

Biophysics Sample test (1. LF UK)

Below you can try a sample credit test for biophysics:

1 Blood pressure of 160 mmHg:

- is referred to as mean pressure
- is considered pathological
- is the normal physiological value of systolic pressure
- is the normal physiological value of diastolic pressure

2 The digital tonometer is based on:

- oscillometric principle
- on changes in the resistance of the strain gauge wire
- on changes in the capacity of the strain gauge wire
- none of the above options are correct

3 Where will the speed of sound be the highest?

- in air at a temperature of 0°C
- in water at a temperature of 0°C
- in air at a temperature of 20°C
- in steel

4 Sample activity

- grows linearly with time
- decreases exponentially with time
- decreases linearly with time
- grows exponentially with time

5 What are the units of absorbed dose?

- Gy
- Bq
- J.kg⁻¹
- this quantity is dimensionless

6 A laser device is a current of:

- photons
- electrons
- positrons
- helium nuclei

7 Reynolds number

- gives the critical speed in [m.s⁻¹]
- is a quantity with the sign R
- determines the limit value when turbulent flow turns into laminar flow
- depends only on the viscosity and speed of the liquid and on the lumen of the vessel

8 Hypoxic tissue:

- sensitivity to radiotherapy does not depend on oxygen content
- is radioresistant
- is radiosensitive
- has a normal sensitivity to radiotherapy

9 Positive contrast agents:

- absorb radiation more than the examined organ

- on the X-ray image they cause a saturated shadow
- cause clarification on the X-ray image
- are substances with low absorption capacity

10 Betatron uses the acceleration principle

- positrons and electrons
- protons and neutrons
- electrons
- heavy charged particles

11 The rheobase is:

- current frequency that is needed for irritation
- current value at which tissue damage occurs
- the highest current that can still be used safely
- the smallest current that causes irritation

12 Bipolar limb lead II:

- connects right leg and right hand
- connects left arm and left leg
- connects right leg and left hand
- connects right arm and left leg

13 Applies to the audiogram:

- is used to record audiometry results
- has a curve for the right and left ear separately
- the pain threshold is recorded in it
- the curve that is marked in the audiogram is called an isophone

14 Where does periosteal pain occur?

- at the interface of soft tissue and bone
- at the interface of two soft tissues
- at the interface of two tissues with similar bioimpedance to ultrasound
- anywhere in the organism that is affected by ultrasound

15 Cannot be measured by spirometry

- resting tidal volume
- vital capacity
- residual volume
- inspiratory capacity

16 Effective half time

- is always shorter than the biological half-life
- is always longer than the biological half-life
- is longer in real conditions than in physical conditions
- does not match any of the above definitions

17 Quantum physics attributes to microworld objects:

- particle and wave character
- only wave character
- only particle character
- none of the listed options

18 What electrical properties does the cell membrane have if a high current passes through the tissues? frequencies?

- the current flows only through the extracellular space
- for electric current becomes through
- represents an infinite resistance to electric current
- bioimpedance is proportional to the weight of the extracellular fluid

19 Doppler effect in sonography enables:

- distance measurement
- measurement of acoustic resistance
- detection of speed and direction of flow
- measurement of tissue echogenicity

20 Applies to wavelength

- $\lambda = c.f$
- $\lambda = c/f$
- $\lambda = f/c$
- $\lambda = 1/f$

21 The cones are in different areas of the retina:

- of the same shape
- same shape but different core
- of different shape and do not have a nucleus on the periphery of the retina
- different shape

22 Astigmatism is corrected:

- distractions
- toric glasses
- couplings
- bifocal glasses

23 Low power laser can damage

- internal organs
- the skin
- mucous membrane
- sight

24 Close point

- is the closest point that the eye can see sharply with maximum accommodation
- moves away from the eye with increasing age
- is the closest point that the eye can see clearly without accommodation
- gets closer to the eye with increasing age

25 For X-ray imaging methods, we use:

- of the current of electrons emitted from the cathode and accelerated by the high voltage between the cathode and the anode
- fluorescence, which is caused by a stream of electrons after passing through the examined object
- braking radiation caused by the impact of a current of positively charged electrons emitted from the anode and accelerated by the high voltage between the cathode and the anode
- beta-radiation emitted by cobalt emitters

26 State quantities do not include:

- pressure
- internal energy
- work
- temperature

27 Indicate the correct unit of the Boltzmann constant

- J
- $J.K^{-1}$
- J.K
- J.K. kg

28 Brassoid X-rays:

- has a continuous spectrum
- can have a continuous or line spectrum

- is created by the transition of electrons on the levels
- no answer is correct

29The Doppler effect does not occur

- in a situation where the transmitter and receiver move at the same speed in different directions
- in a situation where the transmitter and receiver are at rest
- in a situation where the transmitter and receiver are moving at the same speed in the same directions
- no answer is correct

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