EXAM TOPICS, 2021/2022

A.

1. **Stucture of a bacterial cell:**
   cell wall of Gram positive [Gram(+)] and Gram negative [Gram(-)] bacteria, significance of surface structures in the pathogenicity of microorganisms (flagella, pili , fimbriae, capsule), endospores *etc*
2. **Bacterial physiology as a basis for laboratory culture and differentiation**
3. **Mechanisms of the pathogenicity of bacteria. Adhesion, invasion, toxicity – exotoxins, endotoxins**
5. **Microbiota of the human body, composition, interactions and significance**
6. **Antibiotics and chemotherapeutics:**
   characteristics, representatives, spectrum of activity, mechanism of action:
   a) beta-lactam antibiotics (penicillins, cephalosporins, carbapenems and monobactams)
   b) aminoglycosides
   c) tetracyclines
   d) macrolides
   e) glycopeptides
   f) quinolones,
   g) lincosamides,
   h) metronidazole,
   i) sulfonamides
   j) trimethoprim

   Mechanisms of bacterial resistance to antibiotics:
   a) the genetic basis of drug resistance
   b) phenotypic expression of resistance
      clinically and epidemiologically relevant resistance phenotypes and enzymes:
      MRSA (CA-MRSA, HA-MRSA, FA-MRSA), MRCNS, GISA, GRSA,
      VRE, HLAR, PRSP, KPC, MBL, NDM, ESBL, MDR, PDR
   c) laboratory detection of microbial susceptibility/resistance to antibiotics

   Microbial tolerance to antibiotics

7. **Sterilization, disinfection, antisepsis**

B.

Characteristics of microorganisms:
virulence factors, epidemiology of infections (reservoirs, routes of transmission, clinical forms of diseases, laboratory diagnostics, prevention, vaccines, treatment)

Gram-positive bacteria*:*

- *Staphylococcus, Streptococcus, Enterococcus*
- *Bacillus, Clostridium*
- *Mycobacterium* and MOTT, *Actinomyces*
- *Lactobacillus, Corynebacterium, Cutibacterium*

Gram-negative bacteria:

- *Escherichia, Klebsiella, Enterobacter, Proteus, Salmonella, Shigella,*
- *Pseudomonas, Acinetobacter, Stenotrophomonas*
- *Neisseria, Moraxella,*
- *Haemophilus, Bordetella, Legionella*
- *Bacteroides, Tannerella, Porphyromonas, Prevotella, Aggregatibacter, Veillonella, Capnocytophaga, Fusobacterium, Leptotrichia, Treponema*

8. Fungi

- structure, metabolism, classification of medically important fungi
- pathomechanism of mycoses
- diseases
- risk factors of mycoses
- microbiological diagnosis of fungal infections
- antibiotics for treatment of fungal infections (azoles, polyenes, echinocandins, 5-flucytosine)

Characteristics of *Candida, Cryptococcus, Aspergillus, Pneumocystis jiroveci*

10. Viruses

Structure and classification of viruses, replication of viruses, characteristics of:
Herpes simplex v., varicella zoster v., Epstein-Barr v., Papillomavirus, Paramyxoviruses (parainfluenzae v., mumps v., measles v., respiratory syncytial v.)

11. Microenvironment of the oral cavity:

- dental plaque as a biofilm – composition, development, consequences
- dental caries, periodontal diseases, dentoalveolar infections, oral mucosal infections.