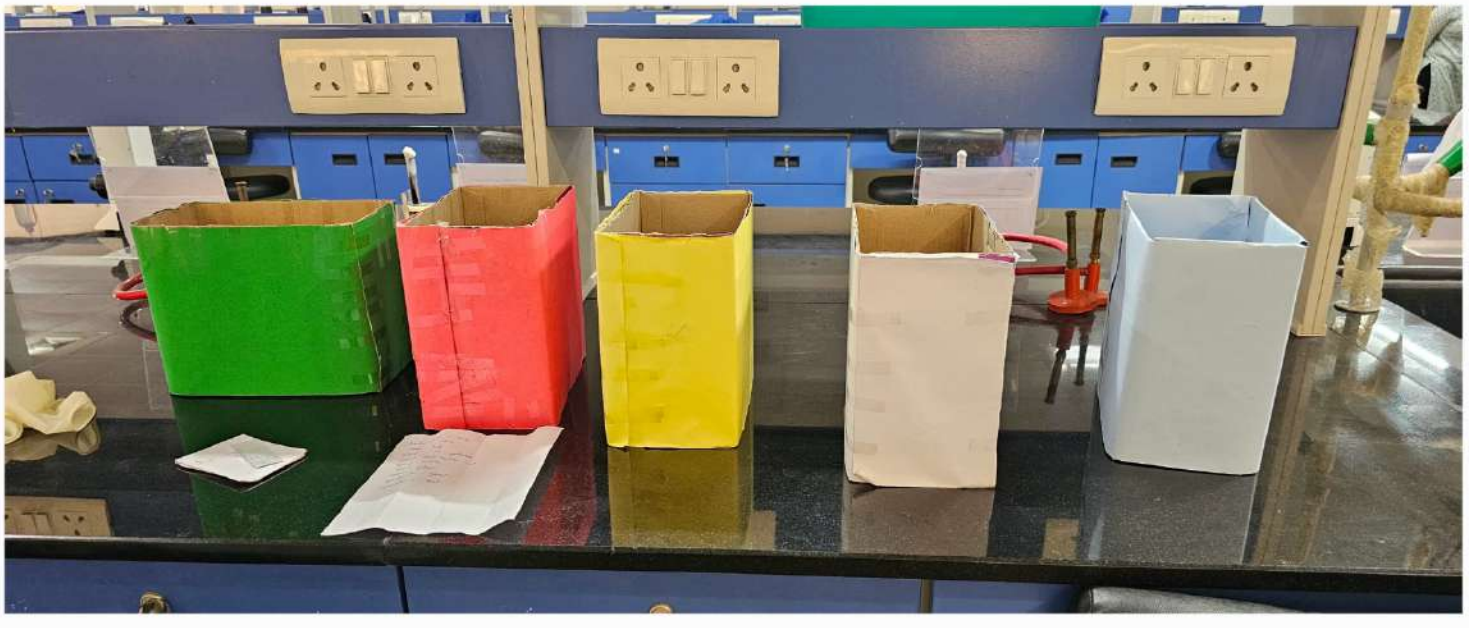
Inference – The given smear contains gram positive cocci in clusters and gram negative bacilli in scattered arrangement



STEPS OF HANDWASHING



DONNING AND DOFFING



BIOMEDICAL WASTE MANAGEMENT