Instructions

Section 1 English

Read the passage below and answer questions that follow

The rich countries of the world, Europe and North America in particular, became rich for several reasons. They were developing at a time when there were still large areas of unexplored and sparsely inhabited land in the world they discovered; and they then began to exploit whatever resources they found.

At the same time, at home, the industrial revolution was going on and the raw materials obtained from the countries they colonised were useful in developing new industries. The products of these industries provided an incentive for people in the mother country to invent more and work harder. The products, for example guns, were used in subduing the peoples of other parts of the world, or in enticing them into the economic orbit of the industrialising countries.

The people of the countries of the world now called developing countries were impressed by the technology of the Europeans. Not without some justification, they connected the wealth of Europeans with their technology alone, being unaware of the other factors contributing to their progress. North America developed, riding on the back of European industrialisation and colonisation. Today America and Europe have forged ahead, so that the *per capita* income in the USA may be ten times that in the poorer countries.

The latter now tend to feel that their way of development and future economic sufficiency must be along the same route as that taken by the wealthier countries. This may not necessarily be so, as the circumstances in which they are developing are very different.

Explain the meaning of the following words in the passage

1. An incentive
    a. A case to handle
    b. A motive for them
    c. Reason for working harder+++
    d. Something to remind them

2. Enticing
    a. Forcing
    b. Allowing
    c. Begging
    d. Persuading+++

3. Orbit of
   a. Sphere of influence+++
   b. Usual progression
   c. Revolving round
   d. Member of

4. What figure of speech is used in "riding on the back of"
   a. Simile
   b. Metaphor+++
   c. Personification
   d. Irony

5. In the writers opinion the way to development of the poorer countries must-------- as that taken by wealthier countries.
   a. Be along the same route
   b. Take a different route+++
   c. Should walk side by side
   d. Should rely on their resources

Read the following passage and select the best option that fills the corresponding gap in the text.

With the decline in sales of manufactured goods at home and abroad, widespread ----6--- is likely to affect many firms. The motor trade employs the largest sector of the working - ----7---- and will probably be first affected. The government has therefore set up a ---8---- to examine ways and means of ----9----- new industries in areas where previously labour was not available. Unemployment is the most serious of all-----10----- problems

6.
   a. promotion
   b. redundancy+++
   c. surplus
   d. abundance
7.
   a. population+++
   b. congregation
   c. crowd
   d. denomination
8.
   a. commitment
   b. profession
   c. committee+++
   d. commune

9.
   a. searching
   b. evolving
   c. developing +++
   d. growing

10.
   a. industrious
   b. industrial+++
   c. employment
   d. workers

INSTRUCTION: Fill the gaps in the sentences below by choosing the word which is most **nearly opposite in meaning** to the one underlined in each sentence, and which also best completes the sense of the whole.

11. Before he started playing football he used to be overweight for his age and height; now he is actually --------
    a. Light-weight
    b. Underweight+++
    c. light
    d. under-balanced

12. Last week it was doubtful if Kola would recover from his illness, but now it is almost---- that he will.
    a. Assured
    b. Factual
    c. Genuine
    d. Certain+++

13. The questions in this exercise require------- answers, but the answers to the composition questions have to be approached subjectively.
    a. Objective +++
    b. Factual
    c. Opposite
    d. Realistic

14. His invention may work in theory but it is not------
    a. Application
    b. Effective
    c. Practical +++
    d. Convenient

15. At first they thought the car belonged to the enemy, but to their relief it had already been captured by their------

a. Comrades
b. Associates
c. Collaborators
d. Allies+++

16. I can't believe Femi would throw the ring into the river deliberately .He must have done it----
   a. Incidentally
   b. Spontaneously
   c. Accidentally+++
   d. Crazily.

17. The government is going to------- all the old buildings in this area and have new ones erected.
   a. Abolish
   b. End
   c. Terminate
   d. Demolish+++

Section 2 – General paper

18. Simplify $\sqrt{27} \times \sqrt{50}$
   a. $8\sqrt{5}$
   b. $15\sqrt{6}$+++
   c. $8\sqrt{6}$
   d. $15\sqrt{5}$

19. Given that log 2 = 0.30103 and log 3 = 0.47712, without using tables, calculate log 6.
   a. 0.09062
   b. 0.60206
   c. 0.77815+++
   d. 0.14363

20. 6 notebooks cost ₦300.00, how many books can be bought with ₦450.00.
   a. 8
   b. 7
   c. 9+++
   d. 10

21. Factorize $5m^2 - 80$
   a. $5(m + 4)^2$
   b. $5(m^2 - 16)$
   c. $5(m + 4)(m - 4)$+++
   d. $16(m^2 - 5)$

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22. Without using tables or a calculator, calculate 12.9 X 0.54
    a. 5.966
    b. 6.966+++
    c. 6.968
    d. 5.968

23. Express 2.4 Kg in g
    a. 240
    b. 2400+++
    c. 24
    d. 480

24. Which of the following is a non-luminous object?
    a. Sun
    b. Moon+++
    c. Stars
    d. Lighted candle

25. If the velocity of light in air is $5.0 \times 10^8 ms^{-1}$, find the velocity of light in a medium whose refractive index is 2.0
    a. $1 \times 10^{-9} ms^{-1}$
    b. $2.5 \times 10^8 ms^{-1}$+++
    c. $2.5 \times 10^{-8} ms^{-1}$
    d. $1 \times 10^9 ms^{-1}$

26. In which medium do sound waves have the greatest speed
    a. Vacuum
    b. Air
    c. Water
    d. Steel+++

27. What is the kinetic energy of a boy of mass 50kg running with a velocity of $3 ms^{-1}$?
    a. 7500 J
    b. 150 J
    c. 225 J+++
    d. 450 J

28. What is the potential energy of a swimmer of mass 65 kg at a height of 15 m above the swimming pool? ($g = 9.8 ms^{-1}$)
    a. 9408 J
    b. 9555 J+++
    c. 4777.5 J
    d. 4704 J

29. Convert 200 Kelvin to °C.
    a. 70 °C
    b. 73 °C

c. -70°C

d. -73°C+++

30. Why does water wet its glass container and mercury does not?
    a. Water is a more viscous liquid than mercury.
    b. Mercury is a more viscous liquid than water.
    c. The adhesive forces between water and glass molecules is more than the cohesive forces between water molecules+++
    d. The adhesive forces between mercury and glass molecules is more than the cohesive forces between mercury molecules.

31. When a brass metal is heated, it expands because its molecules
    a. Vibrate with smaller amplitude
    b. Vibrate with greater amplitude+++
    c. Increase their speed of random motion
    d. Decrease their speed of random motion.

32. When oxygen gas is heated, it expands because its molecules
    a. Vibrate with smaller amplitude
    b. Vibrate with greater amplitude
    c. Increase their speed of random motion+++
    d. Decrease their speed of random motion.

33. Why do leaves of plants appear green?
    a. Leaves use green light in photosynthesis
    b. Leaves absorb green light
    c. Leaves reflect green light+++
    d. Leaf thickness is smaller than the wavelength of green light

34. How much NaCl would be required to prepare normal saline (0.9% NaCl) in a 250 ml volumetric flask?
    a. 1.8 g
    b. 13.2 g
    c. 2.25 g+++
    d. 9.0.

35. A sample of grape juice has pH of 3.80. What is the molar concentration of hydrogen ion in the juice?
    a. 1.58×10^4
    b. 1.58×10^2
    c. 1.58×10^{-2}
    d. 1.58×10^{-4}+++

36. Which of the following are products of hydrolysis of lactose?
    a. Glucose and fructose
    b. Glucose and galactose+++
    c. Glucose and mannose
    d. Glucose and maltose

37. At 40°C, the volume of a gas was 1.2 m^3, at what temperature will the gas occupy a volume of 2.5 m^3 when heated under constant pressure?
    a. 313K
    b. 652K+++
    c. 320K
    d. 330K

38. In a 500 ml volumetric flask, what quantity of Na_2CO_3 would be required to prepare a 2.5M solution? [Na = 23; C = 12; O = 16].
    a. 106 g
    b. 212 g
    c. 265 g
    d. 132.5 g+++

39. The relationship between Gibbs' free energy (G), enthalpy (H), and entropy (S) is represented as follows
    a. $\Delta H = T\Delta S - \Delta G$
    b. $\Delta G = T\Delta S - \Delta H$
    c. $\Delta G = \Delta H - T\Delta S$+++
    d. $\Delta S = T\Delta H - \Delta G$

40. Which of the following signifies that a reaction is at equilibrium
    a. Positive ΔG
    b. Negative ΔG
    c. Positive ΔS
    d. Zero ΔG+++

41. 7.8g of $NaNO_3$ was dissolved in 100 ml of water at 25°C. Calculate the solubility of the salt in mol dm^{-3}. [Na = 23; N = 14; O = 16].
    a. 0.918+++
    b. 0.0918
    c. 22.94
    d. 273.46

42. Which of the following can be regarded as the strongest bonds between atoms
    a. Covalent bonds+++
    b. Electrostatic bonds
    c. Hydrogen bonds

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d. Van der Waals forces

43. A gas occupies a volume of 30 cm^3 at a temperature of 26°C and a pressure of 75 cmHg. What volume will it occupy at 70°C and pressure of 120 cmHg.
   a. 16.34 cm^3
   b. 31.20 cm^3
   c. 50.48 cm^3
   d. 21.51 cm^3+++

44. Which of the following is not a function of the human blood
   a. Defense
   b. Transport
   c. Hemostasis
   d. Cellular respiration +++

45. Which is these cell organelles is responsible for cellular respiration
   a. Golgi bodies
   b. Nucleus
   c. Mitochondria+++
   d. Ribosomes

46. In blood transfusion a universal donor has the following blood group
   a. AB negative
   b. AB positive
   c. O negative+++
   d. O positive

47. The following animal has a heterodont dentition
   a. Tilapia
   b. Toad
   c. Sheep+++
   d. Lizard

48. The following is not a plant hormones
   a. Gibberillins
   b. Ethylene
   c. Cytokines+++
   d. Abscisic acid

49. Which of the following is not a communicable disease
   a. Tuberculosis
   b. Measles
   c. Diabetes+++
   d. Common cold

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50. The following hormone is responsible for lowering blood glucose levels
    a. Glucagon
    b. Thyroxine
    c. Insulin+++
    d. Adrenaline

UNIVERSITY OF MEDICAL SCIENCE
Post UME Screening Test 2016/2017
TIME: 1 hour
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USE OF ENGLISH

Although our aim is to nurture children, Nigerian children are still subjected to severe physical, social and mental stress as they develop. So far our interest and activities have been to ensure their physical well-being through the reduction of high mortality and morbidity rates, still inadequate as this may be. But we need to examine from time to time the other needs of the Nigerian child which will ensure a totally healthy development.

We are split between two cultures our traditional and the western, a relic of our colonial past. This also affects our child rearing practices. Therefore, these practices must have a very important bearing on how the child is prepared for our world of today so that he fits into our different personalities in terms of motivation, aggressiveness, achievement and the integration of the individual into the community socially and cult urally. It is important that while we struggle with the visible organic disease, we fix our gaze on the important measure to attain this one a healthy child.

The proc ess of social adjustment begins from the moment of birth. Many of our traditional birth practices ensure that the m other either carries or suckles her child immediately after birth. The baby therefore comes into close contact with the mother at this critical time. Moreover, she is forced to stay indoors with the baby for varying periods of time. By this means, the attachment of the baby to the mot her, so essential for the child's ability to relate to her in future is secured.

This crucial moment in the baby's life is now being recognized in western countries, whilst birth practices in some hospitals and m aternity homes separate mother and child imm ediately after birth to the extent that their ability to develop a close relationship m ay be jeopardized. Our Nigeria child of today may, therefore, be worse off than that of yesterday. As we move towards the training of our traditional birth attendants with a view to incorporating them into our health services. Healthy practices such as the one described above must be maintained and encouraged.

1. In the passage there is an attempt to explain that to ensure a totally healthy child
   A. it is necessary to concentrate on the child's physical well-being alone
   B. it is essential to reduce the high child mortality and morbidity rate
   C. it is necessary to take care of other things in addition to the child's physical well-being
   D. it is important to keep to the rules of hygiene
   E. it is necessary to copy foreign ways of bringing up children

2. It is said that difference in ways of bringing up children and educating them
   A. achieve the same result
   B. are reflected in the personalities, attitudes and achievements of the individual
   C. make people aggressive
   D. have nothing to do with educational attainments
   E. are a matter of the cultural background of the people

3. Since the training for social adjustment begins from the m oment of birth, our traditional practices
   A. are too uncivilized to be helpful
   B. need to be modernized
   C. are very helpful to the proper growth of the child
   D. make the child a stranger to modern civilization
   E. are the cause of under-developm ent

4. In spite of the fact that the western countries now recognize the importance of the early period of childhood in forming a relationship, Nige rian hospitals and maternity homes.
   A. copy the wrong western practice now being criticized in western countries
   B. improve on local practices and the future of the child is secure
   C. ensure that the child is brought up in the right way
   D. ensure that the child develops the right skills for establishing relationships
   E. do not know which practice to choose

5. Unless the training of our traditional birth attendant is based on healthy practices
   A. our children will be under-developed
   B. our children will be worse off than those brought up in the traditional way
   C. our medical services will be unable to provide the right services
   D. our economic progress will be adversely affected
   E. the role of the mother will be rendered useless

In the following sentences, choose the word that is similar in meaning to the word italicized/underlined in each of the sentences.

6. We consider the recent silver jubilee celebration in the state a very *historic* event.
   A. important
   B. memorable
   C. ancient
   D. critical
7. The governors address during his recent visit to our town was delivered *extempore*.
   A. out-of-hand
   B. timely
   C. off-hand
   D. expertly
8. One of the candidates was handed over to the police for attending the interview with *spurious* credentials.
   A. false
   B. incomplete
   C. unsigned
   D. altered
9. There is a theory that *postulates* that all Nigerian languages derive from one source.
   A. confirms
   B. affirms
   C. suggests
   D. emphasizes
10. The candidate was disqualified as a result of his *irreverent* behaviour.
   A. shameful
   B. disrespectful
   C. careless
   D. abnormal
II. The rain_____when the accident took place.
   A. has stopped
   B. stopped
   C. was stopped
   D. had stopped
12. Players for the next FIFA world competition have been
   A. chosen
   B. chosed
   C. chosen
   D. choosed
13. The boy was _____ by snake early this morning.
   A. beaten
   B. bitten
   C. bit
   D. bite
14. It is desirable that you____there when he arrives.
   A. be
   B. are
   C. will be
   D. should be

15. If I in Udenta's position. I would go in to politics.
   A. am
   B. was
   C. were
   D. be

PHYSICS

1. Two forces whose resultant is l00N are at right angles to each other. If one of them makes a angle of 30° with the resultant, find the magnitude of the other force.
   A. 8.66N
   B. 86.6N
   C. 50.0N
   D. 5.0N
2. A body of weight WN rests on a smooth plane inclined at an angle $^{\circ}80$ to the horizontal. The component of the weight down the slope is.
   A. Wsin
   B. Wcos
   C. Wtan
   D. Wsec
3. A body of mass l00g moves with a velocity of 10.0m fs and collides with a wall. After collision the body moves with a velocity of 2.0m/s in the opposite direction. The change in momentum is
   A. 8.0Ns
   B. 1.2Ns
   C. 12.0Ns
   D. 80Ns
4. A 12V battery supplying a current of 2OA was used to melt 1.5kg of ice at 0°C. Calculate the time required if the latent heat of fusion of ice is 336×10^3 J/Kg.
   A. 35.0min
   B. 3.5min
   C. 76min
   D. 21.0min
5. The light from the sun reaches the earth mainly by
   A. Convection
   B. Conduction
   C. radiation
   D. reflection
6. One valid assumption of the kinetic theory of gases is that:
   A. the molecules are in random motion and the number of collisions is constant
   B. the number of molecules Increases with the pressure
   C. the molecules of the gas are all identical and are very small in size
   D. the number of molecules increases with temperature

7. An astronomical telescope is said to be in normal adjustment when the
   A. eye is accommodated
   B. focal length of the objective lens is longer than that of the eye piece
   C. final image is at the near point of the eye
   D. final image is at infinity

8. Dispersion of light by a glass prism is due to the
   A. different hidden colours of the glass
   B. different speeds of the various colours in glass
   C. defects in the glass
   D. high density of glass

9. Aguitar string of length 33cm is under a tension of 55N. If the fundamental frequency is 196Hz, find the speed of wave on string.
   A. 6m/s
   B. 0.33m/s
   C. 129m/s
   D. 726m/s

10. A transformer has 400 turns as its primary winding and 100 turns as secondary winding. If the primary coil is connected to a 12V source, the transformer functions as
    A. a step down transformer with secondary emf = 6V
    B. a step, down transformer with secondary emf 3V
    C. a step up transformer with secondary emf = 24V
    D. a step up transformer with secondary emf48V

11. A battery of internal resistance of 2? has a voltage of 4.0V when supplying a current of 2.0A. Calculate the terminal voltage if it now supplies a current of 3.0A
    A. 2.0V
    B. 6.0V
    C. 1.5V
    D. 12.0V

12. The purpose of a dielectric material in a parallel plate capacitor is to
    A. increase its capacitance
    B. decrease its capacitance
    C. insulate the plates from each other
    D. increase the magnetic field between them

13. The name of an atom is associated with its atomic number Z, mass number A and neutron number N. therefore:
    A. $A = Z + N$
    B. $ZA + N$
    C. $N = A + Z$
    D. $AN - Z$

14. A nuclear reaction initiated by adding neutron is called
    A. nuclear fission
    B. nuclear fusion
    C. nuclear enrichment

D. radioactivity.

15. The mass defect resulting from a thermonuclear reaction is 9.8 x 1 0Kg. calculate the energy released. [take c = 3 x 10^8m/s]
    A. 2.94 x10^{-22}J
    B. 8.82 x10^{-22}J
    C. 8.82 x10^{-14}J
    D. 8.82 x10^{-13}J

CHEMISTRY

1. Crystallization is better method of separation than precipitation because
   A. precipitation tends to bring other solutes out of solution
   B. crystallization is applicable to all solids
   C. precipitation always involves salting-out
   D. crystallization can only be done at high temperatures.

2. Which of the following is not a chemical change?
   A. burning of magnesium
   B. rusting of iron
   C. action of water on potassium
   D. dissolving powdered sulfur in carbon disulfide

3. An important ore of iron contains 72.36% iron and 27. 64% oxygen. Determine its empirical formula
   A. FeO
   B. Fe_2O_3
   C. Fe_3O_4
   D. Fe_2O_2

4. Which of the following decreases when a given mass of gas is compressed to half its initial volume?
   A. average intermolecular distance
   B. frequency of collision
   C. number of molecules present
   D. atomic radius of each particle

5. The densities of two gases X and Y are 2.5g/dm^3 and 10.0g/dm^3 respectively. What is the rate of diffusion of X relative to Y?
   A. 1:2.5
   B. 2.5: 1
   C. 1:2
   D. 2:1

6. The properties of elements are periodic functions of their
   A. atomic number
   B. atomic radius
   C. atomic volume
   D. mass number

7. Which of the following solutions containing only hydroxyl ions will liberate hydrogen gas when reacted with Mg metals?
   A. 1.0 x 10^{-5}mol/dm^3
   B. 1.0 x 10^{-13}mol/dm^3
   C. 1.0 x 10^{-3}mol/dm^3
   D. 1.0 x 10^{-2}mol/dm^3

8. In the redox reaction: $2Fe^{2+} + Cl_2 \rightarrow 2Fe^{3+} + 2Cl^-$
   A. Cl_2 is reduced because it has lost electron
   B. Cl_2 is reduced because its oxidation number has decreased
   C. Fe_2 is reduced because it has lost electrons
   D. Fe_2 is reduced because it has gained electrons

9. During electrolysis of molten sodium chloride,
   A. chlorine atom gains an electron
   B. chloride ion gains an electron
   C. chloride ion is oxidized
   D. sodium ion is oxidized

10. Coffee stains are removed with
    A. turpentine
    B. ammonia
    C. borax in water
    D. kerosene

11. What is the value of H for this reaction?
    $Fe_2O_{3(S)} + 3H_2O_{(l)} \rightarrow 2Fe(OH)_{3(S)}$

Substance	H(KJ/mol)
$Fe_2O_{3(S)}$	-824.2
$Fe(OH)_{3(s)}$	-823.0
$H_2O_{(l)}$	-285.8

    A. 35.6KJ
    B. 286.0KJ
    C. 858.6KJ
    D. -536KJ

12. $N_2O_{4(g)} \rightarrow 2NO_{2(g)}$ H = +ve
    What happens to the equilibrium constant of the reaction above if the pressure is increased?
    A. it becomes zero
    B. it decreases
    C. it increases
    D. it is unaffected

13. Radioisotopes are used for the following EXCEPT
    A. development of photographic films
    B. generation of electricity
    C. radio carbon dating
    D. tracers in chemical reactions

14. The common characteristics shared by iron and alluminium is that both
    A. are extracted by reduction method
    B. form only basic oxides
    C. show oxidation states of +2 and +3
    D. form soluble hydroxides

15. In the reaction $H_3C-C \equiv CH + 2HBr \rightarrow X$. X is
    A. $CH_3CBr_2CH_3$
    B. CH_3CH_2CHBr
    C. $CH_3CHBrCHBr$
    D. $CH_2BrCH_2CH_2Br$

AGRICULTURE

1. Soil texture is described as the
   A. distribution of different sizes of soil particles
   B. arrangement of soil particles in a soil sample
   C. rate at which water moves through the soil
   D. degree to which air spaces aerate the soil
   E. distribution of soil particles in a sample

2. Slate is derived from
   A. schist
   B. sandstone
   C. shale
   D. genesis
   E. quartzite

3. Soil can be drained by the use of the following except
   A. sprinklers
   B. channels
   C. gutters
   D. ditches
   E. porous pipes

4. In which layer of the soil profile does most biological activity occur?
   A. parent material
   B. D-horizon
   C. C-horizon
   D. B-horizon
   E. A-horizon

5. Which of the following does not occur as a result of poor drained soil?
   A. mottling near the top
   B. decrease in rooting depth
   C. change of the subsoil
   D. decrease in organic matter content
   E. increase in oxygen level of the soil

6. The common surveying equipment for farmland include the following except
   A. ranging pole
   B. prismatic compass
   C. measuring tape
   D. gunter's chain
   E. spade

7. In the establishment of pastures, it is best to
   A. plant only grasses
   B. plant only legumes
   C. plant a mixture of grasses and legumes
   D. let the natural grasses grow
   E. allow weeds to mix with the forage crops

8. The distance between two successive yam mounds should be about
   A. 0.l0m
   B. 1.00m
   C. 10.00m
   D. 100.0m
   E. 1000.00m

9. Which of the following is not the function of the ruminal micro-organism?
   A. digestion of cellulose
   B. conversion of plant proteins into microbial proteins
   C. production of vitamin B
   D. production of gas in the rumen
   E. eruption of the ruminal gas

10. The part of the ruminant stomach from which digestive juices are secreted is the
    A. rumen
    B. reticulum
    C. osmasum
    D. paunch
    E. abomasums

11. The best method(s) of regulating fish capture is/are
    A. gill-netting and electro-fishing
    B. quota and mesh-size control
    C. beach seine method
    D. active netting
    E. passive netting

12. Exposing farmers to scientific knowledge is the responsibility of the
    A. research institutes
    B. farm settlers
    C. Agro-service centers
    D. extension personnel
    E. agricultural development project

13. The following are factors of Agricultural production except
    A. farmstead
    B. land
    C. labour
    D. capital
    E. management

14. Which of the following is a day-to-day record of work on a farm?
    A. crop yield book
    B. labour diary
    C. farm inventory
    D. produce account
    E. none of the above

15. Which of the following activities is correct about agricultural extension agent?
    A. teaching farmers the management of exotic breeds of animals and crops
    B. educating farmers on the use of improved inputs and techniques in agriculture
    C. training school leavers to become professional farmers
    D. encouraging graduates to take agriculture as a profession
    E. understudying the researchers and recording their findings

BIOLOGY

1. Which of the following parts of a cell is living?
   A. cell wall
   B. calcium oxalate
   C. food vacuole
   D. mitochondria

2. Cells without an organized nucleus are called
   A. heterokaryote
   B. eukaryote
   C. prokaryote
   D. synkaryote

3. The sites for energy transfer within a cell are known as
   A. golgi apparatus
   B. parenchyma
   C. mitochondria
   D. nucleolus

4. Food and dissolved oxygen pass from the water directly into the amoeba by a process called
   A. transport
   B. diffusion
   C. fission
   D. transpiration

5. Which one of these functions is not performed by the nervous system?
   A. receive sensory input from internal and external environment
   B. digestion
   C. integration
   D. response t stimuli

6. In man, gas exchange occurs in the
   A. heart
   B. white blood cells
   C. lungs
   D. kidney

7. Three chambered heart is found in
   A. insects
   B. amphibians
   C. man
   D. no animal

8. A plant cell is different from an animal cell because
   A. the nucleus is pushed to the centre
   B. the nucleus is small
   C. the cell wall is made of cellulose
   D. the cytoplasm fills up the entire cell space.

9. In a transverse section of a dicot stem,
   A. the xylem is more deeply located than the phloem
   B. the cambium lies between the vascular bundles and the cortex
   C. the epidermis is completely encircled by the cortex
   D. the vascular bundles are randomly distributed within the cortex

10. The spongy mesophyll is a tissue found in
    A. animal cells
    B. plant leaves
    C. plant roots
    D. plant stem

11. In the nephron, reabs orption of water takes place in the
    A. bowman's capsule
    B. glomerulus
    C. renal tubules
    D. selective membranes

12. The mixture of a food substance and Benedict's solution was warm ed. The solution changed from blue to brick-red indicating that there is
    A. fatty acid
    B. sucrose
    C. amino acid
    D. reducing sugar

13. Sperm cells are produced in the
    A. penis
    B. bladder
    C. testes
    D. prostrate

14. Photo synthetic pigments are localized in
    A. chloroplast
    B. stroma
    C. stomata
    D. thylakoids

15. If a person lives exclusively on a diet of milk, eggs and bread, he is likely to suffer from
    A. scurvy
    B. rickets
    C. Ben-ben
    D. night blindness

MATHEMATICS

1. Simplify $\sqrt[5]{(243)^{-1}}x^5$
    A. $\frac{x}{3}$
    B. $\frac{3}{4}$
    C. $\frac{x}{3}$
    D. $\frac{3\sqrt{3}}{x}$

2. Without using tables, evaluate $(125)^{-1/3} \times (0.49)^{-1/2} \times (0.01)^{-1/2}$
    A. $\frac{7}{20}$
    B. $\frac{20}{7}$
    C. $\frac{5}{7}$
    D. $\frac{7}{5}$

3. Convert 1231_4 to a number in base 6.
    A. 105_6
    B. 301_6
    C. 103_6
    D. 501_6

4. Find the slope of the curve $y\ 3x^3 + 5x^2 - 3$ at (-1,5)
    A. 1
    B. -1
    C. 19
    D. -19

5. Find the area of the region bounded by $y = x^2 - x - 2$ and x-axis.
    A. $\frac{9}{2}$
    B. $\frac{-9}{2}$
    C. $\frac{8}{3}$
    D. $\frac{16}{3}$

6. The minimum value of $y = X^2 - 4x - 5$ is
    A. -2
    B. 13
    C. -13
    D. 2

7. Make x the subject of the relation: $y = 3\ln x$
    A. e^{3-y}
    B. e^{y+3}
    C. $\frac{y}{3}$
    D. $\frac{3}{y}$

8. Find x, y for which   =
    A. (1,-2)
    B. (1,2)
    C. (-1,2)
    D. (2, -1)

9. Simplify
    A. $\frac{3}{\sqrt{256}}$
    B. $\frac{3}{\sqrt{32}}$
    C. 6
    D. 85

10. The probability of either event A or B is $\frac{5}{6}$, while that of event B is $\frac{1}{6}$. If the probability of bot h A and B is $\frac{1}{2}$, what is the probability of event
    A. ¾
    B. $\frac{5}{6}$
    C. ¼
    D. $\frac{3}{5}$

11. The chances of three independent events X, Y, Z occurring are $\frac{1}{2}$, $\frac{2}{3}$, ¼ respectively. What are the chances of Y and Z only occurring?
    A. $\frac{1}{8}$
    B. $\frac{1}{24}$
    C. $\frac{1}{2}$
    D. ¼

12. Some red balls were put in a basket containing 12 white balls and 16 blue balls, if the probability of picking a red ball from the basket is $\frac{3}{7}$, how many red balls were introduced?
    A. 13
    B. 20
    C. 12
    D. 21

13. Find the co-ordinates of the mid-point of the line joining (2,7) and (1, -6).
    A. $(\frac{1}{2}, \frac{13}{2})$
    B. $(\frac{1}{3}, \frac{1}{2})$
    C. $(\frac{1}{2}, \frac{1}{2})$
    D. $(\frac{3}{2}, \frac{13}{2})$

14. An equilateral triangle of sides 2cm is inscribed in a circle. Find the area of the circle.
   A. 4 cm^2
   B. 8 cm^2
   C. cm^2
   D. cm^2

15. The chord PQ of a circle is equal to the radius, r of the circle. Find the length of the arc PQ
   A.
   B.
   C.
   D.

SOLUTION TO UNIMED 2016/2017 SCREENING TEST

USE OF ENGLISH
1. C
2. B
3. C
4. A
5. B
6. Important, A
8. False, A
9. Suggests, C
10. Disrespectful, B
12. Chosen, C
13. Bitten, B
14. Be, B
15. Were, C

PHYSICS
1. Let F = magnitude of the other force
   Sin 30 = F/100
   F = 100 sin 30 C

2. WSIN > A

3. Impulse change in momentum = final momentum initial momentum
   = mv-mu=m(v-u); where m = 100g = 0.1kg,
   u= 10m/s, v = 2m/s

4. From E = Pt = IVt = mc; where V = 12V, 1 = 20A, m = 1.5Kg, t = ?
   t = = = 35mins A.

5. C
6. C
7. D
8. B
9. From =
   V = x 21 = 196 x 2 x 0.33 = 129.36m/s C

10. =
   $_{(100 \times 12)}$
   EMFs = /$_{400}$ = 3V B

11. From V = Ir, when r= constant,
   = $_{(4 \times 3)}$
   V_2 = /$_2$ = 6V   B

12. A
13. A
14. A
15. E = mc^2 = 9.8 x 10^{-30} x 93 x 10^8)^2 = 8.82 x 10^{-13}J

CHEMISTRY
1. A
2. D
3. A
4. A
5. From = = =
6. A
7. B
8. B
9. C
10. C
   $R_x : R_y$ = 2:1   ?D
11. H = H_p – H_r = [12(-823) – (-824.2 + 3 (-285.8)]
   = -1646 + 1681.5 = 35.5Kg
12. D   13. A   14. D   15. A

AGRICULTURE
1. A   2. C   3. A   4. D   5. A   6. E   7. C
8. D   9. D   10. A   11. B   12. D   13. A   14. A
15. B

BIOLOGY
1. D   2. C   3. C   4. B   5. B   6. C   7. B
8. C   9. A   10. B   11. C   12. D   13. C   14. A
15. A

MATHEMATICS
1. $^5v(243)^{-1}X^5$ $[X^5/243]^{1/5}$ = $[X^5/3^5]^{1/5}$ = $[X^5/3^5]^{1/5}$ = $^X/_3$
   A
2. $(125)^{1/3}$ x $(0.49)^{-1/2}$ x $(0.01)^{-1/2}$ = $(1/125)^{1/3}$ x $(100/49)^{1/2}$ x $(100/1)^{1/2}$ = $^1/_5$ x $^{10}/_7$ x 10 = $^{20}/_7$ B
3. In order to convert to base 6, we first convert to base 10 thus
   1231_4= 1 x 4^3 + 2 x 4^2 + 3 x 4^1 + 1 x 4° = 64 + 32 + 12 + 1 = 109$_{10}$. We then convert to base 6 thus
   6   109
   6   18R1
   6   13R0
        0R3
   1231_4 = 301_6 $_2$ B
4. given: y = 3x^3 + 5x^2 - 3
   $^{dy}/_{dx}$ = 9x^2 + 10x = m; m = 9x^2+I0x
   At(-1,5), i.e.x= -1
   m=9(-1)^2 +10 (-1) = -1   B
5. B
6. Given: y = x^2 -4x -5
   d^{2}y/d^{2}x = 2 A

7. $y = 3 - \ln x$; $\ln x = 3 - y$ (ln can be interchanged with $\log_e$)

   $\log_e x = 3 - y$

   $x = e^{3-y}$ A

8. A

9. $=$

   $=$ $=$ x $= 6$ C

10. no correct option

11. pr(of x and y occurring) = pr(x)x pr(y)

    $= {}^2/_3 \times \frac{1}{4} = {}^1/_6$ D

12. Let no. of red balls = x

    no. of blue balls = 16

    no. of white balls = 12

    total no. of balls x +12 +16 = x + 28

    pr (picking red ball) = ${}^x/_{x+28} = {}^3/_7$

    [cross multiplying, we have]

    xx 7 = 3x + 84

    4x = 84

    ∴. x = ${}^{84}/_4 = 21$ D

13. D   14. C   15. C

UNIVERSITY OF MEDICAL SCIENCE
POST UME SCREENING TEST 2015/2016

TIME: 1 HR

USE OF ENGLISH
Read the passage carefully and answer the questions that follow it.

Our planet is at risk. Our environm ent is under threat. The air we breath, the water we drink, the seas we fis h in, and soils we farm, the forests, animals and plants which surround us are in danger. New terms and words describe these problems acid rain. :he greenhouse effect, global warming, holes in the ozone layer, desertification and industrial pollution. We are changing our environment. More and m ore gases and wastes escape from our factories. Rubbish. oil silages and detergents damage our rivers and seas. Forests give us timbre and paper, but their loss results in soil erosion and also endangers wildlife.

The richer countries of the world are mainly responsible for industrial pollution. This is where m ost of all the commercial energy is produced. In developing countries, poverty cause people to change their environment to over-graze grassland, to cut down trees for new land and firewood, to farm poor soil for food.

The United Nations Environm ental Protection Agency says that an area of forest the size of Sierra Leone disappears every year. Trees are cut down for timber which is used for building, furniture, paper and fuel. They are also destroyed to provide land on which to graze animals and build new villages and towns. But trees have m any other im portant uses. Trees protect the land from heavy downpour of rain and their roots help to hold the soil together. Forests are also the home of m any living things. The Amazon forest contain one fift h of all the species of birds in the world. In our forests, there may be plants and animals which could help in the discovery of new medicines of crops.

To rescue and conserve our beautiful world, we must act cooperatively. Individuals, communities, nations and international associations, all have a responsibility. By learning to protect the natural environm ent, we can manage the earth's resources for generations to come.

1. The risk referred to in the passage is
    A. environmentally induced
    B. industrially produced
    C. man-made
    D. sociologically produced

2. From the passage, it can be deduced that the inhabitants of developing countries

A. take more care of their environment than those in developed countries
B. generate more harmful industrial by-products
C. degrade the environment to eke out a livelihood
D. cut down trees only for farmlands and fuel

3. According to the passage, the size of forest depleted annually is
    A. minimal
    B. Colossal
    C. infinitesimal
    D. infinite

4. The writer holds the richer countries responsible for industrial pollution because of their
    A. technological innovations
    B. energy requirement
    C. industrial revolution
    D. lack of interest in environmental protection

5. The message of the writer is the
    A. need for the developed countries to assist the poorer ones
    B. grave dangers of global warming
    C. urgent need to protect the natural environment
    D. need to research into other uses of the trees in our forest.

In the following sentence s, choose the word that best completes the meaning in each of the sentences

6. The manager failed to control his staff because he was very_____
    A. rash
    B. indiscreet
    C. reckless
    D. tactless

7. The usefulness of the fertilizer in modern farming should be widely
    A. diffused
    B. disseminated
    C. spread
    D. scattered

8. He was the only candidate who failed the interview. So he had to bear his
    A. disaster
    B. misfortune
    C. catastrophe
    D. calamity

9. The death of the night-guard continues to be a _____ to the police
    A. confusion
    B. puzzle
    C. quagmire

D. problem

10. A few politicians were from the accusation of wrong doing.
    A. restrained
    B. rescued
    C. absolved
    D. precluded

In the following sentences, choose the word that i s OPPOSITE IN MEANING to the word in italic/underlined in each of the sentences

11. The officer has commended the *cordial* relationship existing between the soldiers and the civilians.
    A. disordered
    B. confused
    C. strained
    D. unfortunate

12. Many foreign experts would like to establis h in this country because the environm ent is *congenial*.
    A. hostile
    B. inhospitable
    C. aggressive
    D. offensive

13. The new chairman has exhibited prudence in his handling of the revenue
    A. impudence
    B. shabbiness
    C. dishonesty
    D. recklessness

14. There is no point dissipating energy on a useless argument.
    A. destroying
    B. marshaling
    C. storing
    D. conserving

15. There is much apathy among youths nowadays towards reading novels.
    A. indecision
    B. indifference
    C. enthusiasm
    D. inclination

PHYSICS

1. Which of the following statements is true of the period of a simple pendulum?
    A. it depends on the mass of the bob and the acceleration due to gravity
    B. it depends on the length of the string and the acceleration due to gravity
    C. it depends on the mass of the bob and the length of the string
    D. it depends on the m ass of the bob, the length of the string and acceleration due to gravity.

2. A boat travels due east with a speed of 40m/s across a river flowing due south at 30m/ s calculate the resultant speed of the boat.
    A. 1.3m/s
    B. 10.0m/s
    C. 50.0m/s
    D. 70.0mls

3. The atmospheric pressure due to water is $1.3 \times 10^{6} Nm^{-2}$. what is the total pressure at the botton of an ocean l0m deep? (density of water = $1000 kg/m^{3}$ and g = l0m/s^2
    A. $1.3 \times 10^{7} N/m^{2}$
    B. $1.4 \times 10^{6} N/m^{2}$
    C. $1.4 \times 10^{5} N/m^{2}$
    D. $1.0 \times 10^{5} N/m^{2}$

4. Which of the following conditions will m ake water boil at a tem perature of 100°C and saturation vapour pressure of 750mmHg?
    A. decrease the external pressure
    B. heat more rapidly al the same pressure
    C. increase the external pressure
    D. reduce the quantity of water.

5. The density of a fixed mass of gas at constant pressure is
    A. constant with temperature
    B. directly proportional to the temperature
    C. inversely proportional to the temperature
    D. directly proportion alto its volume

6. Which of the following equations is incorrect about an ideal gas (all the symbols have their usual meanings)
    A. $PV = nRT$
    B. PV/T = constant
    C. $PV = {}^{3}/_{2nRt}$
    D. TV/P = constant

7. The equation of a wave traveling along the positive x-direction is given by y = 0.20sin(500t - 2x). the amplitude, angular frequency and wavelength of the wave are respectively given by
    A. 0.2cm, 500rad/s, 20cm
    B. 0.2cm, 500rad/s, 01 cm
    C. 0.2cm, $2x10^{-3rd}/_S$, 0.1 cm
    D. 5cm, 2×10^{-3}rad/s, 0.05cm

8. When a plane mirror at which a ray of light is incident is rotat ed through an angle 9, the reflected ray will be rotated through.
    A.
    B.
    C. 2
    D. 3

9. The quality of sound depends on its
    A. frequency
    B. wavelength
    C. Velocity
    D. harmonics

10. The resistance of a piece of wire of length 20m and cross sectional area $8 \times 10^{-6} m^2$ has a resistance of 1?. The resistivity of the wire is
    A. $3 \times 10^{-7}?/m$
    B. $4 \times 10^{-7}?/m$
    C. $1.6 \times 10^{-5} m^2$
    D. $4 \times 10^{-5}?/m$

11. In an AC circuit that contains only a capacitor, the voltage
    A. leads the current by 90°
    B. lags behind the current by 90°
    C. leads the current by 180°
    D. lags behind the current by 180°

12. The angle between the direction of the earth's magnetic field and the horizontal is called
    A. angle of deviation
    B. magnetic declination
    C. magnetic meridian
    D. angle of dip

13. Which of these statements is not correct concerning atomic structure?
    A. negatively charged electrons orbit the positively charged nucleus
    B. electromagnetic forces bind the electrons to the nucleus
    C. protons and neutrons have approximately equal mass
    D. the number of electrons orbiting the nucleus is equal to the number of nucleons.

14. The half-life of a radioactive element is 9days. Calculate the fraction that remains after 36days.
    A. $^1/_{32}$
    8. $^1/_{16}$
    C. $^1/_4$
    D. $^{15}/_{32}$

15. One of the features of the fission process is that
    A. it leads to chain reaction
    B. its products are not radioactive
    C. neutrons are not released
    D. mass and energy are conserved

CEMISTRY
1. The separation of oil and water with different boiling points can best be achieved by
    A. fractional distillation
    B. decantation
    C. evaporation
    D. using a separating fUNIMEDel

2. Calculate the minimum volume of oxygen that is required for the complete combustion of a mixture of 20cm³ of CO and 25cm³ of hydrogen.
    A. $45cm^3$
    B. $22.5cm^3$
    C. $20cm^3$
    D. $10cm^3$

3. An increase in temperature causes an increase in the pressure of a gas because there is an increase in the
    A. average velocity of the gas molecules
    B. number of collisions between the gas molecules
    C. density of the gas molecules
    D. free mean path between each molecule and the other.

4. A liquid begins to boil when
    A. its vapour pressure is equal to the vapour pressure of its solid at a given temperature
    B. molecules start escaping from the surface
    C. its vapour pressure equals the atmospheric pressure
    D. its volume is slightly increased

5. If the relative rate of diffusion of a gas is 0.25 and that of Cl_2 under the same conditions is 0.20, calculate the relative molecular mass of the gas.
    A. 22.7
    B. 45.4
    C. 68.1
    D. 90.8

6. The following molecules contain hydrogen bonding EXCEPT
    A. ammonia
    B. ethanoic acid
    C. hydrogen fluoride
    D. water

7. If 20cm³ of distilled water is added to 80cm³ of 0.50mol/dm³ HCI solution, the new concentration of the acid is
    A. $0.10mol/dm^3$
    B. $0.20mol/dm^3$
    C. $0.40mol/dm^3$
    D. $2.00mol/dm^3$

8. What is H_2O_2 acting as in the equation below?
   $H_2O_2 + 2H^+ 2Fe$ $^22H_2O + 2Fe^{2+}$ A. oxidizing agent B. reducing agent C. an acid 0. a base

9. A current was passed for 10mins 20secs and 0.1 mole of Cu was deposited. How many grams of silver will be deposited by the same quantity of electricity [Ag = 108].
    A. 10.8g
    B. 21.6g
    C. 5.4g
    D. 108g

10. Which of the following statements is correct?
    A. dissolution of anhydrous CuSO4 is exothermic while that of hydrated CuSO4 is endothermic.
    B. dissolution of anhydrous CuSO4 is endothermic while that of hydrated CuSO4 is exothermic
    C. dissolution of both anhydrous CuSO4 is exothermic

D. dissolution of both anhydrous CuSO4 and hydrated CuSO4 is endothermic

11. $NO_{(g)} + CO_{(g)} \rightarrow \frac{1}{2}N_{2(g)} + CO_{2(g)}$ H = -89.3KJ

What conditions would favour maximum conversion of nitrogen (ii) oxide and carbon (ii) oxide in the reaction above?
A. low temperature and high pressure
B. high temperature and low pressure
C. high temperature and high pressure
D. low temperature and low pressure

12. Which of the alloys below does not contain copper?
A. brass
B. bronze
C. type metal
D. solder

13. From the reaction, give the condition of reaction
A. cold dil. NaOH
B. hot concentrated NaOH
C. warm dilute NaOH
D. hot dilute NaOH

14. Ethanol reacts with aqueous sodium oxoiodate (i) to give a bright yellow solid with a characteristic smell. The product is
A. trichioromethane
B. ethanal
C. Iodoethane
D. triodomethane

15. An alkanoic acid has a molar mass of 102g. derive its molecular formula and hence name of the acid.
A. propanoic acid
B. butanoic acid
C. pentanoic acid
D. methanoic acid

BIOLOGY

1. The joint of a skeleton that allows movement in only one plane is
A. ball and socket joint
B. gliding joint
C. vertebral joint
D. hinge joint

2. Incomplete metamorphosis is found in these organisms except
A. dragon fly
B. house fly
C. locust
D. cockroach

3. Which one of these insects is to be found in flour mills?
A. trogoderma
B. Tribolium
C. sitophilus
D. callosobruchus

4. The unit of hereditary is
A. chromosome
B. gene
C. chromatid
D. centromere

5. The site of fertilization in humans is
A. ovary
B. fallopian tube
C. vagina
D. uterus

6. Fish liver oil is rich in
A. vitamin A & D
B. vitamin C & E
C. Vitamin A & E
D. Vitamin A & K

7. In animals, food is stored as
A. glucose
B. fructose
C. glycogen
D. starch

8. June 5 each year is associated with
A. AIDS day
B. ozone day
C. World environment day
D. world population day

9. Leishmania donovani causes
A. kala-azar
B. Elephantiasis
C. sleeping sickness
D. malaria

10. In which region of the human body does the adult filarial worm reside?
A. muscle
B. nervous system
C. blood
D. lymph

11. An animal shows resemblance with its surroundings. This phenomenon is called
A. mimicry
B. camouflage
C. ammensalism
D. photo-cooperation

12. Which one is not an insect?
A. tick
B. ant
C. beetle
D. locust

13. Bowing of legs in children is due to the deficiency of
A. vitamin D
B. vitamin A
C. vitamin B complex
D. vitamin K

14. Which one of the following organs does not produce any hormone?
A. spleen
B. ovary
C. kidney
D. placenta

15. Horizontal stems that grow below the ground ` often near the surface of the soil are
    A. rhizomes
    B. bulbs
    C. tubers
    D. corms

SOLUTION TO UNIMED 2015/2016 SCREENING

TEST USE OF ENGLISH

1. A   2.C   3.B   4.B   5.C
6. tactless, D
7. disseminated, B
8. misfortune, B
9. puzzle, B
10. precluded, D
11. strained, C
12. inhospitable, B
13. recklessness, D
14. conserving, D
15. enthusiasm, C

PHYSICS

1. B
2. Resultant R = $\sqrt{(40^2 + 30^2)}$ = $\sqrt{2500}$ = 50mls C
3. total pressure = pressure due to ocean depth (lgh) + atmospheric pressure

   = (1000 x 10 x 10) + 1.3 x 10^6 = 1.4x10^6Nm^{-2} 4.

A   5. C   6. D   7. B

[SEE MULTI-PURPOSECALCULATIONS IN PHYSICS]

8.C 9.D

10. Resistivity = $\quad$ = $\quad$ = 4 x 10^{-7}?m, B

11. B   12. D   13. D   14. B   15.A

CHEMISTRY

1.A   2.B   3.B   4.C
5. From Grahams law,

   =

   =

   $\sqrt{VD_G}$ = $\quad$ = 6.7

   VD_G = 6.7^2 = 454

Relative molecular mass of G = 2 x VD = 2 x 45.4 = 90.8, D   6. B

7. From dilution equation: C_1V_1, = C_2V_2

   C2 = $\quad$ = $\quad$ = 2.0mol/dm^3 8. A

9. B   10.D   11. D   12.D
13. incomplete question   14.C
15. The general formular for alkanoic acid is $C_nH_{2n+1}COOH$

   $C_nH_{2n+1}COOH$ = molar mass = 102
   12n+1(2n+ 1)+12 + 16 +16 +1=102
   14n = 56
   n $^{56}/_{14}$ = 4

The formular of the compound = $C_nH_{2 \times 4+1}COOH$
C_4H_9COQH [i.e. Butanoic acid], B

BIOLOGY

1. Hingejoint, D   2. B
3. tribolium, B   4.genes, B
5. fallopiantube, B
6. vitamin A & D, A
7. glycogen, C
8. World Environmental Day, C
9. Kala-azar, A   10. D
11. Camouflage, B
12. ticks, A
13. vitamin D, A   14.A   15.A

USE OF ENGLISH

Read the passage below carefully and answer the questions 1 - 5 below

All over the world till lately, and in most of the world till today, mankind has been following the course of nature: that is to say, it has been breeding up to maximum. To let nature take her extravagant course in the reproduction of the human race may have made sense in an age in which we were also letting her take her course in decimating mankind by the casualties of war, pestilenc e, and famine. Being human, we have at least revolt ed against that senseless waste. We have started to impose on nature's heartless play a humane new order of our own. Bt, once man has begun to interfere with nature, he cannot afford to stop half way. We cannot, with impurity, cut down the death-rate and at the same time allow the birth-rate to go on taking nature's course. We must consciously try to establish an equilibrium or, sooner or later, famine will stalk aboard again.

1. The author observes that
    A. war, pestilence and famine were caused by the extravagance of nature
    B. nature was heartless and senseless
    C. there was a time when uncontrolled birth made sense
    D. it was wise at a time when mankind did not interfere with normal reproduction
    E. nature was heartless in its reproductive process.

2. Which of these statements does not express the opinion of the author?
    A. mankind has started to interfere with the work of nature
    B. many people had died in the past through want and disease
    C. mankind should have the maximum number of children possible
    D. mankind should take care of its children
    E. man's present relationship with nature in matters of birth and death is a happy one

3. "Humane" as used in the passage means
    A. sensible
    B. wise
    C. human
    D. benevolent
    E. thorough

4. "We must consciously try to establish equilibrium" in the passage implies that mankincimust
    A. realistically find an equation
    B. strive not to wasteful

C. Purposely try to fight nature
D. try to fight ature
E. detiberately find a balance

5. The main idea of this passage is that
    A. nature is heartless
    B. man should control the birth rate
    C. mankind will soon perish of starvation
    D. pestilence causes more deaths than war
    E. man should change nature's course gradually.

In questions 6 and 7, selectthe option that best explains the information conveyed in the sentence

6. With the screening test around the corner, I've got the jitters already.
    A. I've felt confident
    B. I've felt secured and hopeful
    C. I'm getting anxious
    D. I'm getting afraid

7. The teacherwarned her students against resting on their laurels
    A. relaxing on soft chairs
    B. taking things forgranted
    C. depending on past achievements
    D. feeling satisfied and making no new efforts

In questions 8 - 11, choose the word(s) that best completes the meaning in the sentences

8. The door handle was shaky because the screws had_____
    A. lost
    B. loosed
    C. losed
    D. loosened

9. Something is being done to detect the person who_____the crime
    A. perpetrated
    B. perpetuated
    C. performed
    D. promoted

10. The lawyer pleaded with the judge to _____ justice with mercy
    A. tempar
    B. temper
    C. tamper
    D. taper

11. Obi bought five novels last week and has gone through all He is totally a_____reader.
    A. vicarious
    B. voracious
    C. vivacious
    D. veracious

In questions 12 and 13, choose the option nearest in meaning to the word(s) or phrase(s) in Italics

12. He lost his voice *momentarily*
    A. in a moment
    B. in a split moment
    C. for a briefperiod of time
    D. without delay
    E. instantly

13. In some parts if India, people are *ostracized* simply because of their ancestry.
    A. abandoned
    B. shut off from society
    C. refused education
    D. rendered unhappy
    E. hated

In questions 14-15, choose the word(s) or phrase which best fills the gap(s)

14. ____him in the crowd, would havetold you atonce.
    A. had it been I saw
    B. if I saw
    C. hadIsaw
    D. shouldIsee

15. _____he had insufficient qualification, he was denied admission.
    A. hence
    B. forthefact
    C. being
    D. as

PHYSICS

1. A body falls freely under gravity (g = 9.8m/s^2) from a height of 10m on t op of a platform 0.8m above the ground. Its velocity on reaching the platform is
    A. 7848m/s
    B. 80m/s
    C. 78m/s
    D. 27.78m/s

2. A hydrometer is an instrument used for measuring the
    A. the depth of water in a vessel
    B. relative density of a liquid by method of flotation
    C. relative density of a liquid by finding the apparent loss in weight
    D. relative humidity of the atmosphere

3. A bead traveling on a straight wire is brought to rest at 0.2m by friction. If the mass of the bead is 0.01kg and the coefficient of friction between the bead and the wire is 0.1. determine t he work done by friction.
    A. 2×10^{-4}J
    B. 2×10^{-3}J
    C. 2×10^{1}J
    D. 2×10^{2}J

4. A machine whose efficiency is 60% has a velocity ration of 5. if a force of 500N is applied to hf a load of P(N), what is the magnitude of P?
    A. 750N
    B. 4166N
    C. 500N
    D. 1500N

5. A mass of gas at 7°C and 70cm of mercury has a volum e of 1200cm. determine its volume at 27°C and a pressureat75cmofmercury
    A. 1200cm^3
    B. 1378cm^3
    C. 4320cm^3
    D. 4629cm^3

6. A motor tyre is inflated to pressure of $2.0 \times 10°N1m^2$ when the tem perature of air is 27°C. What will be the pressure at 87°C assuming the volume does not change?
    A. 2.6×10^{-5}N/m^2
    B. 2.4×10^{-5}N/m^2
    C. 2.2×10^{-5}/m^2
    D. 1.3×10^{-5}N/m^2

7. A beam of light is incident from air to wat er at an angle of 300. find the angle of refraction if the refractive index of water is 4/3.
    A. 15°
    B. 18°
    C. 22°
    D. 240°

8. The wavelength of signal from a radio transmitter is 1500m and the frequency is 200KHz. What is the velocity of the propagation?
    A. 3×10^{8}m/s^2
    B. 7×10^{3}m/s^2
    C. 3×10^{4}m/s^2
    D. 7m/s^2

9. A boy on looking into a mirror discovers that his face appeared to have grown bigger. The boy must have been looking at a
    A. convex mirror with his face at thefocus
    B. concave mirror with his face between the focus and the mirror
    C. convex mirror with his face between the focus and the mirror
    D. concave mirrorwith his face atthe focus

10. Find the frequencies of the first three harmonics of a pia no string of length 5m. if the velocity of the string is 120m/s.
    A. 10Hz, 80Hz, 120Hz
    B. 180Hz, 360Hz, 540Hz
    C. 80Hz, 160Hz, 240Hz
    D. 360Hz, 180Hz, 90Hz

11. The resistance of a piece of wire of length 20cm and cross-sectional area and resistivity is
    A. 1.0?
    B. 10.0?
    C. 400.0?
    D. 1.0×10^{-13}?

12. An electric device is rated 2000W, 250V. The current fuse rating of the device is
    A. 8A
    B. 9A
    C. 7A
    D. 6A

13. Determine the inductive reactance when a 30.0m H inductor with negligible resistance is connected to a 1.3KHz oscillator.
    A. 39.0?
    B. 122.5?
    C. 245.0?
    D. 39K?

14. The half-life of a radioactive element is 9days. Calculate the fraction that remains after 36days?
    A. $^1/_{32}$
    B. $^1/_{16}$
    C. ¼
    D. $^{15}/_{32}$

15. The graphite rods surrounding the uranium fuel rods in a nuclear reactor are used to
    A. absorb the neutrons and hence halt the nuclear process
    B. create the neutrons and hence slow down the nuclear process
    C. slow down the neutrons and hence slow down the nuclear process
    D. speed up the neutrons and hence speed up the nuclear process

CHEMISTRY

1. The presence of NaCI in ice will
    A. lower the boiling point of NaCI
    B. increase the melting point of NaCI
    C. make NaCI impure
    D. lower the melting point of ice

2. What are the values of xy and z in the equation below: $xNH_3 + yO_2 \rightarrow zNO + 6H_2O$
    A. 2,3,4
    B. 4,5,4
    C. 6,5,4
    D. 2,3,4

3. Calculate the volume of CO2 measured at s.t.p produced on heating 250g of potassium hydrogen trioxocarbonate (iv) strongly.
    (K 39, C = 12, O = 16)
    A. $28dm^3$
    B. $2.8dm^3$
    C. $5.6dm^3$
    D. $11.2dm^3$

4. The boiling points of water, ethanol, methylbenzene and butan-2-ol are 373.0k, 351.3K, 383.6K and 372.5K respectively. Which liquid has the highest vapour pressure at 323.0K?
    A. water
    B. methylbenzene
    C. ethanol
    D. butan-2-ol

5. The conclusion from Rutherford's alpha-scattering experiment is that
    A. atoms are mostly empty space with a small nucleus
    B. emissions from radioactive substances consist of three main components
    C. there is a nuclear pull on orbital electrons
    D. electrons are deflected by both magnetic and electric fields.

6. Elements P Q and R have atomic numbers 9, 16 and 20 respectively. Which of them would gain electron(s) during ionic bonding?
    A. Q and R
    B. P and R
    C. P and Q
    D. R Q and R

7. Which of the following has the lowest pH?
    A. $5cm^3$ of M/10 HCl
    B. $10cm^3$ of M/10 HCl
    C. $20cm^3$ of M/8 HCl
    D. $15cm^3$ of M/2 HCl

8. Which of the following is an acid salt?
    A. $(NH_4)_2CO_3$.
    B. CHCOONa
    C. $KHSO_4$
    D. $MgSO_4.7H_2O$

9. $Cr + 14H^+ + 61 \rightarrow 2Cr^{3+} + 31 + 7H_2O$
    The change in the oxidation number of oxygen in the equation above is
    A. 0 .
    B. 1
    C. 2
    D. 7

10. During the electrolysis of CuSO4 solution using Platinum electrodes, which of the following occurs?
    A. acidity increases at the cathode
    B. oxygen is liberated at the cathode
    C. pH decreases at the cathode
    D. pH of solution increases

11. Which of the following ions is a pollution in drinking water even in trace quantities?
    A. Ca^{2+}
    B. Pb^{2+}
    C. Mg^{2+}
    D. Fe^{2+}

12. The solubility of a salt of molar mass 100g at 20°C is $0.34mol/dm^3$. If 3.4g of that salt dissolved completely in 250cm° of water at that temperature, the resulting solution is
    A. a suspension
    B. Saturated
    C. unsaturated
    D. supersaturated

13. Catalyst is important in chemical industry in the
    A. it affects the purity of the products
    B. it affects the quantity of the products

C. it increases the time for the reaching equilibrium

D. bond breaking is slowed down

14. An alkanoic acid has a molecular mass of 88. name the acid [C = 12, O = 16, H = 1]
    A. propanoic acid
    B. botanic acid
    C. pentatonic acid
    D. but-2-ionic acid

15. Ethyne undergoes the following reactions except
    A. polymerization
    B. addition
    C. Substitution
    D. etherification

BIOLOGY

1. The bryophytes are important parts of cert ain food chains because they
   A. grow in great masses
   B. play a role in the national aging of lakes and pond
   C. they choke up other life forms in the lakes
   D. they resemble green algae

2. In m any plants, the growing tips elongate fastest and are said to be
   A. meristematic
   B. apically dominant
   C. phototropic
   D. geotropic

3. Movement of wat er through a semi perm eable membrane because the mem brane moves or expands thus overcoming the resistance of hydrostatic pressure is referred to as
   A. diffusion
   B. osmosis
   C. osmotic potential
   D. turgor pressure

4. When the chromosom es condense and the nucleoli and nuclear mem brane disapper, the cell is said to be
   A. metaphase
   B. prophase
   C. anaphase
   D. telophase

5. While the metabolizing enzymes are inducible other enzymes are said to be
   A. synthetases
   B. repressible
   C. will bind the operator
   D. will not bind the operator

6. In which of the following organisms does a single cell perform all the functions of movement, nutrition, growth, excretion, and photosynthesis.
   A. paramecium
   B. euglena
   C. amoeba
   D. spirogyra

7. An important abiotic factor that affects plants and animals in their habitats is
   A. turbidity
   B. rainfall
   C. wind direction
   D. temperature

8. Discontinuous variations is observed in a man using the following
   A. tongue rolling
   B. body weight
   C. height
   D. skin colour

9. The bone illustrates the structure of
   A. lumber vertebra
   B. thoracic vertebra
   C. caudal vertebra
   D. cervical vertebra

10. A sex-linked defect that allows small cuts to bleed severely is known as
    A. anaemia
    B. Anorexia
    C. haemophilia
    D. haemolysis

11. In the adult mammalian blood, the cell which lack nuclei are the
    A. erythrocytes
    B. Lymphocytes
    C. leucocytes
    D. phagocytes

12. In which of the following group of plant fruits is the pericarp inseparable from the seed coat
    A. caryopsis
    B. nut
    C. follicle
    D. cypsela

13. the part of the brain that controls body posture in mammals is
    A. thalamus
    B. cerebrum
    C. spinal cord
    D. cerebellum

14. The ability of an organism to survive in an environment successfully is known as
    A. residence
    B. adaptation
    C. secession
    D. competition

15. One of the adaptations to life on a tree by monkey is its possession of digits which are
    A. long
    B. opposable
    C. extensible
    D. big

MATHEMATICS

1. In a school, 180 students offer Mathematics or Physics or both. If 125 offer Mathematics and 105 offer Physics. How many students offer Mathematics only?
   - A. 75
   - B. 80
   - C. 55
   - D. 125

2. Find the value of x for which $3(2^{4x+3}) = 96$
   - A. 2
   - B. -2
   - C. ½
   - D. ½

3. The cost of renovating a 5m square room is N500. What is the cost of renovating a 1 Om square room?
   - A. N1,000
   - B. N2,500
   - C. N2,000
   - D. N10,000

4. Find the rate of change of the total surface area Sofa sphere with respect to its radius r when r = 2.
   - A. 8
   - B. 16
   - C. I0
   - D. I4

5. Evaluate $]_0$ d
   - A.
   - B.
   - C. + C
   - D.

6. Differentiate $(\cos + \sin)^2$ with respect to 8.
   - A. 2cos2
   - B. -2cos2
   - C. -2sin2
   - D. 2sin2

7. A binary operation * on the set of rational numbers is defined as $x * y \, 2x + {}^{(x2 \ y 3)}/_{x+ y3}$, find -1 * 2
   - A. 11
   - B. -11
   - C. 8
   - D. -8

8 A polynomial in x whose zeroes are 2, 1 and -3 is
   - A. $x^3 \, 7x+6 = 0$
   - B. $x^3 +7x \, 6 = 0$
   - C. $x^3 \, 7 \, x \, 6 = 0$
   - D. $x^3 +7 \, x + 6 = 0$

9. Find the range of values of x for which $7x -3 > 3x + 4$
   - A. $x < {}^7/_{14}$
   - B. $x > {}^7/_{14}$
   - C. $7 \, x < 4$
   - D. $-4 \, x < 7$

10. Let P be a probability function on set S, where S = {C_1, C_2, C_3, C_4}. Find $P(C_3)$ if $P(C_1)$ = and $P(C_4) = ¼$
    - A. $^2/_5$
    - B. ½
    - C. $^I/_6$.
    - D. $^1/_3$

11. Calculat e the standard deviation of the following data 7, 8,9,10,11,12, 13.
    - A. 2
    - B. 4
    - C. 10
    - D. 11

12. If w is the mode and z is the median of the following set of num bers: 2.4, 2.1, 1.6, 2.6, 2. 6, 3.7, 2.1 and 2.6. Then(3w,2z)is
    - A. (2.6, 2.5)
    - B. (2.1, 2.5)
    - C. (7.8, 5.0)
    - D. (6.2, 5.0)

13. A trapezium has t wo parallel sides of length 6cm and 8cm if the area is $42cm^2$, find the distance between the parallel sides.
    - A. 6cm
    - B. 7cm
    - C. 8cm
    - D. 5cm

14. An arc of a circle of length 22cm subtends an angle of $3y^0$ at the centre of the circle. Find the value of y, if the radius of the circle is 7cm.
    - A. 30°
    - B. 60°
    - C. 120W
    - D. 150°

15. Find the locus of a point which moves such that its distance from the line y = 3 is a constant k.
    - A. y = 3 + k
    - B. y = 3 - k
    - C. y = 3 + k
    - D. y = k – 3

SOLUTION TO UNIMED 2014/2015 SCREENING TEST USE OF ENGLISH

1. C   2. E   3. A   4. E   5. B
6. D   7. D   8. Loosend, D
9. perpetrate, A
10. temper, B
11. varacious, B   12. C   13. B
14. had I seen, C   15. D

PHYSICS

1. $V^2 = U^2 + 2gs$ here u = 0, g = 9.8m/s^2, s = 10m
   $V^2 = 0 + 2(9.8 \times 10) = 196$
   V = V196 = 14m/s [we neglect the height of the platform from the ground]   2. B

3. W = mg x s [where mg = F]
   = 0.1 x 0.01 x 9.8 x 0.2 = 2 x 10^{-3}J B

4. Efficiency =   x 100%
   $60/100 = {}^{P/500}/_5$

P = 0.6 x 5 x 500 = 1500N D

5. $T_1 = 7^0C + 273 = 280K$, $T_2 = 27^0C + 273 = 300K$, $P_1 = 70cmHg$, $P_2 = 75cmHg$

From   =

V_2 =   =_____ = $1200cm^3$ A

6. $P_1 = 2.0 \times 10^5 N/m^2$, $P_2 = ?$, $T_1 = 27^0C + 273 = 300K$, $T_2 = 87^0C = 273 = 369K$

         =

P_2 =   =_____ = $2.4 \times 10^5 N/m^2$,   B

7. n =   =

Sin r =   x sin 30 =   x   =

r = $\sin^{-1}$ = 22^0 C

8. From v = f_____ [where v = ?, f_____ = 200KHz = 200 x 1000 = 200000Hz, = 1500m]
V = 200000 x 1500 = $3 \times 10^8 m/s$ A

9. B   10. B

11. R = P_1 = ———— x 0.2 = $1.0 \times 10^{-13} \Omega$ D

12. Power, P IV;
I =   =   = 8A   ?A

13. reactance of inductor, $X_1 = 2$ fl [L = 30mH = 30 x 10^{-3}H, F = 1.3KHz = 1.3KHz = 1.3 x 1000Hz
$X_1 = 2$ x   x 1.3 x 1000 x 30 x 10 = 245.0Ω A

14. The general formular for alkanoic acid is
$C_nH_{2n+1}COOH$
$C_nH_{2n+1}COOH$ = molar mass = 88
12n + 1(2n + 1) + 12 + 16 + 16 + 1 = 88
14n = 88 -46 = 42
n =   = 3
The formular of the compound = $C_3H_{2x3+1}COOH$ = C_3H_7COOH [i.e. Propanoic acid], A
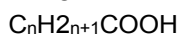
15. D **See Multi-Purpose Calculations In Chemistry by J. O. Onuoha For More Problems & Explanations**

BIOLOGY
1. A
2. meristematic, A
3. osmosis, B
4. prophase, B
5. repressible, B
6. euglena, B
7. temperature, D
8. tongue rolling, A
9. ***
10. haemophilia, C
11. erythrocytes, A
12. cypsela, D
13. cerebellum, D
14. adaptation, B
15. B

MATHEMATICS
1. Let the number of student that offer both Maths & Physics = x
No. of students offering Maths only = 125 –x
No. of students offering Physics only = 105 – x
Total no. of students = 125 x + x + 105 –x = 180
230 –x = 180
x = 230 -180 = 50
Number of students offering only Maths = 125 x
= 125 – 50 = 75 A

2. $3(2^{4x+3}) = 96$; $2^{4x+3} = 32$
2^{4x+3} 2^5 [canceling out the base]   3. C
4x + 3 = 5; 4x = 2
x =   =   C

4. Total surface area of a sphere = 4 ✓ sq. units
= 8 r [When r = 2]
= 8 (2) = 16   5. B

6. Let y = $(Cos + Sin)^2$
$^{dy}/_{dx}$ = 2(cos + Sin) (-sin + cos) =
2(-sin cos + co   si   + sin cos) = 2(Co   si   )
Recall that cos2 = cos^2 sin^2
dy/dx = 2(cos2) = 2cos2 > A

7. x*y = 2x + _____
- 1 * 2 = 2(-1) + _____ = - 2 + _____
= -2-9 = - 11   B

9. 7x – 3 > 3x +4 [connecting like terms]
7x – 3x > 3 +4
4x > 7
x >   B

10. $P(C_3) = 1 – [P(C_1) + P(C_2) + P(C_4)]$ = 1 –[
+   +   ]
= 1 -   =   C   11. A

12. Mode is the highest number. [i.e w = 2.6]
To get the median, we re-arrange the data thus
1.6, 2.1, 2.1, 2.4, 2.6, 2.6, 2.6, 3.7
Z =   = 2.5
Therefore, (32, 2z) = [3(2.6), 2(2.5)] = [7.8, 5.0]   C

13. Area of trapezium, A = ½ [a + b]h where A = $42cm^2$, a = 6cm, b = 8cm, h = ?
A = ½ [6 + 8]h = ½ x 14 x h = 42
h =   = 6cm A

14. Length of arc of a circle =   x 2 r
22 =   x   x 7 =   x 44
y =   = 60^0 B   15. C

See Multi-Purpose Mathematics by J. O. Onuoha For More Problems & Explanations

UNIVERSITY OF MEDICAL SCIENCE
Post UME Screening Test 2013/2014

TIME: 1 hr

USE OF ENGLISH
Read the passage carefully and answer the questions that follow it.

Mathem atics is the language in which the book of nature is written: Mathem atics is the queen of the sciences. It is universally agreed that Mathem atics is the backbone of Science and Technology. For without Mathem atics, the engineer is but an artist or a sculptor. He can build his bridge, attest to its form and beauty, but without Mat hem atics he cannot guarantee its reliability to serve the purpose for which it is built. Mathem atics is indeed the science of sciences. It is also art of all arts. It is right, legitimate and defensible to consider Mathematics as an art. The poet, the musician, the artist and the mathematician have a lot in common. Fundam ental to all their studies and works is their common interest in the logical study of related concepts and objects to form pattern called painting and the mathem atician arranges abstract ideas into a pattern using symbols, to produce equations. Each of these patterns the poem, the music, the painting and the equation must stand up to the test of the same order, harm ony and beauty. So if M athem atics is not an art, what is art?

1.   The views expressed in this passage belong to
   A.   JAMB
   B.   artists
   C.   Mathematicians
   D.   the poet
   E.   the author of the passage

2.   The expression "Mathematics is the queen of science" contains
   A.   a contradiction
   B.   an analogy
   C.   an irony
   D.   a lie

3.   "Mathematics" is written with a capital M in this passage because
   A.   the writer is a mathematician
   B.   the writer does not know how to use punctuation correctly
   C.   the writer wants to distinguish between concept and a subject
   D.   it is the normal way of writing about the sciences
   E.   the writer is confused

4.   The last sentence in the passage, "so if Mathematics is not an art, what is art?" is a
   A.   question for the reader to answer
   B.   statement put in form of a question

C.   question combined with a statement
D.   mathematical question stated in words
E.   pattern which illustrates beauty, harmony and order in language.

5.   "Mathematics" can be considered as a form of art because
   A.   its main principles is made use of by the arts }?
   B.   it involves drawing in figures
   C.   it is a form of fine arts
   D.   it is a type of graphic arts
   E.   it involves a study of beauty, harmony and order

In questions 6 and 7, choose the word that has been correctly spelt.

6.   It is not easy to _____ jobs sweeping in the streets and on campus
   A.   maneuver
   B.   manouever
   C.   maneuver
   D.   manoeuvre

7.   The defendant claimed he had been _____ into making a statement
   A.   coerced
   B.   coaxed
   C.   coarsed
   D.   coerced

In questions 8-10, choose the option that best completes the gap

8.   I have reminded him that he is the only person _____ can solve my problem.
   A.   who
   B.   which
   C.   that
   D.   whom

9.   My sister has _____ several food packages for my birthday party.
   A.   laid on
   B.   layed up
   C.   laid off
   D.   layed on

10.   Many students were _____ into rioting by the more radical ones
   A.   guided
   B.   gathered
   C.   guarded
   D.   goaded

In question 11, choose the option that explains the information conveyed in the sentence.

11.   Posters have been printed, and would be distributed to the rank and file.

A. to both the ordinary members and the leaders
B. to those of high ranks and file
C. to the leaders alone
D. to the ordinary members alone.

In questions 12 and 13, choose the option nearest in meaning to the word(s) in italics

12. Because more reliable evidence is needed to prosecute the case, it is now in abeyance
    A. court record
    B. suspension
    C. privacy
    D. secret

13. In the olden days, mothers of twins were never accepted as members of the society. They were simply
    A. banished
    B. excommunicated
    C. expelled
    D. ostracized

In question 14, choose the option that has the same vowel sound as the one represented by the letter(s) underlined

14. Fl<u>oo</u>d
    A. stop
    B. Flock
    C. blood
    D. block

In question 15, choose the option that has the same consonant sound as the one represented by the letter(s)

15. E<u>ch</u>elon
    A. church
    B. character
    C. chief
    D. chassis

PHYSICS

1. The extension of a string when 5g weight was hung from it was 0.56cm, if Hooke's law is obeyed, what is the extension caused by a load of 20g weight?
    A. $2.60m/s^2$
    B. $0.26m/s^2$
    C. $3.40m/s^2$
    D. $12.00m/s^2$

2. A car of mass 1500kg goes round a circular curve of radius 50m at a speed of 40m/s. The magnitude of centripetal force on the car is
    A. $1.2 \times 10^2 N$
    B. $1.2 \times 10^3 N$
    C. $4.8 \times 10^3 N$
    D. $4.8 \times 10^4 N$

3. The efficiency of a machine is always less than 100% because
    A. load lifted is always greater than work input

B. load lifted is always greater than the applied effort
C. effort applied is always greater than mechanical advantage
D. velocity ratio is always greater than the mechanical advantage

4. Which of these statements is not true? Thermostats are used to control the temperature of
    A. pressure cookers
    B. laundry irons
    C. hot water storage tanks
    D. aquaria for tropical fish

5. A given mass of an ideal gas occupies a volume V at a temperature T and under a pressure P. if the pressure is increased to 2P and the temperature reduced to 1/2T, then the percentage change in volume of the gas is
    A. 25%
    B. 75%
    C. 300%
    D. 1%

6. The thermometric property of a constant volume thermometer is
    A. change in pressure
    B. change in length
    C. differential expansion
    D. change in volume

7. The combination of sound waves with different frequencies is known as
    A. interference
    B. diffraction
    C. superposition
    D. resonance

8. Which of the following characteristics of a wave is used in the measurement of the depth of the sea?
    A. refrection
    B. reflection
    C. diffraction
    D. interference

9. Which of the following eye defects can be corrected using a cylindrical lens?
    A. astigmatism
    B. presbyopia
    C. chromatic aberration
    D. myopia

10. The resistance of a wire depends on
    A. the length of the wire
    B. the area of the wire
    C. the temperature of the wire
    D. all of the above

11. A dynamo primarily converts
    A. mechanical energy into electrical energy
    B. electrical energy into kinetic energy
    C. potential energy into kinetic energy
    D. kinetic energy into potential energy

12. If a current carrying coil is mounted on a metal frame, the back emf induced in the coil causes
   A. inductance
   B. eddy current
   C. electromagnetism
   D. dipole moment

13. Which of the following may be found in light nuclei? I -particles II. Protons III. Neutrons IV. -particles,
   A. I and II only
   B. I and III only
   C. I and IV only
   D. II and III only

14. The difference between x-.rays and y-rays is that
   A. x-rays arise from energy changes and are due to electrons while y-rays come from the nucleus
   B. x-rays are electromagnetic radiations while y-rays are not
   C. x-rays have higher frequencies than y-rays
   D. x-rays are more penetrating than y-rays

15. When an atom loses or gains a charge, it becomes
   A. an electron
   B. an ion
   C. a neutron
   D. a proton

CHEMISTRY

1. What are the values of p, q, r and s respectively in the equation:
   $PCH_4 + qO_2 \quad + rCO + sH_2O$
   A. 1,2,1,2
   B. 1,3,2,2
   C. 2,3,2,4
   D. 2,3,2,2

2. $KHCO_3$ is contaminated with K_2CO_3 as impurity. If 2. 5g of the impure KHCD3 on heating produces $0.224dm^3$ of CO_2 at s.t.p. calculate the percentage of K_2CO_3 impurity. (K 39, H = 1, C =12,0=16).
   A. 30%
   B. 40%
   C. 10%
   D. 20%

3. The partial pressure of N_2 in a container at 50°C in which there are 0.30 mole of N_2 AND 1.2 mole of CO_2 at a pressure of 2.00atm is
   A. 0.6atm
   B. 0.5atm
   C. 0.4atm
   D. 1 .6atm

4. The major reason why chemical reaction occurs among elements is that they have the tendency to
   A. attain the nearest noble gas structure
   B. become a metal

C. become a nonmetal
D. become a noble element

5. Given that the pH of a solution of KOH is 12, what is the concentration of OH^- ions?
   A. $0.01 mol/dm^3$
   B. $1 \times 10^{-12} mol/dm^3$
   C. $1 \times 10^{-14} mol/dm^3$
   D. $1 \times 10^{-7} mol/dm^3$

6. Which of the following salt has a pH less than 7?
   A. $NaHCO_3$
   B. NH_4Cl
   C. Na_2SO_4
   D. $NaCl$

7. In which of the following reactions does hydrogen peroxide act as a reducing agent?
   A. $PbO_2 + 2HNO_3 + H_2O \quad Pb(NO_3)_2 + 2H_2O + O_2$
   B. $H_2S + H_2O_2 \quad S + 2H_2O$
   C. $PbSO_2 + H_2O_2 \quad PbSO_4 + H_2O$
   D. $2I^- + 2H^+ H_2O_2 \quad I_2 + 2H_2O$

8. Temporary hardness of water is removed by the use of the following EXCEPT
   A. boiling
   B. use of $Ca(OH)_2$
   C. use of Na_2CO_3
   D. use of alum

9. Hydration of ions in solution is associated with
   A. liberation of heat
   B. absorption of heat
   C. reduction of heat
   D. conduction of heat

10. A piece of radioactive element has initially 8.0×10^{22} atoms. Half-life is two days. After 16 days, the number of atoms is
   A. 5×10^{21}
   B. 5×10^{22}
   C. 2×10^{22}
   D. 2×10^{21}

11. Which of the following pairs of substances are hygroscopic?
   A. CaCl and NaOH
   B. CaO and KOH
   C. Conc. H_2SO_4 and $MgCl_2$
   D. CuO and CaO

12. Zinc is not regarded as a transition metal even though it is a d-block element because
   A. it has no electron in 3d-orbitals
   B. it has all 3d-orbitals completely filled
   C. it blends with other neighbouring elements
   D. it does not form complex ions Uke others

13. Silver chloride turns grey when exposed to sunlight because
   A. the silver ion is reduced to silver
   B. the silver ion is oxidized to silver
   C. silver is a transition metal
   D. the silver chloride forms complexes in the sun

14. Which of these compounds exhibits resonance?
   A. benzene
   B. ethanol

C. Propene

D. butyne

15. Hydrolysis of $CH_3COOCH_2CH_3$ in dilute HCl produces

A. $CH_3COOH + CH_3C_3$

B. $CH_3CH_2OH + CH_3COCl$

C. $CH_3COOH + CH_3CH_2OH$

D. $CH_3COOH + CH_3CH,$

BIOLOGY

1. From the following list of types of mutation, identify the one that is hereditary

A. genetic mutation

B. somatic mutation

C. germinal mutation

D. gametic mutation

2. Which of these would not be a limiting factor in photosynthesis?

A. O_2

B. CO_2

C. chlorophyll

D. light

3. In a cell digestive enzymes mostly occur in

A. ribosome

B. lysosome

C. Mitochondria

D. plastids

4. Which of these is not a lipid?

A. wax

B. sterol

C. glycerol

D. lecithin

5. Phototropism is

A. a unilateral response to light

B. a bilateral response to light

C. both unilateral and bilateral response to light

D. a hormonal gradient created within the organ

6. The site of protein synthesis in a cell is

A. golgi apparatus

B. ribosomes

C. Lysosomes

D. nucleus

7. On storage, the sweetness of corn is lost. This is because

A. polysaccharide is reconverted into soluble sugar

B. concentration of sugar increases due to storage

C. of conversion of sugar to polysaccharide

D. enzymes responsible for the conversion are lost

8. The eye worm is known as

A. wuchereina banerofti

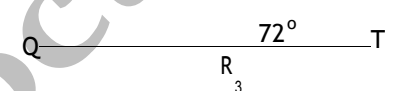B. brugia malayi

C. loa loa

D. dracunenius medinensis

9. Which of these plants is not a pitcher plant?

A. neperithes

B. crotalaria

C. Sarracenia

D. dionaea

10. One of these art hropod is a carrier of viruses and other micro-organism

A. termite

B. ant

C. bee

D. flea

11. The highly developed cortex of the brain of man enables us to do the following except

A. think

B. reason out

C. memonze

D. maintain balance of the body

12. Lampbrush chromosome occurs in

A. salivary gland

B. lymph glands

C. cancer cells

D. oocytes

13. Insulin is secreted by the

A. gallbladder

B. pancreas

C. liver

D. spleen

14. The principal energy storing molecule is

A. NADP

B. FAD

C. ATP

D. ADP

15. Each month the ut erus lining thickens up in readiness to receive the fertilized egg. If the egg is not fertilized, the lining and some blood is lost through the vagina. This is

A. ovulation

B. gestation

C. fertilization

D. menstruation

MATHEMATICS

1. The average of three numbers is 32_5 if the sum of two of the num bers is 131_4, find the third number in base 6

A. 43

B. 36

C. 236

D. 326

2. Three times the second term plus the seventh term of an AP is equal to the twelfth t erm. Find the relationship between the first term a and the common difference d

A. 3a -2d = 0

B. 3a+2d = 0

C. 3a+d = 0

D. 3a –d = 0

3. A fense of 36m is to be built to make three sides of a rectangular compound, the fourth side being a building. Find the possible lengths of the shorter sides of the compound if the area enclosed is 160m^2.

A. 20m, 10m

B. 16m, 8m

C. 20m, 16m

D. l0m, 8m

4. Find   if y = 2x^2 - sin2x

A. 4x+2cosx

B. 4x -2cos2x

C. 4x+2cos2x

D. 4x-2cosx

5. A bag contains 4x First bank ATM cards, (2x1) UBA bank ATM cards and 3(x + 1) Zenit h Bank ATM cards. If the probability of picking a First Bank ATM is 2/5 how many UBA Bank ATM cards are in the bag?

A. 3

B. 8

C. 9

D. 20

6. Express the product of 0.000128 and 0.00125 in standard form.

A. 1.6×10^{-11}

B. 1.6×10^{-5}

C. 1.6×10^{-7}

D. 1.6×10^{-4}

7. Make x the subject of the relation y = 3-lnx

A. e^{3-y}

B. e^{y-3}

C. Y/3

D. 3/y

8. In the diagram below, o is the centre of the circle of radius 42cm. find the area of the shaded portion (take   = $^{22}/_7$)

A. 903cm^2

B. 441cm^2

C. 462cm^2

D. 21cm^2

9. A student dropped an object from a building l00m high. If the height of the object above the ground after t seconds is 100 + 4.9t^2 m, how fast is it falling 3 seconds after it is dropped?

A. 14.7m/s

B. 85.3m/s

C. 29.4m/s

D. 70.6m/s

10. An investor who invested N6, 500 at some simple interest rate collected a total amount of N7,800 after four years. How much simple interest would he have collected after two years if he had invested N9,000?

A. N1,000

B. N10,000

C. N5,400

D. N900

11. Differentiate (cos + sin)^2 with respect to

A. 2cos2

B. 2sin2

C. -2cos2

D. -2sin2

12. If the sum of the roots of the equation 2x^2 5px + 8 0 is five times the product of the roots, find the value of p.

A. -8

B. 8 $^1/$

C. 8

D. $^{-1}/_8$

13. Find the area of region enclosed by the curve y = 2- x^2 and the line y = -x.

A. $^3/_2$

B. 9

C. 3

D. $^{-9}/_2$

14. In the figure below,   =   =   = 72°. Find <QPS.

15. If x – 1 is a factor of 3x   – px + 5x – 3p, find the ` value of p.

A. -2

B. 2

C. ½

D. ½

SOLUTION TO UNIMED 2013/2014 SCREENING TEST

USE OF ENGLISH

1. E   2. B   3 C   4. B   5. A   6. maneuver, A

7. Coerced, D   8. Who, A   9. laid on,   A

10. Goaded, D   11. D   12. suspension, B

13. Ostracized, D   14. C   15. D

PHYSICS

1. Let the resultant of the forces = F

F^2=12^2 + 5^2 = 144 + 25 = 169

F = √169 = 13N

Recall: F=ma; a=$^F/_m$

a = $^{13}/_5$ = 2.6m/s^2 A

2. Centripetal force, F   =   4.8 x 10^4 N D

3. D   4.C   5.A   6.A   7.C   8.B   9.A 10. D

11. A   12.B   13.D   14.A   15.B

$$3 - p + 5 - 3p = 0$$
$$2p = 8; \quad p = \quad = 4 \quad B$$

See Multi-Purpose Calculations In Physics By J. 0. Onuoha For More Problems & Explanations

CHEMISTRY

1. A

2. Reaction equation: $2KHCO_3 \quad K_2CO_3 + CO_2 + H_2O$
   2(100)g of $KHCO_3$ produces 22.4dm^3 of CO_2 at s.t.p
   xg of $KHCO_3$ will produce 0.224dm^3 of CO_2
   [Cross multiplying]

   xg =   = 2g of $KHCO_3$

   % of K_2CO_3 impurity = _____ x l00% = 20% D

3. B   4. A   5. A   6. A   7. A   8. D   9. A
10. no correct option   11. D   12. B   13. D   14. A
15. C

BIOLOGY

1. germinal mutation, C   2. A
3. Lysosome, B   4. Glycerol, C
5. A   6. Ribosomes, B   7. C   8. Loaloa, C
9. B   10. Flea, D   11. D   12. occytes
13. pancreas, B   14. ATP, C   15. Menstruation, D

MATHEMATICS

1. B.
2. $3(a + d) + (a + 6d) = a + 11d$ [expanding and collecting like terms]
   $4a - a + 9d - 11d = 0$
   $3a - 2d = 0$?A   3. D
4. Given $y = 2x^2 - \sin 2x$

   $= 4x - 2(\cos 2x) = 4x - 2\cos 2x$ B   5. A
6. $0.000128 \times 0.00125 = 1.6 \times 10^{-7}$ C
7. $y = 3 - \ln k$
   $\ln k = 3 - y$
   $\log_e x = 3 - y$
   $x = e^{3-y}$ A
8. Area of the segment = Area of sector – Area of triangle

   $= \quad x\, r^2 - \frac{1}{2}r^2 \sin$

   $= \quad x \quad x\, 42^2 - \frac{1}{2} \times 42^2 \times \sin 30$
   $= 462 - 441 = 21cm^2$ D
9. Given: $s = 100 + 4.9t^2$ v

   $= \quad = 9.8t$

   at t = 3s,
   $v = 9.8 \times 3 = 29.4m/s$ C   10. C
11. Let $y = [\cos + \sin][-\sin + \cos] = 2[-\sin\cos + \cos^2 \sin^2 + \sin\cos] = 2[\cos^2 \sin^2]$
    Recall that $\cos 2 = \cos^2 \sin^2$

    $= 2[\cos 2] = 2\cos 2$ >A   12. C
13. D   14. C
15. If x – 1 is a factor,
    Then x – 1 = 0; x = 1
    $f(x) = 3x^3 - px^2 + 5x - 3p$ [substituting x = 1 into the equation]
    $f(1) = 3(1)^3 - p(1)^2 + 5(1) - 3p = 0$

UNIVERSITY OF MEDICAL SCIENCE
Post UME Screening Test 2012/2013

TIME: 1 hr

USE OF ENGLISH
Read the passage carefully and answer questions 1 - 5 below.

Olumba removed a small black amulet from his neck and substituted a bigger one. The form er was for general protection at hom e, the latter for protection and luck whilst traveling. Ready at last he picked up his matchet and headed for the chief's hous e with Ikechi behind him.

Olumba walked ahead looking upward as usual. Just what he was searching for in the sky Ikechi couldn't tell. Perhabs, his shortness accounted for this habit since he often has to look up into t he faces of his taller com panions. What he lacked in height he made up in solid muscle and he looked strong. His wrestling pseudonym was Agadaga, a nam e whic h meant nothing but which som ehow convey ed an impression of strength.

Eze Diali, the chief, sat at one end of his reception hail ringed by the village elders whom he had called to a meeting. The rest of the hall was filled with much younger men.

"People of Chiolu", the chief began, "I have learnt that poachers from Aliakoro will be at the Great ponds tonight. There is no doubt that they will try to steal from the pond of Wagaba which as you know is rich in fish. Our plan tonight is to bring one or m ore of these thieves home alive and ask for very large ransoms. This line of action will have two effects. Firstly, it will prove our charges of poaching against the people of Aliakoro, and secondly, the payment of very large rans oms would be a deterrent. We need seven men for this venture. I call for volunteers"

"Who will head this party?" the chief asked, looking around. Chituru, one of the elders, said: "Eze Diali, let us not waste time. Olumba is the man for the job. We all know that he has led many ex ploits like this one"

"We still need six men," Eze Diali said. Eager youths came surging forward. Their well -form ed muscles rippled as they elbowed one another. It was difficult to choose.

"I suggest Olumba should choose his men. He knows the boys very well and his judgm ent should be reliable." It was Wezume, another elder, who spoke.

1. Olumba wore amulets because he
   A. was superstitious
   B. was a strong and fearless fighter
   C. wanted to please his wife
   D. wanted to instill fear in Eze Diali
   E. believed in their power of protection
2. Olumba looked upwards because

A. he was searching for something in the sky
B. this was his usual practice
C. he was short and often had to look up
D. he lacked height
E. his wrestling pseudonym was Agadaga

3. "Poaching" means
   A. stealing
   B. cracking eggs
   C. fishing
   D. demanding ransoms from Aliakoro
   E. deterring thieves
4. The chief called the meeting because
   A. he wanted volunteers to go to Aliakoro
   B. he wanted to announc e the fact that there would finitely be poachers from Chiotu at the Great ponds that night
   C. he wanted to ask for very large ransoms because the people of Chiolu needed money for fishing
   D. the elders had devis ed a plan to prevent the poaching E. seven men were needed to bring seven thieves home.
5. Why was Olumba chosen?
   A. in order not to waste time
   B. because his nickname conveyed an impression of strength
   C. his amulets for luck were stronger than anyone else
   D. he had caught thieves alive before
   E. the passage doesn't say

In each questions 6 8, choose the word(s) that best complete the meaning in the sentence

6. We watched the woman as she stood up and _____ herself more comfortably.
   A. reseated
   B. resat
   C. reseat
   D. resitted
7. The students_____the principal's appear for claim and took to the streets.
   A. deferred
   B. defied
   C. differed
   D. defined
8. The noise from the record seller's workshop _____ on my ears.
   A. jeers
   B. jars
   C. jams
   D. jabs

In question 9 11, choose the option opposite in meaning to the word(s) in italics

9. The Military Governor *upheld* the decision of his cabinet.
   A. held up
   B. undercut
   C. maintained
   D. abolished
   E. reversed

10. Chidi is naturally *taciturn*.
   A. friendly
   B. cheerful
   C. dumb
   D. lively
   E. reserved

11. James is a disco-addict. He takes his student rather *lightly*.
   A. humorously
   B. gloomily
   C. tediously
   D. carefully
   E. seriously

In questions 12 14, choose the words or phrases which best fill(s) the gap(s)

12. There's_____ventilation in this room; that's why you don't breathe well
   A. few
   B. little
   C. a few
   D. a little

13. Whenever he puts the light on, someone _____to disturb him.
   A. came
   B. has come
   C. comes
   D. would come

14. It_____be taken for repair after all; it's working again
   A. couldn't
   B. shouldn't
   C. mightn't
   D. needn't

In question 15, choose the word that has the same consonant sound a s the one represented by the letter(s) underlined.

15. Chassis
   A. chip
   B. cheat
   C. sharp
   D. character

PHYSICS

1. The extension of a spring when 5g weight was hung from it was 0.56cm. if Hooke's law is obeyed, what is the extension caused by a load of 20g weight?
   A. 1.12cm
   B. 2.l4cm
   C. 2.52cm
   D. 2.24cm

2. The distanc e traveled by a particle starting from rest is plotted against the square of the time elapsed from the comm encem ent of m otion. The resulting graph is a measure of
   A. initial displacement
   B. initial velocity
   C. acceleration
   D. average velocity

3. A 90cm uniform lever has a load of 30N suspended at 15cm from one of its ends. If the fulcrum is at the centre of gravity. The force that must be applied at its other end to keep it in horizontal equilibrium is
   A. 15N
   B. 20N
   C. 30N
   D. 60N

4. Two points on a velocity-time graph have co-ordinates (5s, 10m/s) and (20s, 20m/s). Calculat e the mean acceleration bet ween the two points.
   A. $0.67m/s^2$
   B. $0.80m/s^2$
   C. $1.50m/s^2$
   D. $2.00m/s^2$

5. Which of the following statements are correct?
   I. land and sea breezes are natural convection II. The vacuum in a therm o flask prevents heat loss due to convection only Ill. convection m ay occur in liquids or gases but not in solids.
   A. I and II only
   B. II and lll only
   C. I and lll only
   D. I, II and III only

6. The property of the ey e known as its power of accommodation is controlled by the
   A. pupil
   B. vitreous humour
   C. iris
   D. ciliary muscles

7. Under constant tension and constant mass per unit length, the not e produced by a plunked string is 500Hz when the length of the wire is 0.9m. At what length is the frequency 150Hz?
   A. 3m
   B. 0.27m
   C. 8.33m
   D. 6740m

8. An object is placed in front of two plain mirrors inclined at an angle of ^{o}. If the total num ber of images formed is 7, find the value of ^{o}.
   A. 30°
   B. 45°
   C. 51°
   D. 90°

9. The north pole of a magnet can never be separated from the South Pole because of a property known as
   A. magnetic dipole
   B. magnetic moment
   C. magnetic monopole
   D. magnetic quadruple

10. If the distance between two points charges is increased by a factor of four, the magnitude of electrostatic force between them will be
    A. ½ of its initial value
    B. ¼ of its initial value
    C. $\frac{1}{16}$ of its initial value
    D. 4 times of its initial value

11. The terminal voltage of a battery is 4.0v when supplying a current of 2.0A; and 2.0v when supplying a current of 3.0A. the internal resistance of the battery is
    A. 0.5?
    B. 1.0?
    C. 2.0?
    D. 4.0?

12. The primary aim in high tension transmission is to
    A. minimize electrical energy losses due to heat production
    B. increase the rate of energy transfers by using high voltage
    C. increase the current in the wires
    D. generate electricity at high current and low voltage

13. Which of the following is required to convert a millimeter to ammeter?
    A. a high resistance in parallel
    B. a low resistance in series
    C. a low resistance in parallel
    D. a high resistance in series.

14. A light of energy 5ev falls on a metal and electrons with a maximum kinetic energy of 2ev are ejected. The work function of the metal is
    A. 0.4ev
    B. 2.5ev
    C. 3.0ev
    D. 70ev

15. One of the features of fission process is that
    A. its products are not radioactive
    B. it leads to chain reaction
    C. neutrons are not released
    D. the sum of the masses of the reactants equals the sum of the masses of the products.

CHEMISTRY

1. Two immiscible liquids with different boiling points can be separated by
   A. the use of separating fUNIMEDel
   B. evaporation
   C. distillation
   D. decantation

2. A mixture of $CaCl_2$ and $CaCO_3$ in water can be separated by
   A. evaporation
   B. sublimation
   C. distillation
   D. decantation

3. Consider the reaction represented by:
   $xPb(nq_3)_2 \quad\quad 2PbO + yNO_2 + z0_2$
   What are the values of x, y and z respectively?
   A. 2,6,3
   B. 1,4,2
   C. 2,4,1
   D. 2,4,2

4. $20cm^3$ of H_2, mixed and separated with $100cm^3$ of air containing 21% O_2. Calculate the volume of the residual gases at 110°C.
   A. $31cm^3$
   B. $11cm^3$
   C. $90cm^3$
   D. $110cm^3$

5. What is responsible for metallic bonding?
   A. sharing of electrons between the metal atoms
   B. attraction between the atomic nuclei and the cloud of electrons
   C. transfer of electrons from one atom to another
   D. attraction between positive and negative ions

6. $25cm^3$ of 1.5M solution of NaCl are added to $50cm^3$ of 3M NaCl. The molar concentration of the resulting solution is
   A. 2.5M
   B. 3M
   C. 2.25M
   D. 4.5M

7. A solution of salt formed from HCl and NH_3 solution is
   A. acidic
   B. basic
   C. complex
   D. neutral

8. Which of the following elements will burn in excess oxygen to form a product that is neutral to litmus?
   A. carbon
   B. hydrogen
   C. sulphur
   D. sodium

9. A current was passed for 10mins and 0.2mole of Cu was deposited. How many grammes of Ag will it deposit? (Cu = 64, Ag = 108)

10. Pollution of underground water by metal ions is very likely in a soil that has high
    A. acidity
    B. alkalinity
    C. chloride content

D. nitrate content

11. Producer gas with low calorific value because it contains more
   A. CO_2 than O_2
   B. N_2 than CO
   C. CO_2 than N_2,
   D. N_2, than CO_2,

12. For most reversible reactions,
   A. the reaction rate increase with time
   B. the reaction rate decreases with time
   C. the rate stabilizes with time
   D. the rate produces a curve with time

13. Which of the following compounds will leave a metal residue when heated?
   A. $Cu(NO_3)_2$
   B. $AgNO_3$
   C. K_2CO_3
   D. Na_2CO_3

14. Which of the polymers contains nitrogen?
   A. nylon
   B. pvc
   C. polyethene
   D. cellulose

15. A red precipitate of copper (i) dicarbide is formed when ammonium solution of copper (i) chloride is introduced into
   A. $CH_2=CH-CH_2-CH_3$
   B. $CH_3-CH_2-C \equiv CH$
   C. $CH_3-CH_2-CH_2-CH_3$
   D. $CH_3-C \equiv C-CH_3$

BIOLOGY

1. Increasing complexity due to multi cellularity first appeared in this animal group
   A. protozoa
   B. coelentrata
   C. sarcodina
   D. protista

2. In the angiosperms, the sieve tube members are living non-nucleated, but they are usually accompanied by
   A. cork cambium
   B. phloem rays
   C. vascular cambium
   D. companion cells

3. Abscisic acid is a chemical that prepares plans for
   A. ripening fruits
   B. emergency of seedlings
   C. for leaf fall
   D. reproduction

4. The formula below represents
   $C_6H_{12}O_6 \rightarrow 2C_2H_6O + 2CO_2 + ATP$
   A. glycolysis
   B. fermentation
   C. photosynthesis
   D. respiration

5. In any population, any specific allele will mutate at one time or another, usually to a non functional or harmful form. The proportion of gametes carrying new mutant alleles of a given locus is called
   A. the mutation rate
   B. the selective coefficient
   C. the relative fitness
   D. the lethal genotype

6. In mosses, the sporophyte generation is highly prominent producing spores in a cone-like
   A. gametophyte
   B. strobilus
   C. antheridium
   D. archegonium

7. When Sudan 111 solution is boiled with a solution of food substances, it gives a colour black precipitate showing the presence of
   A. fats and oil
   B. protein
   C. amino acid
   D. starch

8. Plants adapted to life in salty marsh are known as
   A. hydrophytes
   B. xerophytes
   C. halophytes
   D. epiphytes

9. A circulatory system that does not allow mixing of oxygenated blood in the mammalian heart is referred to as
   A. open
   B. double
   C. single
   D. closed

10. In a pyramid of numbers, it is common to have _____ with the smallest of individuals
   A. secondary consumers
   B. tertiary consumers
   C. primary consumers
   D. primary producers

11. In blood transfusion, agglutination occurs when
   A. white blood cells from two people meet
   B. two different antibodies meet
   C. two different antigen meet
   D. contrasting antigens and antibodies meet

12. Genetic counseling is important when marriage is planned between a
   A. Rh^+ woman and Rh^- man
   B. Rh^- woman and Rh^+ man
   C. Rh^+ man and Rh^+ woman
   D. Rh^+ woman and Rh^+ man

13. One of these animal groups contain acoelomate members
   A. mollusca
   B. coelentrata
   C. arthropoda
   D. reptilian

14. The enzyme invert ase will hydrolyse sucrcse to give
    A. mannose and galactose
    B. glucose and fructose
    C. maltose and galactose
    D. glycerol and fatty acids
15. A flower that has both stamen and pistil is said to be
    A. perfect
    B. imperfect
    C. pistillate
    D. staminate

AGRICULTURE

1. The role of science and technology in the development of agriculture includes the following except
   A. provision of insecticide and drugs
   B provision of good road networks
   C. introduction of artificial insemination
   D. setting up produce market of plant and animals
   E. introduction of new varieties of plants and animals
2. An accessory sex gland in a dull is
   A. prostrate gland
   B. pituitary gland
   C. thyroid gland
   D. pancreatic gland
   D. bulloid gland
3. The replacem ent of traditional farming methods with modern method is a step in agricultural
   A. expansion
   B. education
   C. development
   D. diversification
   E. modernization
4. Although clayey soil are rich in nutrients, they are not good for m ost agric ultural crop because they
   A. do not release their nutrients
   B. are too compact and poorly aerated
   C. loose their nutrients too readily after rains
   D. contain too much iron, aluminum and boron
   D. are too porous
5. Rosette disease o groundnut is transmitted by
   A. an earthworm
   B. grasshopper
   C. a white fly
   D. an aphid
   E. butterfly
6. The sequence of events in the reproductive process of diary animal is
   A. lactation, parturition, gestation and copulation

B. parturition, copulation. lactation and gestation, gestation. Lactation. part urition and copulation
C. copulation, gestation, parturition and lactation
D. copulation, parturition, gestation and lactation

7. The types of rocks formed from molten m agm a is known as
   A. sedimentary
   B. igneous
   C. metamorphic
   D. schist
   E. sandstone
8. Birds are important pest of
   A. tree crops
   B. legumes
   C. cereal
   D. vegetable crops
   E. stored produce
9. The practice of progeny selection involves selecting breeding stock on the basis of the
   A. performance of offspring
   B parental characteristics
   C. sire-dam relationships
   D. individual merits of each animal
   E. characteristics of adult and young animal
10. The commonest method of land tenure in Nigeria
    A. lease
    B. inheritance
    C. outright purchase
    D. pledge
    E. allocation
11. The most important limitation of agricultural mechanization is
    A. small holdings
    B. lack of technical knowhow
    C. poor marketing
    D. inadequate stage facilities
    E. pest attack
12. Trips cause serious mechanical damage of crops by their
    A. feeding activities on flowers, leaves and fruits
    B. laying eggs on plants
    C. sucking of the sac of crops
    D. burrowing activities
    E. activities of vectors of bacterial diseases
13. The expression of a gene in the phenotype irrespective whether the cell is homozygous or heterozygous is known as
    A. recessive
    B. partial dominance
    C. test-cross
    D. segregation
    E. dominance

14. What are give-and-take lines often used for in farm surveying?
    A. leveling measurements of farms.
    B. chain measurements of farm lands
    C. measuring diversions of obstructions in a farm land
    D. measuring farm with irregular boundaries
    E. measuring turning during surveying
15. The disbanded produce marketing boards in Nigeria dealt with the following comm odities except
    A. oil palm
    B. rubber
    C. cocoa
    D. groundnut
    E. yam

MATHEMATICS

1. Express 8×10^{-6} 2×10^{-5} as a fraction
    A. $\frac{1}{4}$
    B. $\frac{3}{2}$
    C. $\frac{2}{5}$
    D. $\frac{1}{5}$
2. Find the values of x for which $2^{2x+3} - 33 \times 2x + 4 = 0$
    A. $x = 2, x = -3$
    B. $x = -2, x =_1 3$
    C. $x = 4, x = /_8$
    D. $x = 2, x = 3$
3. If 260_9 $100_2 = 66_n$/ find n
    A. 7
    B. 9
    C. 10
    D. 8
4. Find the values of x such that_____ = _
    A. $x = y = 2$
    B. $x = 2, y = -2$
    C. $x = -2, y = 2$
    D. $x = y = -2$
5. A chord of a circle of radius 13cm is drawn 5cm from the centre of the circle. Find the length of the chord
    A. 12cm
    B. 25cm
    C. 18cm
    D. v195cm
6. If $x -2$ is a factor of $px^3 + 2x^2 - 2p + 12$, find the value of p
    A.
    B.
    C. 2
    D. -2
7. In a regular pentagon ABCDE, AC intersects BD at P. calculate <CPD.
    A. 108^0
    B. 36^0
    C. 72^0
    D. 48^0

8.

Subject	Biology	Chemistry	Maths	Physics
Marks	95	2x + 10	x	75

The table above shows the marks obtained by a student in an examination. If the total mark obtained is 300, what is the angle corres ponding to the mark obtained in Chemistry if the information is represented in a pie chart?
    A. 120^0
    B. 144^0
    C. 48^0
    D. 108^0
9. A ladder 17m rest against a vertical wall so that its foot is 8.5cm from the wall. Find the angle of inclination of the ladder to the horizontal floor.
    A. 30^0
    B. 60^0
    C. 45^0
    D. 55^0
10. Evaluate limx?2 _____
    A. 0
    B. 5
    C. 8
    D. 1
11. If $dy/dx = 6x -3$ and $y(-1) = 8$, find $y(x)$
    A. $3x_2^2 -3x- 8$
    B. $3x -3x + 8$
    C. $3x^2 -3x - 2$
    D. $3x^2 -3x + 2$
12. The minimum of the function $f(x) = 2x^2 - 12x + 5$ is
    A. 59
    B. -59
    C. 3
    D. -3
13. A basket contains 5 MTN cards, 6 GLO cards, 3 MTE L cards and 6 V – m obile cards. What is the probability that a card selected from the basket at random 3 will be MTN or MTEL card?
    A.
    B.
    C.
    D.
14. Find the range of the numbers   ,   ,   ,   ,   ,   ,
    A.
    B.
    C.
    D.
15. If the mean of the numbers 4, 3, 5, x, 7 is 5, find the variance.
    A. 2
    B. 10
    C. v2
    D. 5

SOLUTION TO UNIMED 2012/2013 SCREENING

TEST USE OF ENGLISH

1. E   2. C   3. A   4. B   5. D

6. reseated, A   7. Defined, C   8. Jars, B

9. reversed, E   10. Friendly, A

11. seriously, E   12. A few, B

13. comes, B   14. D 15. C

1.   From Hooke's law: $F_1/e_1 = F_2/e_2$

=

e_2 = 20 x 0.56/5 = 2.24cm, D

2. C   3. B   4. C   5. C   6. D   7. A

8.   number of images formed = - 1 = 7

= 1 + 7 = 8

= = 45^0 B

9. A   10. C   11. C   12. A   13. C

14. C   15. B

See Multi-Purpose Calculations in Physics By J. O. Onuoha For More Problems & Explanations

CHEMISTRY

1. C   2. D   3. C   4. D   5.B

6. A   7. A   8. B   9. A   10. B

11. B   12. C   13. B   14. A   15.D

See Multi-Purpose Calculations in Chemistry By J. O. Onuoha For More Problems & Explanations

BIOLOGY

1. B   2. D   3. C   4. B   5.A

6. D   7. A   8. C   9. B   10. B

11. D   12. B   13. B   14. B   15.A

AGRICULTURE

1. D   2. A   3. C   4. B   5.D

6. D   7. B   8. C   9. A   10. B

11. A   12. A   13. E   14. D   15.E

MATHEMATICS

1. 1.8×10^{-6} 2×10^{-5} = x = = ½ , C

2. A   3. D   4. D

5. $x^2 = 3^2 – 5^2$ = 169 – 25 = 144; x = v144 = 12cm

Length of the chord = 2x = 2x -12 = 24cm, B

6.   If x -2 is a factor, then x – 2 = 0; x = 2

$F(2) = p(2)^3 + 2(2)^2$ 2p + 12 = 0

8p 2p + 8 + 12 = 0; 6p = -20; p = = , B

7. C   8. D   9. B   10. B   11. D

12. $f(x) = 2x^2 – 12x + 5$

f''(x) = 4x – 12 = 0; 4x = 12

x = = 3,   C

13.   Total cards = 5 + 6 + 3 + 6 = 20; Pr(MTN cards)

= Pr(MTEL cards) =

Pr(MTN or MTEL cards)= + = = D

14.   Range = + = , D 15. A