



BRIGHT LEARNERS ORGANIZATION AND CONCOUR PREP SCHOOL

CONTINUOUS ASSESSMENT WEEK 7

CONTENT

BIOLOGY = 50MARKS

CHEMISTRY = 25MARKS

PHYSICS = 25MARKS

GOOD LUCK

Biology

1) Which of the following regions of the lower limb is most proximally located?

- a) ankle
- b) thigh
- c) knee
- d) toe

2) What system of the body control homeostasis?

- a) respiratory and digestive
- b) skeletal and muscular
- c) urinary and reproductive
- d) nervous and endocrine

3) An organ which is part of more than one system is the ?

- a) esophagus
- b) stomach
- c) pancreas
- d) small intestine

4) in a feedback loop, effector that bring about change receive information from

- a) stimuli
- b) the control center
- c) receptor
- d) a response mechanism

5) Which of the following is found in the pelvic cavity?

- a) aorta
- b) urinary bladder
- c) pancreas
- d) stomach

6) The mediastinum is

- a) a part of the stomach
- b) a region between the lungs
- c) a structure in the lower right quadrant
- d) in the dorsal cavity of the body

7) Implantation occurs ____ after fertilization

- a) immediately
- b) a few hours
- c) a day
- d) about 6 days

8) In Klinefelter's syndrome

- a) female are lacking on X chromosome
- b) males have an extra X chromosome
- c) the extra chromosome 21 results in mental retardation
- d) females are characterised by short stature and webbed neck

9) Fertilization in a laboratory dish and transfer of the developing embryo into the uterus is

- a) in vitro fertilization
- b) embryo transfer
- c) gamete intra fallopian transfer (GIFT)
- d) ectopic pregnancy

10) An autosomal aneuploidy resulting from nondisjunction is

- a) color blindness
- b) fragile X chromosome
- c) down syndrome
- d) phenylketonuria

11) After Implantation, the only tissue of the developing embryo to come in direct contact with maternal tissue is the ?

- a) zona pellucid
- b) embryoblast
- c) blastocoele
- d) trophoblast

12) In a cell the reticulum is in origin of

- a) mitochondria
- b) golgi apparatus
- c) starch inclusion
- d) none of the above

13) The bacterium

- a) is a eukaryote
- b) lack nucleus
- c) lacks cytoplasm
- d) none

14) A cell is considered living because:

- a) it can move
- b) it can reproduce
- c) it is the seat of exchange with its milieu
- d) it grows
- e) none of the above

15) A nucleolus is a nucleus:

- a) undergoing formation
- b) rudimentary
- c) secondary
- d) nine of above

16) Mitochondria are present;

- a) in prokaryotic cells
- b) only in animal cell
- c) in all cell types
- d) none of the above

17) Endocytosis

- a) is always specific
- b) occurs only in eukaryotes
- c) transport liquid particles in intracellular medium
- d) uses energy
- e) none of the above

18) Viruses are:

- a) eukaryotes
- b) prokaryotes
- c) obligate parasite
- d) Organisms with their own metabolism
- e) none of the above

19) An animal cell placed in hypertonic solution will

- a) swell
- b) shrivel
- c) remain the same in size

d) swell then shrivel

20) The pairing up of homologous chromosome occurs in

- a) only in mitosis
- b) only in meiosis 1
- c) only in meiosis 11
- d) only in meiosis and mitosis

21) The functional unit of the myofibril is ?

- a) muscle fibre
- b) myofibril
- c) sarcomere
- d) sarcoplasm
- e) sarcolemma

22) The motor end plate is a synapse

- a) between 2 neurons
- b) neuromuscular
- c) electronic
- d) electric
- e) none of the above

23) The skeletal muscle is described by all the following properties except

- a) striated
- b) voluntary
- c) multinucleated
- d) automatic
- e) none of the above

24) The difference origins of the excitement of muscle are

- a) thermal
- b) mechanical
- c) electric
- d) chemical

25) In the liver, some of the lactic acid is converted to ?

- a) glycogen
- b) myoglobin
- c) ATP
- d) acetylcholinesterase

26) Muscle contraction is triggered by impulse carried over.

- a) sensory neurons
- b) afferent neurons
- c) motor neurons
- d) myofibril

27) A muscle fascicle is surrounded by?

- a) sarcomysium
- b) endomysium
- c) epimysium
- d) perimysium

28) Muscle growth due to an increase in the size of existing fibers is called

- a) hyperplasia
- b) fusion extension
- c) hypertrophy
- d) pericytosis

29) Elasticity refers to the ability of the muscle fiber to ?

- a) shorten
- b) stretch
- c) respond to stimulus
- d) return to original shape after contracting or stretching

30) The motor end plate is part of a

- a) motor neuron
- b) skeletal muscle cell at contracting or stretching
- c) cardiac muscle cell at the intercalated disc
- d) smooth muscle cell when two cells meet

31) The period of lost excitability in both muscles and nerves cells is called the

- a) latend period
- b) relaxation period
- c) rest period
- d) refractory period

32) The long bone(s) of the upper limb are :

- a) the humerus
- b) the furmur
- c) the tibia
- d) the fubula
- e) The tarsay

33) The vertebral column comprises of

- a) 32 vertebrae
- b) 35 vertebrae
- c) 33 vertebrae
- d) 34 vertebrae
- e) 36 vertebrae

34) There are

- a) 3 types of bone
- b) 4 types of bone
- c) 5 types of bone
- d) 6 types of bone taking in to account the sub-groups
- e) 5 types of bone with the sub- group

35) The join between vertbaed are

- a) fixed
- b) semi mobile
- c) mobile
- d) varies
- e) semi varied

36) The pericardium is made of:

- a) an epithelium
- b) a double layer of smooth muscle
- c) a double layer of striated muscle
- d) connective tissue

37) Blood rich in oxygen first enter in the

- a) of diastole
- b) of systole
- c) of holo- systole
- d) of holo-dissole
- e) none of the above

38) At the level of the Epiphysis, we observed:

- a) joint cartilage
- b) the periosteum
- c) spongy bone
- d) a hollow compact bone with a cavity filled with yellow bones marrow

39) Some bones that make up the fore arm are

- a) tibia and humerus
- b) Humerus and fabula
- c) fibula and femur
- d) ulna and radius

40) Osteoblasts cells are

- a) egg cells
- b) estrogen producing cells
- c) bone building cells
- d) gamate producing cells

41) The human skeleton has ---- n pairs of ribs

- a) 6
- b) 24
- c) 12
- d) 20

42) Each bone of the human leg has its counterpart in the arm with the exception of

- a) the patella
- b) the femur
- c) the tibia
- d) the fibula

42) The neck bones are called the ----- vertebrae

- a) the sacral
- b) the cervical
- c) the lumbar
- d) the caudal

43) Bone is somewhat flexible due the presence of

- a) tuberosity
- b) epiphyseal line
- c) osteon
- d) metaphysic

44) How many bones are there in the skull

- a) 18
- b) 22
- c) 24
- d) 22 plus a variable number of sutural bones

45) The longest, heaviest, and strongest bone of the human skeleton is the

- a) Humerus
- b) sacrum
- c) tibia
- d) femur

46) Another term for a freely movable joint is

- a) diarthrosis
- b) gomphosis
- c) synarthrosis
- d) amphiarthrotic

47) The pectoral girdle consist of the

- a) coxal bones

- b) carpal
- c) Tarsal
- d) metacarpal

48) The point of contact between bones is a/and

- a) angle
- b) tuberosity
- c) synarthrosis
- d) amphiarthrosis

49) The movement of the head when you tilt it back to look at something above you is called

- a) extension
- b) hyperextension
- c) rotation
- d) elevation

50) DNA is composed of

- a) Deoxyribose
- b) phosphorio
- c) clycerol
- d) adenine
- e) Cystosin

Chemistry

1) Dichloridiphenyltrichloroethane (DDT) is a very toxic insecticide. The lethal dose for a human is 500mg per kilogramme. What mass of DDT will kill a person of 78.5Kg ?

- a) 19.63g
- b) 63.19g
- c) 78.50g
- d) 59.53g
- e) 39.25g

2) A piece of zinc is place in 100cm³ of solution of CuSO₄ of concentration 0.2M until the disappearance of the blue clouds. The mass of copper deposited is ?

- a) 1.28g
- b) 128g
- c) 20g
- d) 6.4g

3) If 2.68g of hydrated sodium sulphate, Na₂SO₄.nH₂O, on heating produce 1.26g of water, what is the empirical formula of this compound. (Write your answer)

4) What is the mass of carbon dioxide produced when 125.0g of ethylene (C₂H₄) burns in oxygen

- a) 392.9g
- b) 196.4g
- c) 250.0g
- d) 296.4g

5) Normal saline is 0.9% (w/v) NaCl. How much pure NaCl is found in 500mL of normal saline

- a) 4.5mL
- b) 50mL
- c) 450mL
- d) 4.5 mL

5) What mass of CaCO₃ has the same number of atoms as 21g of NaF

- a) 10g
- b) 20g
- c) 50g
- d) 100g

6) How many molecules are there in 3.00 moles of NH₃ (write down your answer)

6) The pH at 25°C of a mixture of 20mL of HCl (pH1=2) with 30mL of the same acid (pH2=3) (write down only the answer)

7) The pH of a solution obtained by mixing 280mL of 3×10^{-3} M of sulphuric acid and 220mL of 6.40×10^{-2} (write down only the answer)

8) If [H⁺] = 10^{-11} mol/L, what is the pH

- a) 3
- b) 11
- c) 7
- d) 4

e) 5

9) Which of the following contains an organic acid

- a) vinegar
- b) bleach
- c) sodium bicarbonate
- d) battery acid
- e) none of the above

10) The ionic product of water (K_w) at 80°C is 25.0×10^{-14} . The pH of the neutral solution at this temperature

- a) 7.5
- b) 7.0
- c) 6.3
- d) 6.5
- e) none of the above

11) What elementary particles are the main contributors to the mass of an atom

- a) protons and electrons
- b) neutrons and electrons
- c) protons and neutrons
- d) none of these
- e) all of these

12) The element chlorine is a mixture of two isotopes: 75% ³⁵Cl and 25% ³⁷Cl.

Using this information, calculate the RAM of chlorine

- a) smaller than 35
- b) 35
- c) between 35 and 36
- d) 36
- e) between 36 and 37

13) if n=2, how many orbitals are possible?

- a) 3
- b) 4
- c) 2
- d) 8

14) Write the electronic configuration for Fe²⁺

15) Which of the following electronic configuration is different from those expected

- a) Ca
- b) Sc
- c) Cr
- d) V

16) In which molecule is the central atom sp³ hybridise

- a) CH₄
- b) :NH₃:
- c) H₂O:
- d) all of this

17) Which of the following transition metals is used in the haber process in the industrial manufacturing of ammonia

- a) copper
- b) iron
- c) nickel
- d) platinum

18) What is the wavelength of an alpha particle moving at 1.4×10^7 m/s (He=4.003, Planck's constant = 6.626×10^{-34} Js. (write down only the answer)

19) One of these pairs do not form coloured ions

- a) Sc³⁺ and Zn²⁺
- b) Mn²⁺ and Fe³⁺
- c) Fe³⁺ and V³⁺
- d) Cr⁶⁺ and Fe²⁺

20) The electronic configuration of the element with atomic number 29 is (write it)

21) How much energy in calories is released if the water temperature is increased by 6°C

- a) 1.2×10^2
- b) 1.2×10^3
- c) 2.25×10^3
- d) 4.5×10^3

Directions from question 21- 25 show your working and write the answer

21) What is the volume of alcohol (density 0.8g/mL) is needed to obtained 320g of the alcohol

22) Who coined the word atom

23) if 111.7 of iron reacted with oxygen gas to produce iron (III) oxide, how many moles of oxygen will be used (Fe: 56, O: 16)

24) What Volume of 1.5M HCl is needed to neutralized 90mL of 0.5M NaOH

25) What is an acid-base conjugate pair and support you definition with and equation

Physics

1. Two equal masses separated by a distance r attract each other with gravitational force F . If the distance is halved, what happens to F ?

- a. Halved
- b. Doubled
- c. Quadrupled
- d. Reduced to one fourth
- e. Remains same

2. The escape speed from a planet is v_e . If the radius of the planet doubles and mass becomes 8 times, the new escape speed is:

- a. $2v_e$
- b. $\sqrt{2}v_e$
- c. v_e

- d. $4v_e$
- e. $8v_e$

3. Electric field due to a dipole at axial point is:

- a. $\frac{1}{4\pi\epsilon_0} \cdot \frac{2p}{r^3}$
- b. $\frac{1}{4\pi\epsilon_0} \cdot \frac{p}{r^2}$
- c. $\frac{1}{4\pi\epsilon_0} \cdot \frac{p}{r^3}$
- d. Zero
- e. Infinite

4. The net electric flux through a closed surface is:

- a. Zero always
- b. Depends on volume
- c. Depends on surface area
- d. Equal to charge enclosed divided by ϵ_0
- e. Infinite

5. A proton and an alpha particle enter a magnetic field perpendicular to their velocity. The ratio of their radii is:

- a. 1:1
- b. 1:2
- c. 2:1
- d. 1:4
- e. 4:1

6. A charged particle moves through an electric field and magnetic field such that net force is zero. Then:

- a. $v = E/B$
- b. $v = EB$
- c. $v = B/E$
- d. $v = 0$
- e. $v = 1$

7. The energy stored in a $5 \mu\text{F}$ capacitor charged to 200 V is:

- a. 0.1 J
- b. 0.5 J
- c. 0.2 J
- d. 0.05 J
- e. 0.025 J

8. Capacitance of a parallel plate capacitor increases when:

- a. Plate area decreases
- b. Plate separation increases
- c. Dielectric constant increases
- d. Potential difference increases
- e. None of the above

9. Electric potential inside a charged conducting sphere:

- a. Zero
- b. Inversely proportional to radius
- c. Constant
- d. Proportional to r
- e. Depends on field

10. An electric dipole in a uniform field experiences:

- a. No force or torque
- b. A net force only
- c. A torque only
- d. Both force and torque
- e. Only displacement

11. Drift velocity increases when:

- a. Electric field decreases
- b. Cross-sectional area increases
- c. Electron density decreases
- d. Temperature increases
- e. Electric field increases

12. Ohm's law fails for:

- a. Resistors
- b. Electrolytes
- c. Vacuum tubes
- d. Semiconductors
- e. All of the above

13. Two wires have same length but different cross-sectional areas. Resistance is:

- a. Greater in thicker wire
- b. Same
- c. Greater in thinner wire
- d. Zero
- e. Depends on voltage

14. Potential difference across a wire carrying current is 5 V and its resistance is 10 Ω . Power dissipated?

- a. 0.5 W
- b. 1 W
- c. 2.5 W
- d. 5 W
- e. 10 W

15. Energy stored in magnetic field of an inductor is:

- a. $\frac{1}{2}CV^2$
- b. $\frac{1}{2}LI^2$
- c. $\frac{1}{2}mv^2$
- d. LI
- e. CV

16. Two parallel wires carry equal current in same direction. Force between them is:

- a. Zero
- b. Repulsive
- c. Attractive
- d. Rotational
- e. Inverse

17. Lenz's law is based on:

- a. Conservation of charge
- b. Conservation of mass
- c. Conservation of energy
- d. Newton's second law
- e. Ohm's law

18. A magnetic field of 2 T exists over an area of 0.5 m². What is the flux?

- a. 1 Wb
- b. 0.5 Wb
- c. 2 Wb
- d. 4 Wb
- e. 0.25 Wb

19. In a transformer, ratio of primary to secondary turns is 5:1. If primary voltage is 1000 V, secondary is:

- a. 100 V
- b. 200 V
- c. 250 V
- d. 500 V
- e. 1000 V

20. A 1000 W heater runs for 2 hours. Energy consumed in kWh?

- a. 1 kWh
- b. 2 kWh
- c. 0.5 kWh
- d. 5 kWh
- e. 10 kWh

21. Which quantity is conserved in an inelastic collision?

- a. Kinetic energy
- b. Momentum
- c. Angular momentum
- d. Energy and momentum
- e. None

22. Unit of magnetic permeability is:

- a. H
- b. H/m
- c. T
- d. Wb
- e. N/A

23. Cyclotron is used to:

- a. Detect radiation
- b. Measure force
- c. Accelerate charged particles
- d. Measure mass
- e. Create magnetic fields

24. The unit of electric flux is:

- a. C
- b. V
- c. Nm²/C
- d. Nm/C
- e. J

25. The current density J is related to electric field E by:

- a. $J = \rho E$
- b. $J = \sigma E$
- c. $J = E/\rho$
- d. $J = qE$
- e. $J = \varepsilon E$