

Solved By; M.AMIR

**Roll num; F18-076**

**3<sup>rd</sup> year MBBS**

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**SPECIAL BACTERIOLOGY**

**OBJECTIVE STRUCTURED PERFORMANCE EVALUATION (OSPE)**

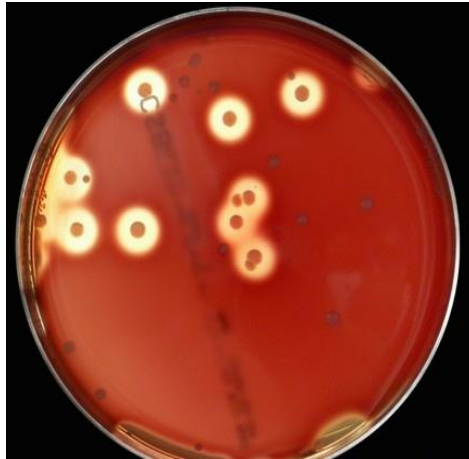
**OBSERVED STATION**

Marks: 03

Time allowed: 04 minutes

**For Candidate**

A 13 year old child presented with high grade fever, productive cough and tender throat. Blood culture was taken. The colonies grown showed beta hemolysis and were bacitracin sensitive.



1. Name the causative agent. (0.5)
2. What are the modes of pathogenesis of this organism? (1.5)
- 3) Bacitracin is used to differentiate which two bacteria? (1)

Ans

1) strep pyogenes

2) superficial infections

Invasive infection

Auto immune infection

3) s.pyogenes and s.agalactiae

## **OBSERVED STATION**

Marks: 03

Time allowed: 04 minutes

### **For Candidate**

A 27 year old female from a rural area, gave birth to a child who was suspected to have meningitis. The mother did not have any screening tests done during her pregnancy. The following test is positive:



1. Name the following test. (1)
2. Which Lancefield group of Beta hemolytic Streptococci is mainly responsible for causing meningitis in this age group? (1)
3. Which biochemical test is used to differentiate these bacteria from other beta hemolytic bacteria? (1)

Ans

- 1) **CAMP test**
- 2) **S.Agalactie**
- 3) **Bacitracin sensitive**

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**For Candidate**

A retired army officer went to the dentist for extraction of his wisdom tooth. The extraction went perfect, but 2 weeks later he started having chest pain, and high grade fever. The organism obtained was optochin resistant.



1. Name the pathogen. (1)
2. Is it alpha or beta hemolytic? (1)
3. Where is this organism present as flora? (1)

**Ans**

**1) *S. viridans***

**2) alpha**

**3) pharynx, upper respiratory tract**

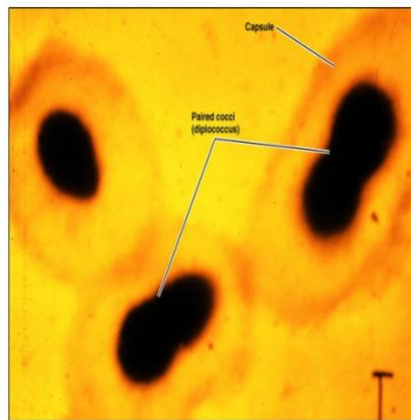
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**For Candidate**

A splenectomised boy presented with upper respiratory tract infection, ending up with pneumonia. The organism obtained was alpha hemolytic giving the following positive biochemical tests.



1. Name the causative agent. (1)
2. Name this biochemical test. (1)
3. Name the other alpha hemolytic bacteria. (1)

**Ans**

**1) *s.pneumoniae***

**2) capsular swelling test, bile solubility test**

**3) *S.viridin***

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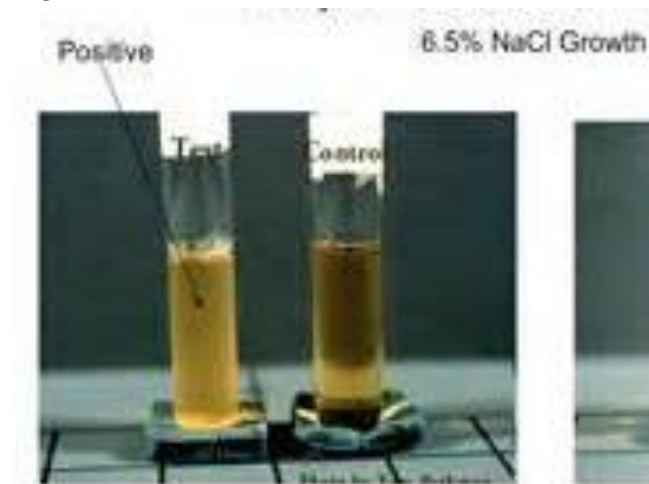
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**For Candidate**

A 27 year old female developed burning micturation, frequency and low grade fever, few weeks after giving birth to her first child. She was suspected to have infection with her normal gut flora. The organism obtained is a very hardy organism, able to resist high temperature and can grow in 6.5% NaCl.



1. Name the organism and its Lancefield group. (1)
2. Name other biochemical test used for its diagnosis. (1)
3. Name one other disease caused by this organism. (1)

**Ans**

**1) Enterococci group D**

2) bile esculin test

3) Uti, endocarditis

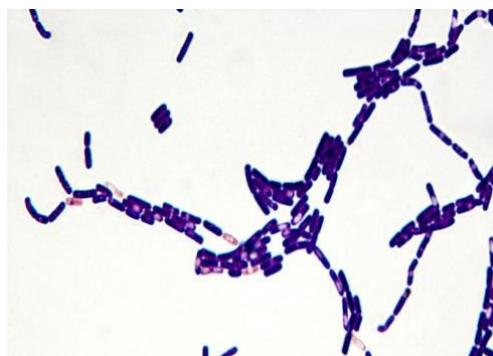
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**For Candidate**

Gram staining of a sputum sample of patient having fever and cough, suspected to have woolsorter's disease, revealed Gram positive rods with square ends. Blood culture revealed Non-hemolytic gray colonies with rough texture and ground glass appearance on blood agar.



1. Name the causative agent. (0.5)
2. What is the chemical nature of capsule of this organism? (0.5)
3. What is the route of transmission of this disease? (1)
4. Name two exotoxins produced by this bacteria. (1)

**Ans**

**1) Bacillus anthrax**

**2) polypeptide (D-glutamate)**

**3) cutaneous anthrax (95%), pulmonary anthrax (5%), gastrointestinal anthrax (rare)**

**4) edema factor, lethal factor**

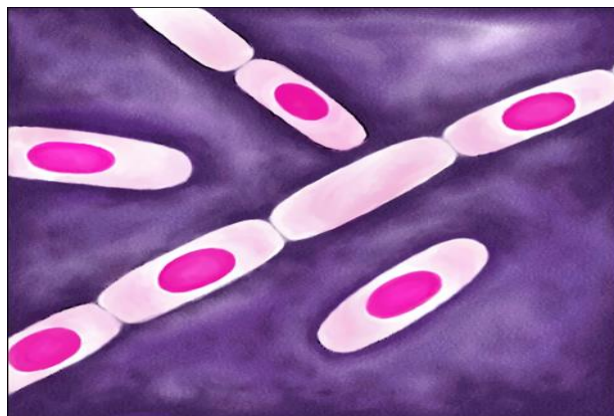
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**For Candidate**

A patient especially fond of eating rice, presented with profuse watery diarrhea 1 day after attending an annual dinner of his office. Gram staining revealed Gram positive spore forming rods.





1. Name the causative agent. (1)
2. What are the two types of diseases caused by it? (1)
3. What are the mechanisms of two exotoxins produced by it? (1)

**Ans**

**1) bacillus cerus**

**2) emetic type, diarrheal type**

**3) cholera toxin (adenylyl cyclase), enterotoxin (superantigen)**

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**For Candidate**

A child presented with rigid contraction of jaw muscles, preventing mouth from opening, accompanied by rigidity of neck & trunk muscles & arching of back. History revealed circumcision done in a local clinic in unsanitary conditions, a week ago.



1. Identify the disease and the causative agent. (1)
2. What is the characteristic appearance of this organism on Gram staining? (0.5)
3. Is it an aerobe or anaerobe? (0.5)
4. What are the modes of prevention of this disease? (1)

**Ans**

**1)tetanus by c.tetani**

**2)tenis rocket apperence**

**3)anaerobe**

**4)immunization with tetanus toxoid,tetanus antitoxin**

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**For Candidate**

A young man very fond of canned smoked fish and mushrooms, developed diplopia, dysphagia and descending weakness ending up in flaccid paralysis, few days after this meal.



1. Name the bacteria responsible for his condition and the disease. (0.5)
2. How does the toxin of this bacteria works? (1)
3. Can the toxin produced by these bacteria be destroyed by heating or cooking? (0.5)
4. What are two uses of this toxin? (1)

**Ans**

- 1) **Clostridium botulinum (botulism)**
- 2) **Botulinum toxin absorbed from gut via blood to PNS and block release of ACh**
- 3) **Yes at 85°C for 5 min longer**
- 4) **Remove wrinkle on face**  
**Treatment of spastic muscle**

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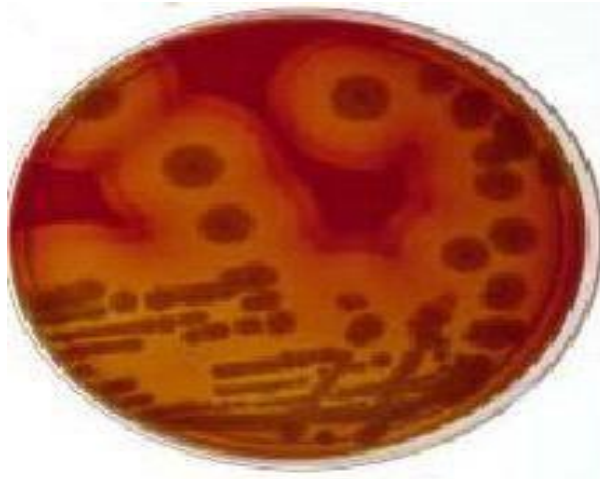
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#### **For Candidate**

A young lady had a septic abortion due to endometritis, ending up in development of gas gangrene. Gram positive anaerobic rod was isolated showing the following picture on blood culture.



1. What is evident in this culture plate? (1)
2. Name the causative agent. (1)
3. Name the selective and anaerobic media used to culture this organism. (1)

**Ans**

**2) *C. perfringens***

**3) selective media, neomycin blood agar**

**Anaerobe media, Robert Cooked media**