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## *Learning Center*

# OBAFEMI AWOLOWO UNIVERSITY

## POST UTME PAST QUESTIONS FOR SCIENCE

# OBAFEMI AWOLowo UNIVERSITY, ILE-IFE, NIGERIA

## FACULTY OF SCIENCE/MEDICINE/ENGINEERING

### 2015 POST-UTME SCREENING EXERCISE ENGLISH LANGUAGE

Fill out the gaps in the passage below with the correct option from the list provided in brackets in front of the gaps.

1. \_\_\_\_\_ (A. jargon B. vernacular C. dialects D. Wazobia) is specialized language that appears in a non-specialized context, thus giving a \_\_2.\_\_ (A. generalized B. technical C. restricted D. straightforward) flavour to statements that would be better \_\_3.\_\_ (A. addressed B. written C. expressed D. spoken) in everyday words. When you are writing a \_\_4.\_\_ (A. paper B. document C. treatise D. pamphlet) in, say, economics, anthropology, or psychology, you can and should use terms that are meaningful within the \_\_5.\_\_ (A. pool B. conundrum C. register D. field) cash flow, kinship structure, paranoid, and so forth. But those same terms become jargon when used out of \_\_6.\_\_ (A. place B. meaning C. contest D. context). **Choose the option nearest in meaning to the italicize words in the following sentences.**

7. He cannot hide his *aversion* for Kemi's unrepentant behaviour.  
A. abhorrence  
B. sadness  
C. ignominy  
D. moodiness
8. The *investments* in stocks seemed to have gone down the drain with this meltdown in the banking sector.  
A. businesses  
B. capital  
C. surplus  
D. dividends
9. My efforts at making her to see my point were *rebuffed*.  
A. embraced  
B. antagonized  
C. snubbed  
D. dividends.
10. He is a *lout* and can't be relied upon at all.

- A. vagabond  
B. thug  
C. unserious  
D. liar

11. The undisputed boxer was quite a *mouthful* for his opponent.

- A. not a match  
B. undefeated  
C. evenly match  
D. boastful

12. Such stories are difficult to believe because they are *make-belief*.

- A. lies  
B. vituperations  
C. genuine  
D. fantasy

13. All those who mistook President Buhari's *demeanour* for cowardice will soon know him for who he actually is.

- A. stealthy  
B. sloppy  
C. snaky  
D. succulent

**Choose the most appropriate option to complete the gaps in the following sentences.**

14. The new inspector General of Police will be alleged that terrorists had the rank and file of the force.

- A. proliferated  
B. conquered  
C. infiltrated  
D. insulated

15. He lay awake, his whole body \_\_\_\_\_ sleep.

- A. acting for  
B. looking for  
C. drumming for  
D. aching for

16. Please think everything and let me have your answer tomorrow.

- A. thoroughly  
B. through  
C. around  
D. on

17. I asked you \_\_\_\_\_.

- A. when you are going to get marry
- B. the time when you are going to get marry
- C. at what point you are getting married
- D. when you were going to get married

**Choose from the options A-D the word opposite in meaning to the underlined word(s).**

18. I guess he is indifferent to our plans to rid Nigeria of societal ills.

- A. interested in
- B. opposed to
- C. bothered
- D. not interested in

19. The increase in transportation cost imperilled my sister's plan to travel this month.

- A. propelled
- B. restricted
- C. disturbed
- D. hoodwinked

20. The criminal's answers to the questions during interrogation were evasive.

- A. harsh
- B. outspoken
- C. clever
- D. direct

**Read the passage below and answer the questions under it.**

Among his papers, there is the farewell lecture given in 1925 when he retired from his Copenhagen chair at the age of 65 protesting himself 'an old fogey', though English studies were fortunate that so youthfully creative a 'fogey' was to go on writing for almost a further two decades. In the splendid apologia, he explained that for him 'linguistic investigation' involved primarily 'understanding the texts...to penetrate into the innermost thoughts of the best men and women.' 'Speech is the noblest instrument to bind man to man, and... it is by speech as by literature, or best by both combined, that one comes to understanding the people from whom they emanated.' First and foremost, of course, a student of language, he insisted on studying language at its best and in that way,

he hoped, he says, 'to have imparted to my hearers some of my own enthusiasm for the great poets.

My greatest enjoyment, and no doubt that of my hearers as well, has been in my Chaucer classes, partly because Chaucer has such a wonderful power of describing human beings.' So far from confining himself to expounding linguistic history for its own sake, he sees his work as 'combating mark' of which 'is antipathy', disdain, finally hatred'. 'Especially now since the World-war this is a task of the greatest importance, since it is necessary that the wounds of this gruesome time should be healed.' Thus, he spoke to his students in 1925. Sadly, this noble friend of mankind was to see a still more gruesome manifestation of nationalism and to die in 1943 when his country had already suffered for some years the horrors of the Nazi occupation, when there was little opportunity 'to diffuse knowledge and love of what is best in other peoples'.

21. Another word used in the passage that can serve as a synonym to 'ghastly' is

- A. expanding
- B. essential
- C. splendid
- D. gruesome

22. The figure of speech used by the writer in 'though English studies were fortunate that so youthfully creative a 'fogey' was to go on writing for almost a further two decades' in describing the person being talked about is\_.

- A. hyperbole
- B. irony
- C. innuendo
- D. sarcasm

23. The writer believes that .

- A. human beings are best understood by what they say or by what is written about them
- B. human beings are very difficult to penetrate in a linguistics investigation
- C. the innermost thoughts of all men and women are the major preoccupations of linguistic
- D. literature and language are combined in any worthwhile linguistic enquiry to understand human beings

24. According to the writer, he derived greatest enjoyment in

- A. Chaucer, the great personality he befriended when he was in school
- B. the profound ideas expounded by his teachers while he was in school
- C. series of lectures he received about Chaucer and his writings
- D. the wonderful ways his teacher described human beings in many of his lectures

25. We can categorically pinpoint on the passage that the writer was talking about \_\_\_\_\_.

- A. a former student of his who is intelligent
- B. disturbing trend in linguistic study
- C. distinguished scholar who had impacted positively on the field of discussion
- D. the ghastly malady of our time, 'nationalism', 'the essential mark' of which 'is antipathy, disdain, finally hatred.'

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## **ANSWERS TO 2015 ENGLISH LANGUAGE**

1. A 2. C 3. C 4. A 5. D 6. D 7. A 8. A  
9. C 10. B 11. B 12. D 13. A 14. C  
15. D 16. B 17. D 18. A 19. A 20. D  
21. D 22. D 23. D 24. C 25. C

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# 2014 POST-UTME SCREENING EXERCISE

## EXERCISE ENGLISH LANGUAGE

### Read the passage and use it to answer question 1-4

As we both fed our eyes wistfully at the used under-wear section, Vivian noticed a heap of women's underwear, a mixture of braziers of various sizes and designs, panties, G-strings and tongs, underskirts, lingerie of different colours, all heaped and scattered on a big bedspread like a pile of rubbish. Some were quite ancient and threadbare, while a few appeared not to have suffered much oppression in the hands and private parts of their previous owners. It was apparent that the international businessman who imported such inglorious assortment had agent with prongs, long enough to dip deep into deepest and farthestmost refuse bins and dumps of Europe to be able meet the demand back home.

- We can infer from the passage above that \_\_\_\_\_  
 A. the effort of international businessmen were commended by the writer for their contribution to Nigeria's economy  
 B. the writer believes that Nigerian government has not been doing enough to encourage importers of goods to remain in business and recoup money they have invested in their business  
 C. The writer makes comic comments on the porous Nigerian borders through which contraband goods are imported into the country  
 D. the writer subtly castigates and derides the patronage of substandard goods that dots the Nigerian market in the name of imported goods
- "...all heaped and scattered on a big bedspread like a pile of rubbish" The figure of speech used in that quotation is \_\_\_\_\_  
 A. metaphor  
 B. simile  
 C. hyperbole  
 D. pun
- It was apparent that the international businessman who imported such inglorious assortment had agents with prongs, long

enough to dig deep into the deepest and farthestmost refuse bins and dumps of Europe to be able to meet the demand back home. From the quotation above, it is apparent that the writer is being \_\_\_\_\_

- metaphorical
  - categorical
  - sarcastic
  - specific
- Another word that means the same as the word 'threadbare' as it is used in the passage is \_\_\_\_\_  
 A. worn-out  
 B. dirty  
 C. expensive  
 D. cheap

### Choose the most appropriate option from A to D to complete the gaps in the following sentences.

- While the host community was condemned roundly by their hostility, the visiting contingent was applauded for their \_\_\_\_\_  
 A. friendliness  
 B. hospitality  
 C. dexterity  
 D. methodology
- It is hard to quantify the \_\_\_\_ that the abducted Chibok girls would have gone through since they were taken away by the dreaded Boko Haram insurgents.  
 A. rape  
 B. trauma  
 C. isolation  
 D. insecurity
- The high-profile witness has been discredited having been accused of being \_\_\_\_ with the truth in his testimony.  
 A. biological  
 B. geographical  
 C. circumventing  
 D. economical
- The jailed businessman has left his family in due \_\_\_\_\_ to the confiscation of his property by the government.  
 A. bliss  
 B. quandary  
 C. opulence  
 D. Eldorado

9. The Federal Government has expressed the fear that the violent activity of the insurgents may\_\_\_\_\_if powerful foreign assistance is not received soon.

- A. extrapolate
- B. proliferate
- C. metamorphose
- D. escalate

10. I am sure that if you probe further, the accused person will reveal where the \_\_\_\_\_ money is kept.

- A. pilfered
- B. missed
- C. lost
- D. robbed

11. I was waving frantically but you drove\_\_\_\_\_me.

- A. past
- B. pass
- C. passed
- D. passing

12. The driver was reckless, the road was slippery due to the early morning downpour, and \_\_\_\_\_ there was a crash that claimed two lives.

- A. frantically
- B. subsequently
- C. constantly
- D. unequivocally

13. Did you know we were very fortunate to run\_\_\_\_for the newly elected president of the country when he was campaigning for the office?

- A. errant
- B. errands
- C. an errand
- D. around

**For question 14-15, Choose the option nearest in meaning to the italicized words in the sentences below**

14. The *erratic* power supply these days has caused a lot of damage to household items that use electricity.

- A. lackadaisical
- B. regular
- C. uneven
- D. high-voltage

15. "You need to go and study the *etymology* of the underlined words in the

returned essay," the lecturer told the student.

- A. meaning
- B. technicality
- C. originality
- D. origin

**For question 16-19, Fill out the gap with the correct option.**

16. The man told him point blank that his argument was bereft\_\_\_\_\_ sound reasoning.

- A. with
- B. of
- C. in
- D. off

17. The workers expressed their heartfelt thanks\_\_the management for the notable improvement to their conditions of service

- A. toward
- B. with
- C. towards
- D. to

18. He won the elections but many people were killed by his thugs, and thus many said his was a\_\_\_\_\_

- A. Philistine victory
- B. pyrrhic victory
- C. crocodile victory
- D. pseudo victory

19. The aspirant for the highest office in the coming elections has started distributing live cows to each electorate in his ward; but some rejected it because they considered it a \_\_\_\_\_.

- A. an Eldorado gift
- B. Grievous gift
- C. Greece gift
- D. Greek gift

**Fill out the gap in the passage below with the correct option from the list provided in brackets in front of the gaps.**

20. \_\_\_\_\_ is specialized language, that appears in a non- specialized context, thus giving a 21 flavour to statements that would be better 22 in everyday words. When you are writing 23 in, say, economics, anthropology, or psychology, you can and should use terms that are meaningful within the 24 cash flow, kinship

structure, paranoid, and so forth. But those same terms become jargon when used out of 25.

- 20. A. jargon
- B. Vernacular
- C. Dialects
- D. Wazobia

- 21. A. Generalized
- B. Technical
- C. Restricted
- D. straightforward

- 22. A. Addressed
- B. Written
- C. Expressed
- D. Spoken

- 23. A. Paper
- B. Document
- C. Treaties
- D. Pamphlet

- 24. A. Pool
- B. Conundrum
- C. Register
- D. Field

- 25. A. Place
- B. Meaning
- C. Contest
- D. Context.

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## **ANSWERS TO 2014 POST-UTME EXERCISE ENGLISH LANGUAGE**

1. D 2. B 3. C 4. D 5. A 6. B 7. C 8. B 9. D  
10. A 11. C 12. D 13. B 14. C 15. D 16. B  
17. D 18. D 19. B 20. A 21. B 22. D 23. A  
24. D 25. D

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# 2013 POST-UTME SCREENING EXERCISE

## ENGLISH LANGUAGE.

### Passage:

All over the world till lately, and in most of the world still today, mankind has been following the course of nature that is to say, it has been breeding up to the 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, pestilence, and famine. Being human, we have at last revolted against that senseless waste. We have started to impose on nature's heartless play a humane new order of our own. But when once man has begun to interfere with nature, he cannot afford to stop half way. We cannot, with impunity, 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 equilibrium or, sooner or later, famine will stalk abroad again.

### Now answer the following questions.

- The author observes that\_\_\_\_\_
  - war, pestilence and famine were caused by the extravagance of nature
  - it was wise at a time when mankind did not interfere with normal production
  - nature is heartless and senseless
  - there was a time when uncontrolled birth made sense.
- Which of these statements does not express the opinion of the author?
  - many people had died in the past through want and disease
  - mankind should not have the maximum number of children possible
  - mankind has started to interfere with the work of nature
  - Man's present relationship with nature in matters of birth and death is a happy one.
- 'humane' as used in the passage means\_\_\_\_\_
  - wise
  - human
  - benevolent
  - sensible

4. 'We must consciously try to establish an equilibrium', in the passage implies that mankind must\_\_\_\_\_

- strive not to be wasteful
- realistically find an equation
- purposely find a balance
- deliberately try to fight nature

5. The main idea of this passage is that\_\_\_\_\_

- nature is heartless
- man should control the birth-rate
- man should change nature's course gradually
- pestilence causes more deaths than war.

### In each of questions 6- 8, choose the option nearest in meaning to the word(s) or phrase in *italics*.

6. Nobody could say precisely when the landlord became a *recluse*

- loner
- drunkard
- nincompoop
- cantankerous

7. If I had known his delicate state of mind, I would not have *broached* the matter

- told them
- divulged
- brought up
- cancelled

8. Don't talk like that; you know the Professor will not entertain such *vituperative* remarks

- irresponsible
- insulting
- angry
- illiterate

### In each of questions 9-11, choose the most appropriate option *opposite in meaning* to the word or phrases in *Italics*.

9. He has been advised to beware of political *jobbers* if he hopes to succeed

- neophytes
- masquerades
- stockbrokers
- masterminds



10. What a *tangled* web we weave, when we try to deceive!

- A. complicated
- B. crooked
- C. simple
- D. loose

11. She devoted too much time to the *peripheral* aspects

- A. superficial
- B. minor
- C. main
- D. real

**In each 4 questions 12-16, fill each gap with the most appropriate option from the list provided.**

12. My daughter would become \_\_\_\_\_ if I paid no attention to her behaviour

- A. rhascally
- B. rhapsodically
- C. rascally
- D. rascality

13. When the soldiers saw that resistance was \_\_\_\_\_ they stopped fighting

- A. inadvertent
- B. futile
- C. inappropriate
- D. insurmountable

14. The last time the man saw his ex-wife, she \_\_\_\_\_

- A. was thinking of a proposal of starting a new business
- B. was intending to start a new business
- C. intended to start a new business
- D. was going to start a new business.

15. Two days before the execution, the robber was taken to the place where he would be \_\_\_\_\_ With doleful eyes, he looked at the spot where his execution

- A. hunged/was to be taken place
- B. hanging/shall take place
- C. hung/would take place
- D. hanged/was to take place

16. Don't \_\_\_\_\_!, said the leader, I want a decision now

- A. prevaricate
- B. predicate
- C. precipitate
- D. be pejorative

**For question 17, choose the letter which contains the correct phonetic symbol in the underlined sounds below.**

17. Women

- A. /l/
- B. /e/
- C. /ou/
- D. /u/

**For question 18, choose the word which contains the correct sound as given in each of the sound below.**

18. /v/

- A. off
- B. fan
- C. of
- D. four

**In each of questions 19 and 20, choose the option that best completes the gap(s)**

19. The car owner does not think about the ..... of his vehicle and other payments involved in owning it

- A. transportation
- B. depreciation
- C. calculation
- D. appreciation

20. We shall offer a good job to a ..... to register guests in the Central Hotel.

- A. waiter
- B. watchman
- C. cashier
- D. receptionist

**In questions 21 and 22, fill in the right word or phrase**

21. There is not ..... sense in what that politician has just said.

- A. many
- B. plenty
- C. lot of
- D. much

22. I'm sorry I can't give you any of the oranges, I have ..... left.

- A. few
- B. little
- C. only a little
- D. a few

**Fill in the gaps in the following sentences with appropriate preposition**

23. Lawrence did not win the contract ..... the long run

- A. at
- B. in
- C. on
- D. to

24. Memuna was careful not to fall ..... Ameen's tricks

- A. into
- B. for
- C. in
- D. with

25. The Commander had placed his troop ..... alert

- A. in
- B. on
- C. at
- D. over

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**ANSWERS TO ENGLISH LANGUAGE 2013**

1. B 2. B 3. C 4. C 5. B 6. A 7. A 8. B 9. A  
10. C 11. C 12. C 13. D 14. B 15. C 16. A  
17. A 18. C 19. B 20. D 21. D 22. D 23. B  
24. B 25. B

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# 2012 POST-UTME SCREENING EXERCISE

## ENGLISH LANGUAGE

Choose the correct options to fill the gaps in the three questions below.

1. I don't understand what exactly you were saying. What is the name of the subordinate clause in this sentence?

- A. Adverbial Clause
- B. Nominal Clause
- C. Adjectival Clause
- D. Interrogative Clause

2. Are you going to Lagos \_\_\_\_\_ your car?

- A. with
- B. in
- C. through
- D. by

3. Another name for a relative clause is

- A. Adverbial clause
- B. Infinitive Clause
- C. Adjectival Clause
- D. Relational Clause

Choose from the options A-D the word or phrase that is nearest in meaning to the word underlined.

4. My efforts at making her to see my point were rebuffed.

- A. embraced
- B. antagonized
- C. snubbed
- D. successful

5. He is a lout and can't be relied upon at all.

- A. shifty
- B. thug
- C. unserious
- D. liar

6. The speech was delivered with great trepidation.

- A. fear
- B. dexterity
- C. power
- D. creativity

7. He cannot hide his aversion for Kemi's unrepentant behaviour.

- A. Abhorrence

- B. sadness
- C. ignominy
- D. moodiness

8. My sister is known by everybody to be scurrilous.

- A. pleasant
- B. vituperative
- C. active
- D. inactive

Choose from the options A-D the word opposite in meaning to the underlined word.

9. The criminal's answers to the questions during interrogation were evasive.

- A. harsh
- B. outspoken
- C. clever
- D. direct

10. I guess he is indifferent to our plans to rid Nigeria of societal ills.

- A. interested in
- B. bothered
- C. opposed to
- D. not interested in

11. The girl is very sombre in her style of dressing.

- A. solemn
- B. pleasant
- C. provocative
- D. exposing

Select from the options A-D the correct meaning of the idiom underlined.

12. The manager behaved as if he had bats in the belfry.

- A. he was pleasant
- B. he had strange ideas
- C. he was speechless
- D. he was angry

13. I learnt Agnes was off colour this morning. She was not in class.

- A. busy somewhere else
- B. not able to wake up early enough
- C. not in her right mind
- D. not in good health

**Fill in the spaces in the passage below with the appropriate words.**

One needs to observe the 14 of the 15 to appreciate how interesting it can be. I witnessed a land 16 many years back. The 17 had 18 those who sold him a piece of land to court for 19 on his land. Appearing for the defendants the 20 argued that the land had been lying untouched for over thirty years and had become a hideout for social miscreants.

A	B	C	D
14. Work	Proceedings	Hearing	Working
15. Law	Document	War	Ruling
16. Quarrel	Law	Matter	Case
17. Plaintiff	Defendant	Accused	Criminal
18. Arrested	Sued	Fought	Prosecuted
19. Trespassing	Claiming	Building	Working
20. Legal luminary	Plaintiff	Defence counsel	Criminal

**Choose from the options A-D the appropriate verb that best completes the following sentences.**

21. Although she suffered a lot of hardship she still \_\_\_\_\_

- A. gloated
- B. glowed
- C. flowed
- D. splashed

22. Our plane \_\_\_\_\_ down at Aminu Kano international Airport at exactly 12 midnight.

- A. landed
- B. descended
- C. got
- D. touched

23. The disease was \_\_\_\_\_ very rapidly in the community.

- A. widening
- B. catching people
- C. spreading
- D. raging

**Choose from the options A-D the correct spelling.**

24. A. embaras

- B. embarass
- C. embarras
- D. embarrass

25. A. conterfit  
 B. contertiet  
 C. counterfeit  
 D. counterteet

**ANSWERS TO ENGLISH LANGUAGE 2012**

1. B 2. A 3. C 4. B 5. A 6. A 7. A 8. B 9. D  
 10. A 11. D 12. B 13. C 14. B 15. A 16. D  
 17. A 18. B 19. A 20. C 21. B 22. B 23. C  
 24. D 25. C

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# 2011 POST-UTME SCREENING EXERCISE

## USE OF ENGLISH

### Passage 1

The privilege of blackening one's stool is not granted to every dead chief or queen-mother without conditions. The honour is merited only on the fulfilment of certain conditions on the part of the occupant of a stool. The blackening of a king's stool is regarded as the greatest honour that could be conferred on a ruler; thus, in many Akan states only the stools of kings who proved to be true leaders are blackened.

No royal person's stool is reserved unless he died while still a ruler. A destooled chief is the last person whose memory anybody wants to keep fresh. He must have broken a taboo or committed a serious crime to merit his degradation. He may have committed adultery with his servants' wives; he may have bought and sold slaves, who are considered as heirlooms to the stool; he may have used the oath unreasonably; he may have cursed people. All these crimes can deprive a chief of his regal powers. Once this happens, he becomes, in the eyes of the people, more insignificant than a commoner who has no right whatever to be a chief.

However, a chief may 'die on the stool', and yet not have his stool blackened. This is so because one must die a 'good death'. Sudden death through an accident destroys the right to have one's stool blackened. So does death through an unusual disease like leprosy, lunacy, epilepsy and dropsy — which, if discovered in time, are causes for destoolment. The only exception here is death in war which magnifies one's fame and dignity. But even here, if it is found out that one fell when retreating, or running away, from the enemy, one is regarded as a treacherous and infamous leader who should be erased from all historical memory. A chief who suffered from an unclean disease, but got cured before dying, is said to have been engaged in a personal difficult war with the disease and emerged triumphant. Such a chief is worthy of respect. Suicide is, perhaps, one of the worst deaths a chief could undergo. Under no condition whatever will the stool of a

ruler who takes his own life, or is killed by a 'fetish' be consecrated

### Answer the following questions on the passage

- Which of the following is true according to the passage?
    - it is entirely up to the chief whether or not his stool will eventually be blackened
    - it is partly up to him, partly due to circumstances beyond his control
    - it is entirely due to circumstances beyond his control
    - it depends entirely on people's opinion of him during his lifetime
  - A destooled chief can be correctly defined as
    - a chief who has committed crimes
    - a chief who was removed during his reign
    - a chief who has broken taboos
    - a chief who is more insignificant than a commoner
  - What is meant by 'die on the stool'?
    - dying a miserable and unworthy death
    - dying as a reigning ruler
    - dying while on stool in the palace
    - dying after a disease of stooling
  - Which of the following is the most suitable title for the passage?
    - reasons for destoolment
    - how to live a worthy life by an Akan ruler
    - an aspect of traditional custom of the Akan people
    - stool blackening by the royal personages
  - The most basic condition that qualifies anybody for stool darkening is
    - dying a worthy death
    - having being crowned as a ruler
    - being a ruler with tangible achievements
    - having respect for traditional customs
- In the following sentences, choose the option that is most nearly opposite to the underlined word**
- In any group there are people who display apathy
    - enthusiasm
    - patience
    - respect

D. tolerance.

7. Femi was very open about his ambition

- A. silent
- B. withdrawn
- C. closed
- D. secretive.

8. Angela is very indolent.

- A. perfect
- B. devoted
- C. diligent
- D. trustworthy.

9. Rather than support the chairman, Olu slept off.

- A. deny
- B. oppose
- C. doubt
- D. back.

10. Ngozi's beauty is natural

- A. unnatural
- B. artificial
- C. awkward
- D. fake.

### Passage 2

**The passage below has gaps numbered 11 to 20. Immediately following each gap, four options are provided, Choose the most appropriate option for each gap.**

Coach Samson Siasia has asked that Heartland be paid their 11 salaries and 12 so as to 13 them to victory against Al-Ahly of Egypt in Sunday's all-important CAF Championships League match. Heartland are third in Group B with four points 14 as many matches and need to 15 defeat at second-placed Al-Ahly to stay in the 16 for a place in the semi-final of Africa's most prestigious club competition. Siasia told MTNFootball.com that the team would be better motivated if they at least receive their August salaries before the Al- Athly 17. We have to make sure that they are paid their salaries 18 so that they could play the game of their lives. The government has done very well, but it will be a big morale 19 to get paid for them to go out there and play. Siasia informed MTNFootball.com that Heartland plan to employ the counter 20 to get a result in Cairo.

A	B	C	D
11. left over	outstanding	owed	late
12. match bonuses	match payments	match wages	match fees
13. push	instigate	spur	move
14. from	in	at	with
15. afford	annul	avoid	afford
16. focus	centre	running	front
17. show	showdown	show up	blow out
18. to time	for time	as due	as and when due
19. boomer	inspirer	booster	pusher
20. attack	attacker	getter	goal

**For questions 21 -23, choose the best options from letters A – D that best summarises the information contained in the underlined sentence.**

21. In an answer to the question as to how life is treating him, the politician said it never rains but it pours.

- A. things are getting decidedly worse.
- B. his financial status is deteriorating.
- C. the blessings of life shower on him like a heavy rain.
- D. he is contented with improved fortunes.

22. Camilla waited for her friend in the library for a good hour.

- A. Camilla enjoyed the sixty minutes she waited for her friend
- B. When Camilla was waiting, she spent the time in a profitable way.
- C. Camilla waited for her friend rather more than sixty minutes.
- D. It was good for Camilla to wait an hour for her friend

23. This is your instruction and I have had no hand in it. From this sentence we know that the writer

- A. does not support the instruction
- B. is refusing to obey the instruction
- C. dislikes the person that issues the instruction
- D. is somehow happy with the instruction

**For questions 24 and 25, choose the letter which contains the correct phonetic symbol in the underlined sounds below.**

24. Plumb

- A. /m/
- B. /b/
- C. /ph/
- D. /p/

25. Women

- A. /I/
- B. /e/
- C. /ou/
- D. /u/

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## **ANSWERS TO ENGLISH LANGUAGE 2011**

1. A 2. B 3. B 4. C 5. C 6. D 7. D 8. B 9. B  
10. B 11. B 12. A 13. C 14. A 15. C 16. D  
17. B 18. D 19. C 20. A 21. D 22. B 23. A  
24. A 25. A

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# 2010 POST-UTME SCREENING EXERCISE

## USE OF ENGLISH

Choose the words that are closer in meaning to the words in initial positions.

1. Futile:
  - A. worthless
  - B. vain
  - C. dangerous
  - D. useless
2. Halt:
  - A. wait
  - B. fault
  - C. stop
  - D. stay
3. Virtuous:
  - A. seeing
  - B. good
  - C. upright
  - D. religious
4. renowned;
  - A. famous
  - B. popular
  - C. well read
  - D. familiar
5. Solitary:
  - A. private
  - B. sultry
  - C. alone
  - D. lonely

In each of questions 6 and 7, choose the option that best completes the gap(s)

6. The car owner does not think about the \_\_\_\_\_ of his vehicle and other payments involved in owning it.
  - A. transportation
  - B. depreciation
  - C. calculation
  - D. appreciation
7. We shall offer a good job to a \_\_\_\_\_ to register guests in the Central Hotel.
  - A. Waiter
  - B. watchman
  - C. cashier
  - D. receptionist

In each of the questions 8 and 9, choose the option *opposite in meaning* to the word in italics.

8. Lola was *agitated* when the sad news of her mother's accident was broken to her.
  - A. excited
  - B. calm
  - C. uncontrollable
  - D. unreasonable.
9. The president took exception to the *ignoble* role the young man played in the matter.
  - A. honourable
  - B. embarrassing
  - C. dishonourable
  - D. extraordinary

In each of questions 10 to 12, select the option that best explains the information conveyed in the sentence.

10. The crowd in the hall is *intimidating*
  - A. The crowd is frightening
  - B. The crowd is angry
  - C. The crowd is overwhelming
  - D. The crowd is riotous
11. The events of last Friday show that there is *no love lost* between the Principal and the Vice-Principal.
  - A. They like each other
  - B. They work independently
  - C. They cannot part company
  - D. They dislike each other.
12. Adawo is an *imp*.
  - A. Adawo behaves badly
  - B. Adawo behaves decently
  - C. Adawo behaves differently
  - D. Adawo behaves queerly

In questions 13 and 14, select from the options to fill in the gaps

13. There is no \_\_\_\_\_ sense in what that politician has just said.
  - A. many
  - B. plenty
  - C. lot of
  - D. much



14. The candidate made \_\_\_\_\_ at the village square a day before the elections
- A. a sermon
  - B. an address
  - C. a eulogy
  - D. a lecture
  - E. a speech

**In each of Questions 15 to 17, choose the option that best completes the gap(s)**

15. The city \_\_\_\_\_ as a federal capital only \_\_\_\_\_ the last twenty years.
- A. existed/over
  - B. has existed/for
  - C. was existing/from
  - D. is existing/in
16. He is \_\_\_\_\_ Kaduna \_\_\_\_\_ an official assignment.
- A. at/in
  - B. at/for
  - C. in/on
  - D. for/in

17. The members of the other team agree \_\_\_\_\_ all the terms of the contract.
- A. on
  - B. by
  - C. to
  - D. with

**In each of Questions 18 and 19, choose the word(s) or phrases which best fill(s) the gap(s)**

18. After Jerry had made the bed, he \_\_\_\_\_ on it.
- A. layed
  - B. laid
  - C. lied
  - D. lay
19. The buildings damaged by the rainstorm \_\_\_\_\_ schools, hospitals and private houses.
- A. included
  - B. include
  - C. were included
  - D. was including

**In each of Questions 20 and 21 fill the gap(s) with the most appropriate option.**

20. \_\_\_\_\_ any problems, I shall travel to London tomorrow on a business trip.
- A. In spite of
  - B. Given
  - C. Barring
  - D. In case

21. 'I can't stand people prying into my private life', Ladi said '\_\_\_\_\_ ' agreed Agbemu.
- A. Me either
  - B. Me too
  - C. I also
  - D. Likewise myself

**In each of Questions 22 to 25, choose the option that has the same consonant sound as the one represented by the letter(s) underlined.**

22. cheap:
- A. machine
  - B. sheep
  - C. chip
  - D. chemist

23. School:
- A. cool
  - B. chart
  - C. itch
  - D. leech

24. Pharmacy:
- A. every
  - B. rough
  - C. plough
  - D. wave

25. happy:
- A. our
  - B. eyes
  - C. honour
  - D. behind

## ANSWERS TO ENGLISH LANGUAGE 2010

1. A 2. C 3. C 4. A 5. C 6. B 7. D 8. B 9. C  
10. A 11. D 12. A 13. D 14. B 15. B 16. C  
17. C 18. D 19. B 20. C 21. B 22. C 23. A  
24. B 25. D

# 2009 POST-UTME SCREENING EXERCISE

## USE OF ENGLISH

### Comprehension:

Read the following passages carefully and answer the question that follows.

#### Passage 1

The best acceptable definition of history is that it is a record of the past actions of mankind, based on surviving evidence. It is this evidence that the historian employs to chronicle and correlate events, by which he arrives at conclusions which he believes to be valid. Hence, the historian is referred to as an interpreter of the development of mankind.

It should be understood that there is more than one way of treating the past. For example, in trying to deal with the revolutions in Nigeria, past and present, the historian may describe the events in a narrative order. Or, he may choose to concentrate on analysis of the general causes, comparing their stages of evolution with the patterns of revolution in other countries.

The historian does not seek to attain the same kind of results as the scientist, who can verify his conclusions by repeating his experiment under controlled conditions. Whilst he also attempts to classify the phenomena, the historian is more likely to consider events in terms of their uniqueness.

Added to this is the fact that history is concerned, fundamentally, with the lives and actions of men, and as such, the historian's search for causes is bound to be relatively subjective as compared to that by the scientist. In essence, however, historians are agreed and insist that history should be written as scientifically as possible and that the evidence should be analyzed with the same objective attitude employed by the scientist when he examines certain phenomena of nature.

1. History could be defined as
- a record of the evolution of a country
  - a record of development of mankind
  - a record of the present actions of mankind based on surviving evidence

D. a record of the past action of mankind based on surviving evidence.

2. According to the passage, one of the duties of a historian is
- to predict the future
  - to analyze the past and future
  - to explain the significance of past events
  - to interpret the development of mankind

3. How can history be scientifically recorded?
- by examining available evidence and analyzing unusual occurrences
  - by falsifying and fabricating available facts
  - by speculating on what was and ought to have been
  - by concealing some of the evidence.

4. The scientist tends to be more reliable than a historian because
- he works in a laboratory
  - he is better qualified
  - he can crosscheck his results several times
  - he has more time to work at his experiments.

5. According to the passage, a historian should try to examine a material
- scientifically
  - subjectivity
  - accurately
  - objectively.

#### Passage 2

From the apex of the Niger Delta southwards, dry land, overgrown with dense forests still virginal in various spots, gives way to seasonally inundated zones. Here, sweet water swamps with strands of raffia palms gradually merge into tidal swamps of brackish ooze, where mud skippers thrive under the arching roots of mangroves. The Niger, fingering through a thousand creeks, meets the sea in a dozen estuaries. Strong River current drifts and mud across the river's mouths, sealing them again and again to navigation.

6. According to the passage, how would you describe a seasonally inundated zone?

- A. a zone always covered with mud
- B. a zone always covered with shallow water
- C. a zone under water at certain times of the year
- D. a zone subject to heavy rain every season.

7. What is brackish ooze?

- A. a strong river current
- B. a mixture of fresh water and mud
- C. a mixture of fresh water and salt water
- D. fresh and clear water

8. Where do mudskippers thrive?

- A. in the creeks
- B. in the swamps
- C. in the mangroves
- D. in the roots

9. Where does the Niger meet the sea?

- A. in the creeks
- B. in the Delta
- C. in the swamps
- D. in the forest

10. 'Fingering through' as used in the passage means

- A. cutting across
- B. passing through
- C. cutting between
- D. passing between

### Lexis and Structure

In each of the following sentences, there is one word underlined and one gap. From the list of words lettered A-E, choose the word that is most nearly opposite in meaning to the word underlined and which will appropriately fill the gap in the sentence. (11-15).

11. She was a very proficient hairdresser but had little aptitude for sewing in which she was...

- A. new
- B. unskilled
- C. unlearned
- D. ignorant
- E. awkward

12. A metal will expand when it is heated and..... when it cools

- A. shorten
- B. lesser
- C. contract

- D. congeal
- E. curtail

13. Athletes wishing to get rid of their... and get more energy should take more exercise

- A. fat
- B. oxygen
- C. lethargy
- D. trainers
- E. spots

14. If you do not accept the offer of a job in the secretariat within the next one week, we shall assume you have... it.

- A. denied
- B. refused
- C. deprived
- D. left
- E. lost

15. The political aspirant asked the villagers to support him and not to... his authority in anyway

- A. deny
- B. undermine
- C. defy
- D. despite
- E. attack

**From the list of words lettered a-e below each of the following sentences, choose the one which is nearest in meaning to the underlined word, as it is used in the sentence (Nos. 16-20).**

16. After finishing the 800 metres race, he fell asleep from exhaustion

- A. weakness
- B. fatigue
- C. overwork
- D. eagerness
- E. sloth

17. The footballers went back to their camp sullenly

- A. cheekily
- B. quickly
- C. stubbornly
- D. resentfully
- E. silently

18. After Warri, on our way to Benin, we passed through a dense forest

- A. crowded
- B. close
- C. thick
- D. heavy

E. wooded

19. Last night there was a very fierce rain storm

- A. raging
- B. storming
- C. angry
- D. violent
- E. ferocious

20. The examiners said that the candidate's performance in the examination was not good enough

- A. failure
- B. achievement
- C. E-marks
- D. presentation
- E. marks

**In each of the following question, fill each gap with the appropriate option from the list. Following exercises express different times by using different tenses. From the options suggested, choose any one that best suits each context**

21. The editor was not happy that the Nigeria press was hemmed...

- A. up
- B. across
- C. in
- D. over
- E. sideway

22. More... to your elbow as you campaign for press freedom!

- A. energy
- B. power
- C. effort
- D. grease
- E. kinetic

23. A child that shows mature characteristics at an early age may be described as...

- A. precocious
- B. ingenious
- C. premature
- D. preconceived

24. That is a very terrible woman; everyday she makes a lot of noise about one thing or the other. I'm not surprised, that's what her sisters... too

- A. are used to doing
- B. do

- C. always used to do
- D. are doing

25. Sir, I'm not lying about the matter, I know nothing of it. If I knew, \_\_\_\_\_

- A. I must tell you
- B. I can tell you
- C. I would tell you
- D. I shall tell you.

## ANSWERS TO ENGLISH LANGUAGE 2009

1. D 2. D 3. A 4. C 5. D 6. B 7. C 8. C 9. A  
10. A 11. B 12. C 13. A 14. E 15. D 16. B  
17. E 18. C 19. D 20. E 21. C 22. B 23. A  
24. B 25. C

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# 2008 POST-UTME SCREENING EXERCISE

## ENGLISH LANGUAGE

**Read the following passage and answer the questions based on it**

Why should an artist attempt to concentrate his experience of life in a unique work of art? No final answer can be given, but two possible reasons suggest themselves. Man seems always to have preferred order to disorder. His whole progress on earth has been a struggle to this end. Everything he has done, from the creation of vast empires to the growing of small gardens, has been a triumph, in greater or lesser degree, of order over chaos. To help control his own thought, the sudden surprises of his limitless mind, he has had to invent Language. As each new thing appears, whether it be an idea or an object, he gives it a name and thus brings it into line with the things he already understands. And he has invented for himself more than one kind of language. There is a language of painting, a language of architecture, or mathematics- to name but three each has its own special symbols, its own form of logic; and each enables him to express some of the myriad thoughts that crowd his mind. high among the languages of man is the language of music.

- Through his struggles man has achieved
  - the return of a state of utter confusion
  - the complete destruction of vast empires
  - the growth of disorder from order
  - the transformation of order out of chaos
- Man invent the Language because
  - it helped to organize his thoughts and unceasing ideas
  - there was little he could do at the time to diversify his talents
  - he already had control over his mind and its countless ideas
  - it was a method or realizing his position as a Supreme Being.
- By naming objects or ideas, man was able to
  - comprehend less and less the things around and about him
  - clarify things and correlate them with facts already known

- allow an area of complete confusion to develop in language
- make visual impressions for more important than ever before.

- The various language can be identified by
  - their use of the same marks or signs and system of logic
  - the manner in which their logic agrees and their symbolism is similar.
  - the endings of the various symbols and their simplified logic
  - their own science of reasoning and their peculiar marks or signs

- The work "myriad" (**line 11**) as used in the context means
  - terrible
  - mysterious
  - frequent
  - multitude

**In each of question 6-10, there is a gap. Complete the gaps with appropriate item from the options A-D under sentence.**

- If you try to write without having a clear idea, you often end up just\_\_\_\_\_ without saying anything very meaningful.
  - drooling
  - boasting
  - gambling
  - rambling
- The four of you should share the remainder you.
  - among
  - around
  - between
  - within
- I have no doubt that Enyimba will\_\_\_\_\_ Oaks next Saturday.
  - flog
  - whip
  - win
  - beat
- "You need not go\_\_\_\_\_ down the road before you notice a huge white building on the road", the man said.
  - inside
  - farther

- C. further
- D. deep

10. If your writing lacks coherence, your reader will just find something else to read or \_\_\_ the television.

- A. tune in
- B. turn on
- C. switch up
- D. open.

**Choose the appropriate option to complete the following**

11. The President promised a higher allocation to the education sector in this year's budget, \_\_\_\_\_

- A. isn't he?
- B. did he?
- C. didn't he?
- D. doesn't he?

12. This picture is ascribed to Leonardo da Vinci. This means that \_\_\_\_\_

- A. Leonardo da Vinci painted it
- B. Leonardo da Vinci might have painted it
- C. Leonardo da Vinci definitely painted it
- D. Leonardo da Vinci did part of the painting.

13. The Principal's reference to the cane \_\_\_\_\_ the boy with much mental uneasiness.

- A. inflicted
- B. assaulted
- C. afflicted
- D. insulted

14. The government's envoy had left the country again in his latest round of trouble shooting. The underlined expression means

- A. trip marring efforts
- B. troublesome efforts.
- C. peace-making efforts
- D. trouble making efforts

15. His three sons, Sanmi, Chukwu and Collins are eleven, nine and seven \_\_\_\_\_

- A. respectively
- B. respectedly
- C. succeedingly
- D. successively.

16. As the examination progressed, it was observed that more and more candidates stared into space. this means many candidates

- A. looked into the sky

B. looked straight for long but to nothing in particular

C. looked through the window for would-be helpers

D. tried to ensure that the spaces, between them were well maintained.

17. Hundreds of cars went \_\_\_\_\_ us before we were given a ride to the campus.

- A. pasted
- B. past
- C. passed
- D. by

18. You told me that Johnson is your trusted friend, why did you not stand up for him during his trial?

- A. defend
- B. ridicule
- C. pity
- D. disown.

19. When you pronounce the word university, how many sounds could you perceive?

- A. 5
- B. 4
- C. 10
- D. 3

**ANSWERS TO ENGLISH LANGUAGE 2008**

1. D 2. A 3. A 4. C 5. D 6. D 7. A 8. C 9. B

10. B 11. C 12. A 13. A 14. C 15. A 16. B

17. C 18. A 19. A

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# 2007 POST-UTME SCREENING EXERCISE

## ENGLISH LANGUAGE

Fill in the blanks in the following sentences making use of one of the four options in the letters A-D

- They \_\_\_\_\_ arrived Lagos by now, all things being equal  
A. had  
B. must  
C. might have  
D. would have
- The pupils \_\_\_\_\_ so much noise that the teacher had to tell them to stand up and raise up their hands  
A. had been making  
B. should have made  
C. were making  
D. had made
- I \_\_\_\_\_ that he was insincere all along  
A. could know  
B. must know  
C. should have known  
D. may have known
- If I had gone to Lokoja, I \_\_\_\_\_ the opportunity of seeing the President  
A. should not have had  
B. must not have had  
C. would not have had  
D. should not have

Choose the preposition that best fills the gaps in the following sentences

- My sister does not have flair \_\_\_\_\_ Mathematics  
A. at  
B. in  
C. with  
D. for
- When I got to her house, she was still \_\_\_\_\_ bed  
A. in  
B. on  
C. on the  
D. in the
- During the demonstration, the anti-riot policemen were instructed to break \_\_\_\_\_ the students' defence line

- A. off  
B. open  
C. through  
D. down

- I was \_\_\_\_\_ hearing distance of the speaker  
A. at  
B. in  
C. on  
D. within

From the words labelled A-D in numbers 9 to 20, choose the one that best completes each of the following sentences

- The electricity cable had to be \_\_\_\_\_ enough to be laid along the bend in the road  
A. elastic  
B. taut  
C. compliment  
D. flexible
- We didn't have a lot of money, so I had to live quite \_\_\_\_\_  
A. niggardly  
B. frugally  
C. wastefully  
D. grudgingly
- I acted too impetuously; I do not know what \_\_\_\_\_ me  
A. came along  
B. came over  
C. came at  
D. came on
- The hurricane raged for several days, learning a trail of \_\_\_\_\_ across the land  
A. destruction  
B. despoliation  
C. desperation  
D. demolition
- If a player breaks the rules during a match, one point will be \_\_\_\_\_ to his opponent  
A. adjourned  
B. credited  
C. debited  
D. allied

14. Mouse-traps are not always very effective, as some mice prove to be remarkably \_\_\_\_\_  
 A. inaccessible  
 B. perpetual  
 C. inconspicuous  
 D. elusive
15. At the frontier he hid the watches in his pocket in order to \_\_\_\_\_ customs duty  
 A. evade  
 B. incur  
 C. repel  
 D. deceive
16. The driver was short of petrol, so he \_\_\_\_\_ down all the hills with the engine switched off  
 A. glided  
 B. cut  
 C. wheeled  
 D. coasted
17. Everyone in my family has a job. My mother is a teacher; my father is an engineer, and my granny \_\_\_\_\_  
 A. used to sell roast chicken  
 B. is selling roast chicken  
 C. has roast chicken  
 D. sells roast chicken
18. One curious thing about my uncle is that he wishes \_\_\_\_\_  
 A. he is having eight wives  
 B. he had eight wives  
 C. he can have eight wives  
 D. he can be allowed to have eight wives
19. I'm afraid, you know. My father has been sleeping since 4:00p.m yesterday. It's about time \_\_\_\_\_  
 A. to wake up  
 B. he wakes  
 C. he woke up  
 D. he's awake
20. Are you deaf? I asked you \_\_\_\_\_  
 A. how old you were  
 B. how old are you  
 C. how old is your age  
 D. what is your age
21. What is a sentence?  
 A. it is a made up of words  
 B. it is made up of phrases and clauses  
 C. it is a group of words giving a complete sense

- D. it can be simple or complex
22. What is a clause?  
 A. it is made up of words  
 B. it is made up of sentences  
 C. it is made up of phrases  
 D. it is a group of words containing a finite verb
23. What is a phrase?  
 A. it is a group of words containing a finite verb  
 B. it is a group of words giving a complete sense  
 C. it is a group of words not containing a finite verb  
 D. it usually begins with a preposition or a participle
24. An example of a finite verb is  
 A. going to school every day  
 B. given his position as the principal  
 C. while going to school  
 D. while they were going to school
25. What is tense?  
 A. it has to do with present, past and future times  
 B. it is a correspondence between the form of the verb and the concept of time  
 C. it is a derived from the Latin word "transpire"  
 D. it is a controversial topic in linguistics
26. What is aspect?  
 A. it is the manner in which the verbal action is experienced or regarded  
 B. it reflects the attitude or mood of the speaker  
 C. it is made up of progressive and perfective forms  
 D. it is normally joined together with tense
27. What are "minor sentences"?  
 A. they are complete sentences  
 B. they are incomplete statements  
 C. they are incomplete statements but normally function as sentences  
 D. they are used by writers for economical purposes
28. In measuring one's linguistics competence in a particular language, itemize four sentence types that one needs to master  
 A. simple, complex-multiple, difficult and more difficult



- B. simple, complex, compound and compound-complex
- C. simple, more simple, difficult, more difficult
- D. rational, more rational, logical and more logical.

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## **ANSWERS TO ENGLISH LANGUAGE 2007**

1. D 2. C 3. C 4. C 5. D 6. A 7. C 8. A 9. B  
10. B 11. B 12. A 13. B 14. D 15. A 16. A  
17. D 18. C 19. C 20. A 21. C 22. D 23. C  
24. A 25. B 26. B 27. C 28. B

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# 2006 POST-UTME SCREENING EXERCISE

## ENGLISH LANGUAGE

**From the words lettered A-E, choose the word that is alike in meaning to the word underlined.**

1. Andrew made some bellicose statement about his strength to other boys in the street. This means that Andrew

- A. is a brave man
- B. wishes to fight
- C. is a coward
- D. loves to help others with his power
- E. has a lot of power

2. The excuse that he forgot about the meeting was a flimsy one. This means the excuse was

- A. very bad
- B. a complete lie
- C. difficult to believe
- D. not important
- E. a very good one.

3. Scrupulous politicians do not have a place in the Nigerian politics. Scrupulous politicians are

- A. honest
- B. dishonest
- C. corrupt
- D. good-natured
- E. insincere

4. The woman was happy because her gorgeous dressing made her quite obtrusive. The woman was very

- A. appreciated
- B. proud
- C. good
- D. noticeable
- E. excellent

5. The man is known to be a sly. I won't trust him with anything. This means the man is known as a

- A. deceiver
- B. thief
- C. kidnapper
- D. rogue
- E. burglar

**From the alternatives suggested, select the answer that best expresses the**

**same meaning as the expression italicized in each exercise.**

6. Don't take the plate away; *it is possible for the owner to ask for it.*

- A. the owner might
- B. the owner can
- C. the owner is going to
- D. the owner will come to
- E. none of them

7. I wonder *if you would allow me* to put out the fire

- A. I might
- B. I can
- C. I should
- D. I have to
- E. all of them

8. When your great-grandmother was in Vietnam, *did she have the ability to speak Chinese?*

- A. had she been able
- B. was she enabled
- C. could she
- D. how possible was it for her
- E. none of them.

9. I know a carpenter that *knows how to* make that kind of wardrobe

- A. could
- B. has the-know-how
- C. can
- D. can be able
- E. may be able to

10. Frances, where is your male visitor? Don't lie to me, *it is not possible that he has gone through the high window*

- A. he couldn't have
- B. he can't have
- C. he shouldn't
- D. he mustn't have
- E. none of them

11. My father *made no bones about* telling his friend how he felt about his behaviour. This means that my father

- A. spoke well to his friend about his behaviour
- B. spoke honestly to this friend about his behaviour
- C. spoke in the open to his friend about his behaviour

D. spoke hesitantly to his friend about his behaviour

E. spoke with all his might to his friend about his behaviour.

12. After much talk, my brother thought it was time to *hit the hay*. This means that my brother thought it was time to

A. make hay while the sun shines

B. burn the collection of hay

C. go to bed

D. keep quiet

E. tell the others off

13. The housemaster was *foaming in the mouth* when he discovered that some students had sneaked out of the hostel. This means the house master

A. was very sad

B. had epilepsy

C. became silent and calculative

D. was uncontrollably furious

E. was jittery

14. Who told Mabel she could sing? She really *laid an egg* at the talent show. This means

A. Mabel's performance was very embarrassing

B. Mabel's performance was very interesting

C. Mabel's performance was very impressive

D. Mabel's performance was not very bad

E. Mabel's performance was like that of a hen laying an egg.

15. Mr. Johnson is *on the warpath* because his car broke down again. This means Mr. Johnson is

A. ready to fight his mechanic

B. started fighting the government because the road was bad

C. very infuriated

D. fighting a war with his family in the car

E. drawing a battle in between him and his mechanic

**For questions 16-20, choose among the options A-E the word that is nearest in meaning to the italicized words in each of the sentences.**

16. The President announced that all political prisoners have been *pardoned*.

A. condemned

B. severely rebuked

C. banished

D. reprieved

E. released

17. He *resented* being criticized every time by his boss

A. preferred

B. abhorred

C. ignored

D. carefully considered

E. enjoyed

18. The most striking thing about the just-concluded World Cup Finals in Germany was the complete *eclipse* of the defending champion-Brazil

A. sudden disappearance

B. defeat

C. failure

D. brilliant performance

E. arrogance

19. As he watched the winning film his face remained *inscrutable*

A. unreadable

B. pale

C. unfriendly

D. impossible to please

E. bright

20. His latest album has done much to *boost* his reputation as a writer

A. increase

B. establish

C. nourish

D. destroy

E. decrease

**For question 21-25, choose from the option A-E the word or phrase opposite in meaning to the underlined word.**

21. The doctor certified the tumour malignant

A. benign

B. ripe

C. painless

D. dangerous

E. slow

22. Andrew is too garrulous for my liking

A. dull

B. apathetic

C. laconic

D. easy-going

E. dumb

23. The man holds parochial views on almost every issue

- A. rational
- B. realistic
- C. popular
- D. broad-minded
- E. sensible

24. Your idea on this issue seems to me quite novel

- A. bookish
- B. dangerous
- C. archaic
- D. genuine
- E. good

25. The people appreciated the chairman for his invaluable contributions to the community's development

- A. worthless
- B. costly
- C. unrecognized
- D. incalculable
- E. meaningless

26. Which of the following statements is true with regard to summary writing?

- A. details are more important than main ideas
- B. main ideas are more important than examples
- C. illustrations are more important than main ideas
- D. elaborations, exemplifications and details are more important than main idea
- E. none of the above

**Choose the appropriate option to complete the following:**

27. At the crusade, we prayed to God to \_\_\_\_\_ this on us

- A. breath His breathe
- B. breathe His breath
- C. breathe His breathe
- D. breath His breath

28. The chairman, Committee of Deans needs to see your friend Dele urgently, do you know his \_\_\_\_\_?

- A. where and about
- B. whereabouts
- C. whereabouts
- D. where and abouts

29. "As from now, this university will have zero tolerance for any form of malpractice", so the Vice-Chancellor. The Vice-Chancellor said that \_\_\_\_\_

- A. as from then, that university would have zero tolerance for any form of malpractice
- B. as from now, this university would have zero tolerance for any form of malpractice
- C. as from the, his university will have zero tolerance for any form of malpractice
- D. as from then, that university would begin to have zero tolerance for any form of malpractice.

30. The teacher took me for one of those students who could not spell such words as

- A. 'miscellaneous and maintenance'
- B. 'miscellaneous and maintainance'
- C. 'miscellaneous and maintenance'
- D. 'miscellaneous and maintainance'

31. God should take control of the heart of the organizers of this Post-UME screening exercise; they should not make this test \_\_\_\_\_ than UME

- A. more tough
- B. more tougher
- C. much tougher
- D. more much tougher.

## ANSWERS TO ENGLISH LANGUAGE 2006

1. B 2. C 3. D 4. B 5. A 6. A 7. C 8. C 9. D  
10. A 11. B 12. C 13. D 14. C 15. C 16. D  
17. B 18. D 19. A 20. A 21. A 22. E 23. D  
24. C 25. A 26. B 27. B 28. B 29. A 30. C  
31. C

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# 2015 POST-UTME SCREENING EXERCISE

## MATHEMATICS

1. The probability of an event A given by  $P(A)$  is a number between \_\_\_\_\_

- A. -1 and 1
- B. 0 and  $\frac{1}{2}$
- C. 0 and 1
- D. -1 and 0.

2. Noting that,  $\sin 2\theta + \cos 2\theta = 1$ , simplify  $\frac{1-\cos\theta}{\sin 2\theta}$

- A.  $\frac{1}{1+\cos\theta}$
- B.  $\frac{1}{1-\cos\theta}$
- C.  $\frac{1}{1+\sin\theta}$
- D.  $\frac{1}{1-\sin\theta}$

3. A circle has an eccentricity

- A.  $< 1$
- B. 1
- C.  $> 1$
- D. 0.

4. If two elements A and B are independent then  $P(A \text{ and } B)$  is

- A.  $P(A \cap B)$
- B.  $(A \cap B)$
- C.  $P(A)$
- D.  $P(B)$

5. Simplify  $\frac{3^{n+3}3^{n+2}}{3^{n+1}-3^n}$

- A. -9
- B. 9
- C. 10
- D. -10.

6. Noting that  $\cos\alpha = (90-\alpha)$ , find y in terms of x in the equation

$$\cos\left(1 + \frac{1}{2}x\right) = \sin\left(\frac{3}{2}y\right)$$

- A.  $y = \frac{178+x}{3}$
- B.  $y = \frac{x-178}{3}$
- C.  $\frac{178-x}{3}$
- D.  $-\frac{178+x}{3}$

7. For what values of x is  $x - 1 < -1$ ?

- A.  $0 < x < 1$
- B.  $x < -1, x > 0$
- C.  $x > 1, x < 0$
- D.  $-1 < x < 0$ .

8. In how many ways can the letters of the word NWAFOR be permuted?

- A. 7200
- B. 72
- C. 720
- D. 72000.

9. If  $\alpha, \beta$  are the roots of equation  $18 + 15x - 3x^2 = 0$ , find  $\alpha\beta - \alpha - \beta$

- A. 11
- B. -11
- C. 10
- D. -10.

10. Resolve  $\frac{1}{(1-x^2)}$  into partial fractions

- A.  $\frac{1}{2(1+x)} - \frac{1}{2(1-x)}$
- B.  $\frac{1}{2(1+x)} + \frac{1}{2(x-1)}$
- C.  $\frac{1}{2(1-x)} + \frac{1}{2(1-x)}$
- D.  $\frac{1}{2(1-x^2)}$

11. Given that the sum of infinity  $S_{\infty} = a + ar + ar^2 + \dots = \frac{a}{1-r}$ , to what sum does the infinite series  $1 - \frac{2}{3} + \frac{4}{9} - \frac{8}{27} + \dots$  coverage

- A.  $-\frac{3}{5}$
- B.  $\frac{5}{3}$
- C.  $-\frac{5}{3}$
- D.  $\frac{3}{5}$

12. What is the value of x for which  $x^2 - 5x + 6$  is minimum?

- A.  $\frac{5}{2}$
- B.  $-\frac{5}{2}$
- C. 3
- D. -3.

13. Integrate  $5x^4 + e^{-x}$  with respect to  $x$

- A.  $-e^{-x} + 5x + k$
- B.  $e^{-x} + x^5 + K$
- C.  $-e^{-x} - x^{-5} + K$
- D.  $-e^{-x} + x^4 + K.$

14. If  $X = \{2, 3, 6, 7, 8\}$  and  $Y = \{6, 7, 10, 3, 17\}$ , find  $Y - \{X \cap Y\}$ .

- A.  $\{22, 32, 11\}$
- B.  $\{10, 17\}$
- C.  $\{2, 3, 6, 7, 8, 10, 17\}$
- D.  $\{3, 6, 7\}.$

15. Find the angle in the line  $\frac{1}{\sqrt{3}} y - x = 0$

makes with positive  $y$ -axis

- A.  $30^\circ$
- B.  $60^\circ$
- C.  $0^\circ$
- D.  $45^\circ$

16. Find the value of  $p$  which satisfies the equation  $\sqrt{p} - \frac{6}{p} = 1$

- A. 4
- B. -4
- C. 9
- D. -9.

17. Find the area of circle

$$4x^2 + 4y^2 - 400 = 0$$

- A.  $10\pi$  sq. units
- B.  $40\pi$  sq. units
- C.  $400\pi$  sq. units
- D.  $100\pi$  sq. units.

18. Let the mean of  $x, y^{-1}, z^5$  be 6 find the mean of  $10, y^{-1}, 12, x z^5$ .

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

19. What is the addition of  $y$  and  $x$ -intercepts of the line  $\frac{2}{3}x + \frac{3}{2}y + 9 = 0$ ?

- A. -19.5
- B. 19.5
- C. 20.5
- D. -20.5

20. Given that  $h(x) = 3 + 2x$  and  $f(x) = 1 - x$ , find  $h(-f(x))$ .

- A.  $1 - 2x$
- B.  $1 + 2x$
- C.  $2x - 1$
- D.  $-1 - 2x.$

21. Find the value of  $k$  in the equation

$$\frac{5}{5\sqrt{2}} - \sqrt{8} = k\sqrt{2}$$

- A.  $4/3$
- B.  $3/4$
- C.  $-3/4$
- D.  $-4/3.$

22. Evaluate  $\int_0^1 3^x \log 3 dx$

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

## ANSWERS TO 2015 MATHEMATICS QUESTIONS

1. C 2. A 3. D 4. A 5. B 6. C 7. D 8. C 9. B  
 10. C 11. D 12. A 12. A 14. B 15. A 16. C  
 17. D 18. B 19. A 20. B 21. C 22. D

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# 2014 POST-UTME SCREENING EXERCISE

## MATHEMATICS

- Evaluate  $\left(\frac{1}{25}\right)^{-\frac{1}{2}} + \left(\frac{1}{8}\right)^{-\frac{2}{3}}$ 
  - 8
  - 10
  - 9
  - 6
- Find the remainder when  $x^4 - 11x + 2$  is divided by  $x$ 
  - 2
  - 6
  - 2
  - 5
- If  $\cos A = \frac{12}{13}$  and  $A$  is an acute angle, find  $(1 + \tan^2 A)$ .
  - $\frac{144}{25}$
  - $\frac{25}{144}$
  - $\frac{169}{25}$
  - $\frac{169}{144}$
- Integrate the function  $1 - 2x$ .
  - $x - x^2 + K$
  - $x + x^{-2} + K$
  - $-x - x^{-2} + K$
  - $x - x^{-2} + K$
- If  $\alpha$  and  $\beta$  are the roots of equation  $cx^2 - ax + b = 0$ , find  $\alpha\beta$ 
  - $-\frac{b}{a}$
  - $-\frac{a}{c}$
  - $\frac{b}{c}$
  - $\frac{c}{a}$
- The binary operation  $\otimes$  is divided by  $a \otimes b$  is defined by  $a \otimes b = 2a - 1$ . Find  $3 \otimes (2 \otimes 1)$ 
  - 3
  - 4
  - 5
  - 6
- Two coins are tossed; find the probability of having at least two heads.
  - $\frac{1}{2}$
  - $\frac{3}{4}$
  - $\frac{1}{4}$
  - 1
- If  $x$  is a real number and  $x + 11 < 0$ , evaluate  $\frac{|x|}{x}$ 
  - 0
  - 1
  - 1
  - 2
- If  $P$  is directly proportional to  $\sqrt{Q}$ ;  $P = 20$  when  $Q = 4$ . Find  $Q$  when  $P = 100$ 
  - 200
  - 300
  - 100
  - 400
- Find the angle in degree which the line  $x - \sqrt{3}y = 0$  makes with the positive  $y$  - axis
  - $30^\circ$
  - $90^\circ$
  - $60^\circ$
  - $180^\circ$
- If equation  $6 - kx + 2x^2 = 0$  has equal roots, find  $k^2 + 4$ .
  - 48
  - 52
  - 44
  - 96
- Simplify  $\log_{100} \sqrt{10^{-1}}$ 
  - $\frac{1}{8}$
  - $-\frac{1}{4}$
  - $\frac{1}{4}$
  - $\frac{1}{8}$
- Obtain the centre of the circle  $7(y^2 + 10y) + 7x^2 =$ 
  - (0, 5)
  - (-5, 0)
  - (0, -5)
  - (5, 0)
- Given  $\int_{-a}^a 15x^2 dx = 3430$ , find the value of the constant  $a$ 
  - 8
  - 6
  - 7
  - 9

## ANSWERS TO 2014 MATHEMATICS QUESTIONS

15. Evaluate  $\frac{dy}{dx}(\ln \sin 3x)$

- A.  $3 \cos 3x$
- B.  $3 \tan 3x$
- C.  $\frac{1}{\sin 3x}$
- D.  $3 \sin 3x$

16. Find the equation of a line which passes through a point  $(-2,3)$  and makes an angle of  $45^\circ$  with positive x-axis

- A.  $y - x - 5 = 0$
- B.  $y + x = 0$
- C.  $x - y - 5 = 0$
- D.  $y - x + 5 = 0$

17. Find the sum of infinity of the sequence:  $1, -1, 1, -1, 1, -1 \dots$

- A. 2
- B.  $-\frac{1}{2}$
- C. 1
- D.  $\frac{1}{2}$

18. Differentiate  $2 - \sin(2 - ax)$  with respect to x

- A.  $a \cos(2 - ax)$
- B.  $-a \sin(2 - ax)$
- C.  $-a \cos(2 - ax)$
- D.  $-a \sin(2 - ax)$

19. Simplify  $\left(\frac{8\sqrt{n^2}}{m^{3/2}}\right)\left(\frac{4^{-1}m^2}{2n^{-2}}\right)$

- A.  $128n^3m^{-1}$
- B.  $8n^3m^{-1}$
- C.  $8n^3m$
- D.  $8n^4m$

20. Solve the equation

21. Simplify:  $\frac{30}{\sqrt{2}} + \sqrt{50}$

- A.  $4\sqrt{5}$
- B.  $20\sqrt{5}$
- C.  $5\sqrt{5}$
- D.  $10\sqrt{2}$

22. If m is the gradient of the line  $py - qx = 0$  and  $q \neq 0$ , find  $\frac{1}{m}$ .

- A.  $\frac{q}{p}$
- B.  $\frac{p}{q}$
- C.  $-\frac{q}{p}$
- D.  $-\frac{p}{q}$

1. C 2. A 3. D 4. A 5. C 6. C 7. C 8. C 9. C  
10. A 11. B 12. B 13. C 14. C 15. A 16. A  
17. D 18. A 19. B 20. A 21. B 22. C

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# 2013 POST-UTME SCREENING EXERCISE

## MATHEMATICS

1. If the probability of success in an event is  $\frac{y}{x}$ . What is the probability of failure?

- A.  $\frac{x-y}{x}$   
 B.  $\frac{y-x}{x}$   
 C.  $\frac{x}{x-y}$   
 D.  $\frac{y}{y-x}$

2. What is the circumference of the circle

$$x^2 + y^2 = \left(\frac{7}{\pi}\right)^2$$

- A. 16 units  
 B. 14 units  
 C. 15 units  
 D. 15 units

3. Find the diameter of the circle

$$2x^2 + 2y^2 - 50 = 0$$

- A. -10units  
 B. 14units  
 C. 25units  
 D. -25units

4. Find point of intersection of the lines

$$3x - 2y = 5 \text{ and } 2x + 5y = -7$$

A.  $x = \frac{11}{19}, y = -\frac{31}{19}$

B.  $x = -\frac{11}{19}, y = \frac{31}{19}$

C.  $x = -\frac{11}{19}, y = -\frac{31}{19}$

D.  $x = \frac{11}{19}, y = \frac{31}{19}$

5. Solve  $4x^2 + 20x - 24 = 0$

- A. 1,6  
 B. -1,-6  
 C. 6, -1  
 D. -6, 1

6. What is the 15<sup>th</sup> term of the sequence -3,2,7,...?

- A. 65  
 B. 66  
 C. 68  
 D. 67

7. What is the distance between the points (-1,5) and (-7, -3)?

- A. 9  
 B. 10  
 C. 11  
 D. 12

8. Evaluate  $\frac{\log \sqrt{27} - \log \sqrt{8}}{\log 3 - \log 2}$

- A.  $\frac{2}{3}$   
 B.  $-\frac{2}{3}$   
 C.  $\frac{3}{2}$   
 D.  $-\frac{3}{2}$

9. What is the remainder when  $x^3 + 5x^2 - 6x + 1$  is divided by  $x - 1$ ?

- A. -1  
 B. 2  
 C. -2  
 D. 1

10. Giving that  $-x^2 + 5x + 6 = 0$

Find  $\alpha\beta + \alpha + \beta$

11. What is the value of y for which the function  $\frac{y-1}{y+1}$  is undefined?

- A. -1  
 B. 1  
 C. 0  
 D. 2

12. Resolve  $\frac{1}{x(1+x)}$  into partial fractions

- A.  $\frac{1}{x} + \frac{1}{1+x}$   
 B.  $\frac{1}{1+x} - \frac{1}{x}$   
 C.  $\frac{-1}{x} - \frac{1}{1+x}$   
 D.  $\frac{1}{x} - \frac{1}{1+x}$

13. Solve the equation  $5^{x^2} = 25^{x+4}$

- A. -4, 2  
 B. -4, -2  
 C. 4, -2  
 D. 4, 2

14. Evaluate  $\sum_{n=2}^4 (2^n + 1)$

- A. 28  
 B. 31  
 C. 29  
 D. 32

15. Integrate  $4x^3 + \frac{1}{x}$  with respect to x

- A.  $\ln x + x^4 + K$   
 B.  $x^{-1} + x^4 + K$   
 C.  $12x^2 - x^{-2} + K$   
 D.  $\frac{1}{5}x^5 + x^{-2} + K$

16. If  $X = \{2,3,6,7,8\}$  and  $Y = \{6,7,10,3,17\}$ , find  $X \cap Y$

- A.  $\{\}$   
 B.  $3,6,7$   
 C.  $\{2,3,6,7,8,10,17\}$   
 D.  $\{6,3,7\}$

17. What is the coordinate of centre of the circle  $x^2 + y^2 + 2x - 4y = 10$ ?

- A.  $(-1, -2)$   
 B.  $(1, 2)$   
 C.  $(-1, 2)$   
 D.  $(1, -2)$

18. Simplify  $\log_x x^4 + \log_4 4^x$

- A.  $4x$   
 B.  $\frac{1}{2}$   
 C.  $4 + x$   
 D.  $4x \log_{4x} 4x$

19. Solve the equation  $3^{x+1} = 27^{1-x}$

- A.  $\frac{1}{2}$   
 B.  $-\frac{1}{2}$   
 C.  $\frac{3}{4}$   
 D.  $-\frac{3}{4}$

20. Given  $f(x) = 3 + x$  and  $g(x) = 3 - x$ , find  $g(f(x))$ .

- A. 6  
 B.  $x$   
 C.  $-x$   
 D. 0

21. Differentiate  $\sin(2x - 5)$  with respect to  $x$ .

- A.  $\cos(2x - 5)$   
 B.  $-\cos(2x - 5)$   
 C.  $2\cos(2x - 5)$   
 D.  $-2\cos(2x - 5)$

22. If  $\delta, \lambda$  are the roots of equation  $x^2 - 5x + 7 = 0$ , find the value of  $\delta^2 + \lambda^2$

- A. 25  
 B. -25  
 C. -11  
 D. 11

## ANSWERS TO 2013 MATHEMATICS QUESTIONS

1. A 2. B 3. B 4. A 5. D 6. D 7. B 8. C 9. D  
 10. D 11. A 12. D 13. C 14. B 15. A 16. B  
 17. C 18. C 19. A 20. C 21. A 22. D

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# 2012 POST-UTME SCREENING EXERCISE

## MATHEMATICS

1. What is the highest possible value of  $\frac{8}{1+x^2}$

If  $0 \leq x \leq 3$ ?

- A. 8
- B. 4
- C. 2
- D. 16

2. The fifth term in the progression 9, 27, 81, ... is

- A. 243
- B.  $3^7$
- C. 729
- D.  $3^8$

3. The interior angles of a hexagon are  $120^\circ$ ,  $100^\circ$ ,  $80^\circ$ ,  $150^\circ$ ,  $x^\circ$  and  $130^\circ$ . The value of  $x$  is

- A.  $170^\circ$
- B.  $20^\circ$
- C.  $120^\circ$
- D.  $140^\circ$

4. Obtain the product of  $1100_2$  and  $101_2$

- A.  $111100_2$
- B.  $110100_2$
- C.  $2220_5$
- D.  $1144_7$

5. Simplify  $\left(\frac{8\sqrt{n}}{3}\right)^2 \left(\frac{4^{-1}m^2}{2n^{-2}}\right)$

- A.  $128n^3m^{-1}$
- B.  $8n^3m^{-1}$
- C.  $8n^4m$
- D.  $8n^3m$

The universal set  $U$  consists of all integer's subsets of  $U$  are defined as:

$$A = \{y: y \leq 3\}$$

$$B = \{y: -5 < y < 12\}$$

$$C = \{y: -2 \leq y < 5\}$$

**Use the information above to answer question**

6.  $A \cap (B \cup C)'$  is \_\_\_\_\_

- A.  $\{y < -4\}$
- B.  $\emptyset$
- C.  $\{y < 0\}$
- D.  $\{-4 \leq y \leq 3\}$

7. Make  $k$  the subject of the formula  $m = \frac{2nk}{p} + \frac{k}{2p}$

- A.  $k = \frac{2mp}{2n+1}$
- B.  $k = \frac{4n+1}{mp}$
- C.  $k = \frac{2n+1}{2mp}$
- D.  $k = \frac{2n+1}{2mp}$

8. Evaluate  $\log_8 128 + \log_3 9$

- A. 19
- B. 48
- C.  $\frac{13}{3}$
- D. 6

9. Find the value of  $y$  if  $\frac{1}{2}\log_3 y = 2$

- A. 9
- B. 18
- C.  $\frac{9}{2}$
- D. 81

10. Which of the following is a perfect square?

- A.  $x^2 - 3x - 4$
- B.  $x^2 + 9x + 9$
- C.  $2x^2 + 2x + 2$
- D.  $x^2 + 2x + 1$

11. Integrate  $\sqrt{2x+1}$

- A.  $\frac{1}{3}(2x+1)^{\frac{3}{2}} + K$
- B.  $\frac{1}{3}(2x+1)^{\frac{3}{2}} + K$
- C.  $-\frac{1}{3}(2x+1)^{\frac{3}{2}} + K$
- D.  $-\frac{1}{3}(2x+1)^{\frac{3}{2}} + K$

12. Obtain the centre of the circle  $3y^2 + 3(x+5)^2 = 17$

- A. (0.5)
- B. (-5, 0)
- C. (0, -5)
- D. (5, 0)

13. If  $f(x+1) = \frac{x^2+1}{x^3}$ , find  $f(2)$

- A.  $\frac{5}{8}$
- B. 2
- C.  $\frac{1}{4}$
- D. 1

14. The quadratic equation whose roots are  $(x-3)$  and  $(x+\frac{1}{3})$  is \_\_\_\_\_.

- A.  $x^2 + \frac{8}{3}x - 1 = 0$   
 B.  $x^2 - 2x - 3 = 0$   
 C.  $x^2 - \frac{8}{3}x - 1 = 0$   
 D.  $x^2 - 3 = 0$

15. If the bearing of a town B from A is  $145^\circ$ , the bearing of A from B is \_\_\_\_.

- A.  $305^\circ$   
 B.  $325^\circ$   
 C.  $35^\circ$   
 D.  $145^\circ$

16. A number is selected randomly from the set of integers 1 to 30 inclusive. The probability that the number is prime is \_\_\_\_.

- A.  $\frac{4}{15}$   
 B.  $\frac{1}{3}$   
 C.  $\frac{3}{15}$   
 D.  $\frac{7}{30}$

17. Differentiate  $\cos ax$  with respect to  $x(a)$

- A.  $\sin ax$   
 B.  $\frac{1}{a}\sin ax$   
 C.  $-a \sin ax$   
 D.  $-\frac{1}{a} \sin ax$

18. Obtain the values of  $x$  in  $|x - 9| = 16$

- A. 25  
 B. -7  
 C. 25, -7  
 D. -25, 7

19. Which of these numbers is an irrational number

- A.  $\sin 0^\circ$   
 B.  $\sin 30^\circ$   
 C.  $\sin 60^\circ$   
 D.  $\sin 90^\circ$

20. Given  $\int_{-a}^a 15x^2 dx = 3430$ , find the value of the constant  $a$

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

21. Which of these lines is a right angle with the line  $x = -7$

- A.  $2x + y = -1$

- B.  $2x - y = 1$   
 C.  $y = 0$   
 D.  $x = 49$

The scores of students in a class test are shown in the table below. Use the information to answer question 22.

Scores	1	2	3	4	5	6	7	8
No of students	1	1	3	5	3	4	2	0

The modal score is \_\_\_\_.

- A. 5  
 B. 4  
 C. 6  
 D. 8

## ANSWERS TO 2012 MATHEMATICS QUESTIONS

1. A 2. C 3. D 4. A 5. B 6. A 7. B 8. C 9. D

10. D 11. A 12. B 13. B 14. C 15. B 16. B

17. C 18. C 19. C 20. C 21. C 22. B

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# 2011 POST-UTME SCREENING EXERCISE

## MATHEMATICS

1. If the universal set  
 $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ ,  
 $M = \{1, 3, 5, 7, 9\}$  and  
 $N = \{2, 4, 6, 8, 10\}$ ,  
 which of the following is equal to  $(M \cup N)'$ ?

- A.  $(M \cap N)'$
- B.  $M' \cup N'$
- C.  $M' \cap N'$
- D.  $M \cap N$

2.  $\cos(180 - \theta)$  is equivalent to

- A.  $\cos(\theta - 180)$
- B.  $\cos \theta$
- C.  $-\cos \theta$
- D.  $-\cos(180 + \theta)$

3. Find the equation of the circle with centre  $(-1, 3)$  and radius 4.

- A.  $x^2 + y^2 - 6x + 2y = 6$
- B.  $x^2 + y^2 + 2x - 6y = 16$
- C.  $x^2 + y^2 - 6x + 2y = 16$
- D.  $x^2 + y^2 + 2x - 6y = 6$

4. Find  $\frac{dy}{dx}$ , if  $y = \frac{3}{\sqrt{x}}$

- A.  $-\frac{3}{2}x^{-\frac{3}{2}}$
- B.  $3x^{-\frac{3}{2}}$
- C.  $\frac{3}{2}x^{-\frac{3}{2}}$
- D.  $\frac{3}{4}x^{-\frac{3}{2}}$

5. Integrate  $\frac{1}{2x}$

- A. not defined
- B. 0
- C.  $\frac{1}{2} \ln x + C$
- D.  $\frac{1}{4} x^2 + C$

6. A die is tossed twice. What is the probability of obtaining a total of 6 if both numbers are odd?

- A.  $\frac{1}{12}$
- B.  $\frac{1}{18}$
- C.  $\frac{5}{36}$
- D.  $\frac{1}{6}$

7. If the mean of the numbers  $a, b, c, d, e$  is  $x$ , find the mean of numbers  $a + k, b + 2k, c - k, d - 2k, e$ .

- A.  $x$
- B.  $x + k$
- C.  $x - k$
- D.  $2x$

8. Factorize:  $a^2 - b^2 + (a + b)^2$

- A.  $2a^2$
- B.  $2a(a - b)$
- C.  $2a(a + b)$
- D.  $2b(b - a)$

9. Let  $\alpha$  and  $\beta$  be roots of quadratic equation  $x^2 + 2x - 3 = 0$ , then  $\alpha\beta$  is \_\_\_\_.

- A. -3
- B. -2
- C. 2
- D. 6

10. Convert  $69_{10}$  to a number in base two

- A.  $1001101_2$
- B.  $1010001_2$
- C.  $1000101_2$
- D.  $100101_2$

11. The reciprocal of  $\frac{\frac{3}{4}}{\frac{1}{4} + \frac{1}{3}}$  is

- A.  $1\frac{2}{7}$
- B.  $\frac{7}{9}$
- C.  $-1\frac{2}{7}$
- D.  $-\frac{7}{9}$

12. The speed of 30 kilometres per minute, expressed centimetres per second is \_\_\_\_.

- A. 5
- B. 50
- C. 500
- D. 5000

13. Evaluate  $x$  if  $\log_4(x + 3)(x - 3) = 2$

- A. 3 or -3
- B. 5 or -5
- C. 5 or -3
- D. 3 or -5

14. Given that  $a = \frac{1}{2 - \sqrt{3}}$ ,  $b = \frac{1}{2 + \sqrt{3}}$ , find the value of  $a^2 + b^2$

- A.  $\frac{14}{37}$
- B. 7

- C.  $14+2\sqrt{3}$   
D. 14

15. If the binary operation  $*$  is defined as  $x * y = 2$ , find  $2 * (4 * 5)$

- A. 4  
B. 5  
C. -5  
D. 2

16. Find the value of  $\sqrt{6 + \sqrt{6 + \sqrt{6 + \sqrt{6 + \sqrt{6}}}}}$

- A. -2,  
B. 2  
C. 6  
D. 3

17. Find the value of  $\int_0^{\frac{\pi}{2}} (2\pi + 2\cos 2x) dx$

- A.  $\pi^2 + 1$   
B.  $\pi^2$   
C.  $\pi^2 - 4$   
D.  $\pi^2 + 3$

18. The circle  $2x^2 + 2(y - \frac{3}{2})^2 = 2$  has centre and radius respectively as

- A.  $(0, \frac{3}{2})$  and 2  
B.  $(0, -\frac{3}{2})$  and 1  
C.  $(\frac{3}{2}, 0)$  and 2  
D.  $(0, \frac{3}{2})$  and 1

19. The line perpendicular to the straight line  $y + \frac{3}{2}x - 1 = 0$  has the gradient.

- A.  $-\frac{2}{3}$   
D.  $\frac{3}{2}$   
C. 3  
D.  $\frac{2}{3}$

20. Find  $x$  if  $2x^2 = 4^{(x+4)}$

- A. 2 or 4,  
B. -2 or 2  
C. -4 or 4  
D. -4 or 2

21. Express in partial fraction

$$\frac{3x}{x^2-1} = \frac{A}{x-1} + \frac{B}{x+1}$$

Then A and B respectively is

- A. -3, 3  
B.  $\frac{2}{3}, \frac{2}{3}$

- C.  $-\frac{3}{2}, -\frac{3}{2}$

- D.  $\frac{3}{2}, \frac{3}{2}$

22. A square has a perimeter of 40cm. What is its area in cm square?

- A. 80  
B. 1600  
C. 100  
D. 160

## ANSWERS TO 2011 MATHEMATICS QUESTIONS

1. D 2. C 3. D 4. A 5. C 6. A 7. A 8. C 9. A

10. C 11. B 12. - 13. B 14. D 15. D 16. D

18. D 19. D 20. A 21. D 22. C

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# 2010 POST-UTME SCREENING EXERCISE

## MATHEMATICS

- Find  $x$  if  $x^2 - 2x - 15 = 0$ 
  - 3, -5
  - 3, 5
  - 1, 15
  - 2, -15
- A father leaves a legacy of N45 million for his children – Peter, David and Paul to be shared in the ratio 7:5:3. What amount in million Naira would each receive respectively?
  - ₦14, ₦7, ₦3
  - ₦15, ₦5, ₦3
  - ₦21, ₦15, ₦9
  - ₦20, ₦16, ₦10
- As  $q$  tends to zero, what does  $\cos \theta$  tend to?
  - $\sin \theta$
  - 0
  - $\frac{1}{2}$
  - 1
- The expression  $2\cos\theta + \sin 2\theta$  has the numerical value
  - 1
  - 2
  - 4
  - 0
- If  $\tan x = \frac{\sin x}{\cos x}$ , find  $\tan(90^\circ + x)$  for acute value of  $x$ .
  - $-\cot x$
  - $-\tan x$
  - $\cot x$
  - $\tan x$
- Evaluate the length of perpendicular from A to BC
  - $\sqrt{52}$  cm
  - $\frac{12}{\sqrt{52}}$  cm
  - $\frac{24}{\sqrt{52}}$  cm
  - $\frac{24}{\sqrt{52}}$  cm<sup>2</sup>
- The indefinite integral of  $xe^x$ , for any real constant  $c$  is
  - $c$
  - $x + e^x + c$
  - $x^2 + e^x + c$
  - $e^x(x - 1) + c$
- Find the area under the curve  $y(x) = \sin x$  between  $x = 0$  and  $x = \pi$ 
  - 2
  - 1
  - 2
  - $\pi$
- Let the letters P, Q, R and S denote parallelogram, quadrilateral, rectangle and square respectively. Using subset notation, which of these inclusions is correct?
  - $Q \subset R \subset P \subset S$
  - $R \subset Q \subset P \subset S$
  - $S \subset P \subset R \subset Q$
  - $S \subset R \subset P \subset Q$
- In a convex polygon with  $n$  sides, the sum of interior angles is
  - $(n-2)\pi$
  - $2(n-1)\pi$
  - $4(n-1)\pi$
  - $(2n+4)\pi$
- Find the equation of the line perpendicular to the line  $y = 2x + 1$  and passing through a point (3, 1).
  - $y = \frac{1}{2}x + \frac{5}{2}$
  - $y = -\frac{1}{2}x + \frac{5}{2}$
  - $y = x + 5$
  - $2y = x + 5$
- What is the distance between points (1,2) and (4,5) on a plane?
  - $3\sqrt{2}$
  - $2\sqrt{3}$
  - 3
  - 9
- Integrate  $\int 2 \tan(2x + \pi) dx$ 
  - $2 \cot(2x + \pi) + k$
  - $\log[\cos 2x + \pi] + k$
  - $-\log[\cos 2x + \pi] + k$
  - $4 \cot(2x + \pi) + k$
- Find the values of  $x$  for which  $5 + 2x - 3x^2 = 0$ 
  - 2 and  $\frac{6}{5}$
  - 1 and  $\frac{5}{3}$
  - 2 and -1
  - 6 and 5

15. If  $\left(\frac{3}{4}\right)^x \left(\frac{2}{3}\right)^y = \frac{32}{27}$ , find the value of  $3y - 2x$

- A. 1
- B. 7
- C. 1
- D. -7

16. The integral value of  $y$  which satisfy the inequality  $-1 < 5 - 2y \leq 7$  are

- A. -1, 0, 1, 2
- B. 0, 1, 2, 3
- C. -1, 0, 2, 3
- D. -1, 0, 2, 3

17. If  $x^2 - 5x + 6 = (x - a)^2 + b$ , the value of  $b$  is\_\_\_\_\_.

- A.  $-\frac{1}{4}$
- B.  $\frac{5}{2}$
- C. 2
- D. 3

18. The scores of 16 students in a mathematics test are 65, 65, 55, 60, 60, 65, 60, 70, 75, 70, 65, 70, 60, 65, 65, 70. What is the sum of the median and modal scores?

- A. 125
- B. 130
- C. 140
- D. 150

19. A businessman invested a total of ₦200,000 in two companies which paid dividends of 5% and 7% respectively. If he received a total of ₦11,600, how much did he invest at 7%?

- A. ₦140,000
- B. ₦160,000
- C. ₦80,000
- D. ₦100,000

20. If  $a\sqrt{5} + b\sqrt{2}$  is the square root of  $95 - 30\sqrt{10}$ , the values of  $a$  and  $b$  are, respectively

- A. 5, 2
- B. 2, -5
- C. -5, 3
- D. 3, -5

21. If  $\frac{x}{y} = \frac{z}{w} = c$ , find the value of  $\frac{3x^2 - xz + z^2}{3y^2 - yw + w^2}$  in terms of  $c$ .

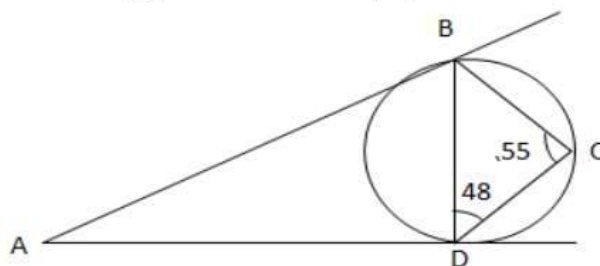
- A.  $3c^2$
- B.  $\frac{17c^2}{4}$
- C.  $2c - c^2$
- D.  $c^2$

22. Express  $\frac{5y-12}{(y-2)(y-3)}$  in partial fractions

- A.  $\frac{2}{y-2} - \frac{3}{y-3}$
- B.  $\frac{2}{y-2} + \frac{3}{y-3}$
- C.  $\frac{2}{y-3} - \frac{3}{y-2}$
- D.  $\frac{5}{y-3} - \frac{4}{y-2}$

23. The second term of an infinite geometric series is  $-\frac{1}{2}$  and the third term is  $\frac{1}{4}$ . Find the sum of the

- A. 2
- B. 1
- C.  $\frac{3}{2}$
- D.  $\frac{2}{3}$



24. In the figure AB and AD are tangents to the circle. If  $\angle BCD = 55^\circ$  and  $\angle BDC = 48^\circ$ , find  $\angle BAD$ .

- A.  $80^\circ$
- B.  $70^\circ$
- C.  $110^\circ$
- D.  $55^\circ$

25. Find the area of triangle:

- A. 24cm
- B.  $24\text{cm}^2$
- C.  $12\text{cm}^2$
- D. 12cm

## ANSWERS TO 2010 MATHEMATICS QUESTIONS

- 1. B 2. C 3. D 4. D 5. A 6. - 7. D 8. A 9. D
- 10. A 11. B 12. A 13. C 14. B 15. B 16. A
- 17. A 18. B 19. C 20. D 21. D 22. B 23. D
- 24. B 25. -



# 2014 POST-UTME SCREENING EXERCISE

## CHEMISTRY

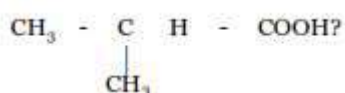
1. When  $\text{CuSO}_4$  solution is treated with ammonia solution drop by drop till it is added in excess, a precipitate is first formed which then dissolves in excess to give a deep blue solution. The deep blue solution is

- A.  $\text{Cu}(\text{OH})_2$
- B.  $[\text{Cu}(\text{NH}_3)_4](\text{OH})_2$
- C.  $\text{CuSO}_4$
- D.  $[\text{Cu}(\text{NH}_3)_2]\text{SO}_4$

2. If 7.0 g of ethane at s.t.p occupy 5.6  $\text{dm}^3$ , what volume will 7.5 g of ethane at the same condition occupy? (C = 12; H = 1; GMV at s.t.p = 22.4  $\text{dm}^3$ )

- A. 6.0  $\text{dm}^3$
- B. 5.6  $\text{dm}^3$
- C. 5.2  $\text{dm}^3$
- D. 9.4  $\text{dm}^3$

3. Which of the alcohol below is likely to be oxidized to give the acid,



- A. Butan-1-ol
- B. 2-methylpropan-2-ol
- C. 2-Methylpropan-1-ol
- D. Propane-2-ol

4. The name of  $\text{CH}_3\text{-OCOC}_2\text{H}_5$  is \_\_\_\_\_

- A. methoxyethane
- B. methyl propanoate
- C. ethyl ethanoate
- D. propyl methanoate

5. Which of these elements has the highest first ionization energy?

- A. Rb
- B. Li
- C. Na
- D. K

6. Which of the following is responsible for the conduction of electricity in a gas enclosed in a glass tube containing two electrodes at a reduced pressure and to which a high voltage is applied?

- A. Cations and anions
- B. Cations
- C. Electrons
- D. Cations and electron

7. The type of reaction an alkanolic acid cannot undergo is

- A. Oxidation
- B. Combustion
- C. Decomposition
- D. Esterification

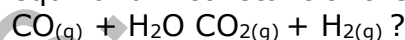
8. What is the pH of  $2.5 \times 10^{-2} \text{ mol dm}^{-3}$  barium hydroxide solution?

- A. 11.5
- B. 11.6
- C. 11.7
- D. 11.8

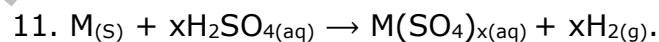
9. The complete oxidation of proan-1-ol yields

- A.  $\text{CH}_3\text{CH}_2\text{CHO}$
- B.  $\text{CH}_3\text{COCH}_3$
- C.  $\text{CH}_3\text{COOH}_3$
- D.  $\text{CH}_3\text{CH}_2\text{COOH}$

10. Which of the following will change the equilibrium constant of the reaction



- A. Increase of temperature
- B. Increase of concentration of CO
- C. Removal of  $\text{CO}_2$  from the mixture
- D. Decrease of pressure



Which of the following elements will not undergo the above reaction?

- A. Zn
- B. Na
- C. Cu
- D. Ca

12. A physical change is exemplified by the

- A. burning of bush
- B. rusting of a metal
- C. dissolution of calcium in water
- D. heating of ammonium chloride

13. The number of neutrons in the deuterium atom is/are

- A. 0
- B. 1
- C. 2
- D. 3

14. Which of these is correct about methyl orange?

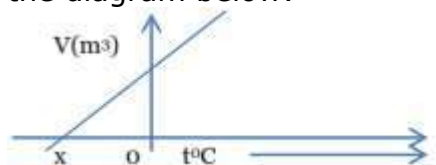
- A. Yellow in excess aqueous hydrogen ions
- B. Pink in excess aqueous hydrogen ions

- C. Orange in excess aqueous hydrogen ions  
D. Colourless in excess aqueous hydrogen ions

15. Which of these does not affect the rate of a particular chemical reaction?

- A. The order of the reaction  
B. The size of the particle of the reactants  
C. The temperature of the reaction  
D. The concentration of reactants

16. An ideal gas changing volume as temperature rises can be represented by the diagram below:



- A. -273 K  
B. 273 K  
C. 273°C  
D. -100 K

17. How many isomeric dichlorobenzenes are obtainable?

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

18. By accurate description, ozone in the reaction,  $O_3(g) + H_2O_2(l) \rightarrow H_2O(l) + 2O_2(g)$

- A. displace to form oxygen  
B. decomposed to form oxygen  
C. oxidized to oxygen  
D. reduced to oxygen

19. 150 cm<sup>3</sup> of nitrogen II oxide were sparked with 100 cm<sup>3</sup> of oxygen, what volume of nitrogen IV oxide will be produced at s.t.p?

- A. 100 cm<sup>3</sup>  
B. 75 cm<sup>3</sup>  
C. 50 cm<sup>3</sup>  
D. 150 cm<sup>3</sup>

20. Which of the following ions will interact with water to give a solution of pH < 7?

- A. Na<sup>+</sup>  
B. NH<sub>4</sub><sup>+</sup>  
C. CN<sup>-</sup>  
D. HCOO<sup>-</sup>

## ANSWERS TO 2014 CHEMISTRY QUESTIONS

1. B 2. B 3. A 4. C 5. A 6. B 7. B 8. C 9. D  
10. B. 11. D 12. C 13. C 14. A 15. A 16. A  
17. A 18. C 19. D

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# 2013 POST-UTME SCREENING EXERCISE

## CHEMISTRY

1. A motor truck releases an average of 5.0g CO into air for every km covered. How many molecules of CO will be emitted into the air if the truck travels 8 km? [C = 12; O = 16;  $N_A = 6.02 \times 10^{23}$ ]

- A.  $4.32 \times 10^{22}$
- B.  $2.48 \times 10^{22}$
- C.  $8.6 \times 10^{23}$
- D.  $6.82 \times 10^{21}$

2. A sample of an organic compound was weighed to 0.250g and subjected to Kjeldahl treatment. The ammonia produced was neutralized by 27.0cm<sup>3</sup> of 0.100 mol dm<sup>-3</sup> HCl. What is the percentage of nitrogen in the compound?

[H = 1; N = 14]

- A. 18.4%
- B. 17.8%
- C. 15.1%
- D. 13.3%

3. Given the half-redox reaction  $O_2 + 4H^+ + 4e^- \rightarrow 2H_2O$ , how many moles of electron will be required produce  $3.0 \times 10^{22}$  molecules of water

- A. 0.05
- B. 0.10
- C. 0.15
- D. 2.0

4. The quantum number l in an atom defines

- A. the shell K, L, M
- B. orbitals
- C. multiplicity
- D. degeneracy of orbitals

5. The hybridization of the central atom in a molecule

- A. dictates the shape of the molecule
- B. shortens the sigma bond in the molecule
- C. distorts the shape of the molecule
- D. serves to explain the shape of the molecule.

6. Lithium with atomic number of 3 is a

- A. Strong reducing agent
- B. Strong oxidizing agent
- C. Weak reducing agent
- D. Weak oxidizing agent

7. The correct name for HCOOC<sub>2</sub>H<sub>5</sub> is

- A. methylethanoate
- B. ethylethanoate
- C. ethylmethanoate
- D. propylethanoate

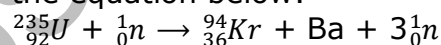
8. When CaC<sub>2</sub> reacts with water, the organic product formed is

- A. ethanol
- B. ethanoic acid
- C. ethane
- D. ethyne

9. 100cm<sup>3</sup> of ethyne was mixed with 240cm<sup>3</sup> of oxygen in a combustion chamber. What volume of carbon (iv) oxide is produced?

- A. 100cm<sup>3</sup>
- B. 24cm<sup>3</sup>
- C. 138cm<sup>3</sup>
- D. 192cm<sup>3</sup>

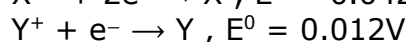
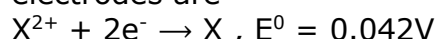
10. Uranium-235 explodes when bombarded with a slow-moving neutron according to the equation below:



The atomic number and mass of Ba respectively are

- A. 46 and 126
- B. 36 and 116
- C. 56 and 139
- D. 66 and 146

11. The reduction potential of two electrodes are



Calculate the free energy change for the cell that is made up of the electrodes

[F = 96500 Coulomb mol<sup>-1</sup>]

- A. 4.20kJ
- B. 5.79kJ
- C. 6.86kJ
- D. 10.55kJ

12. Which of SF<sub>4</sub>, SiH<sub>4</sub>, CO<sub>2</sub>, ICl, CH<sub>2</sub>Cl<sub>2</sub>, SO<sub>2</sub> and XeO<sub>3</sub> will not show the property of permanent dipole?

- A. CO<sub>2</sub> and SiH<sub>4</sub> only
- B. SF<sub>4</sub> and SiH<sub>4</sub> only
- C. CO<sub>2</sub>, SiH<sub>4</sub> and XeO<sub>3</sub> only
- D. SF<sub>4</sub>, SiH<sub>4</sub>, CO<sub>2</sub> and ICl

13. A sample of water weighs 200.00g at 298K. What is the volume of this quantity of water in cubic meters given that the density of water at 298K is  $0.98\text{gcm}^{-3}$ ?

- A.  $2.04 \times 10^{-3} \text{ m}^3$
- B.  $2.04 \times 10^{-6} \text{ m}^3$
- C.  $2.04 \times 10^{-9} \text{ m}^3$
- D.  $2.04 \times 10^{-4} \text{ m}^3$

14. What is the pH of  $500\text{cm}^3$  of  $0.02 \text{ mol dm}^{-3}$  tetraoxosulphate (VI) acid?

- A. 1.456
- B. 1.333
- C. 1.455
- D. 1.699

15. The main product of electrophilic addition of HCl to 2-methylpropene is

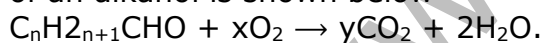
- A. 2-chloro-2-methylbutane
- B. 2-chloro-2-methylbutene
- C. 2-methyl-2-chloropropene
- D. 2-chloro-2-methylpropane

16. Which of the following compounds would you expect to show positive iodoform test?

- I. Butanone
- II. Propanoic acid
- III. Ethanol
- IV. Benzaldehyde
- V. But-2-one

- A. I and II
- B. I and III
- C. IV and V
- D. II and III

17. The complete combustion of one mole of an alkanol is shown below



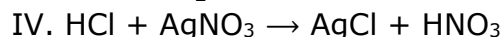
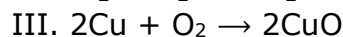
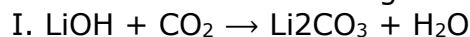
What is the value of x in terms of n?

- A.  $\frac{3n+1}{2}$
- B.  $\frac{3n-1}{2}$
- C.  $\frac{3n}{2}$
- D.  $\frac{3n+3}{2}$

18. An ion has a charge of +3. The nucleus of the ion has a mass of 120. The number of neutrons in the nucleus is 1.50 times that of the number of protons. How many electrons are in the ion?

- A. 55
- B. 48
- C. 45
- D. 42

19. Consider the following-reactions



Which of these reactions are redox reactions?

- A. I and III only
- B. I, II and III only
- C. II and IV only
- D. II and III only

20. Which of the following metals cannot displace hydrogen from steam?

- A. Copper
- B. Iron
- C. Strontium
- D. Lithium

21. Consider the exothermic reaction  $2\text{SO}_{2(g)} + \text{O}_{2(g)} \rightarrow \text{SO}_{3(g)}$ . If the temperature of the reaction is reduced from  $600^\circ\text{C}$  to  $300^\circ\text{C}$  and no other changes take place then\_\_\_\_\_

- A. the reaction rate increases
- B. concentration of  $\text{SO}_3$  decreases
- C. concentration of  $\text{SO}_3$  increases
- D.  $\text{SO}_2$  gas becomes unreactive

22. The molarity of 5% by weight of aqueous solution of tetraoxosulphate (VI) acid [molecular weight = 98] is

- A.  $0.537\text{mol dm}^{-3}$
- B.  $0.208\text{mol dm}^{-3}$
- C.  $0.551\text{mol dm}^{-3}$
- D.  $0.333\text{mol dm}^{-3}$

## SOLUTION TO CHEMISTRY 2013

1. C 2. C 3. B 4. D 5. A 6. A 7. C 8. D 9. D  
 10. C 11. B 12. D 13. D 14. - 15. D 16. B  
 17. A 18. C 19. D 20. A 21. C 22. A

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# 2012 POST-UTME SCREENING EXERCISE

## CHEMISTRY

1. During the electrolysis of dilute tetraoxosulphate (VI) acid solution, 0.05 mole of electrons were passed. What volume of gas was produced at the anode?

- A. 2.24dm<sup>3</sup>
- B. 0.560dm<sup>3</sup>
- C. 0.280dm<sup>3</sup>
- D. 0.224dm<sup>3</sup>

2. What volume of 0.750mol dm<sup>-3</sup> Na<sub>2</sub>CO<sub>3</sub> solution could be diluted to 250cm<sup>3</sup> to reduce the concentration of 0.025mol dm<sup>-3</sup>?

- A. 16.8cm<sup>3</sup>
- B. 14.2 cm<sup>3</sup>
- C. 10.4 cm<sup>3</sup>
- D. 8.3 cm<sup>3</sup>

3. When 70cm<sup>3</sup> of 3.0 mol dm<sup>-3</sup> Na<sub>2</sub>CO<sub>3</sub> is added to 30cm<sup>3</sup> of 1.0mol dm<sup>-3</sup> NaHCO<sub>3</sub>, the concentration of Na<sup>+</sup> ions in mol dm<sup>-3</sup> in the solution is

- A. 1.5
- B. 4.5
- C. 2.0
- D. 3.5

4. The reaction, Y → Product is of first order with the initial concentration of Y = 3.55 × 10<sup>-3</sup> mol dm<sup>-3</sup> and the rate constant of 5.25 × 10<sup>-3</sup> s<sup>-1</sup>. What is the half-life of the reaction?

- A. 350s
- B. 215s
- C. 132s
- D. 615s

5. Given the half-cell reaction, 2Br → Br<sub>2</sub>, how many moles of electron will be required to produce 0.56dm<sup>3</sup> of bromine at s.t.p.? [molar volume of gas at s.t.p 22.4 dm<sup>3</sup>]

- A. 0.05
- B. 0.10
- C. 0.20
- D. 1.00

6. The equilibrium constant, K<sub>c</sub> for the reaction, NO(g) +  $\frac{1}{2}$ O<sub>2(g)</sub> → NO<sub>2(g)</sub>, is 35.2.

What is the value of K for the reaction, NO<sub>2(g)</sub> → NO(g) +  $\frac{1}{2}$ O<sub>2(g)</sub>

- A. 35.2
- B. 17.6
- C. 2.84 × 10<sup>-2</sup>
- D. 1.24 × 10<sup>3</sup>

7. An atom has a core and outside the core an electron occupies an orbital for which the principal quantum number  $n = 4$ ,  $\ell = 0$ ,  $m = 0$  and  $s = +\frac{1}{2}$  or  $-\frac{1}{2}$ . The atom is likely to be

- A. boron
- B. sodium
- C. potassium
- D. fluorine

8. An element B, has two isotopes  $^{20}_{10}B$  and  $^{22}_{10}B$  present in ratio 2:3. The relative atomic mass of B is

- A. 20.5
- B. 21.2
- C. 23.4
- D. 25.0

9. What quantity of current is required to deposit 2.4g of copper in a period of 750 seconds during an electrolytic deposition process? [Cu 64, IF = 96500C mol<sup>-1</sup>]

- A. 9.65A
- B. 10.81A
- C. 12.33A
- D. 15.54A

10. Platinum electrodes are dipped into copper sulphate solution in a voltammeter. The solution left after electrolysis is

- A. clear
- B. blue
- C. pale
- D. sky blue

11. What volume of water is produced when a mixture of 150cm<sup>3</sup> of hydrogen and 100cm<sup>3</sup> of oxygen is exploded in a eudiometer?

- A. 250cm<sup>3</sup>
- B. 150cm<sup>3</sup>
- C. 100cm<sup>3</sup>
- D. 50cm<sup>3</sup>

12. A chloroform solution of pure organic compound was spotted at a distance 0.80cm from the base of a 20cm long chromatoplate. If the compound has the *rf*-value of 0.505 and moves half way up the

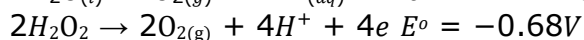
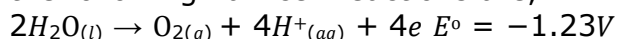
20cm long plate, which is the distance of the solvent front from the top of the plate upon elution?

- A. 0.80cm
- B. 1.0cm
- C. 1.2cm
- D. 1.4cm

13. The main organic product named when bromine water is added to but-1-ene is

- A. 1-bromobutane
- B. 2-bromobutane-1-ol
- C. 1-bromobutan-2-ol
- D. 2-bromobutan-2-ol

14. The standard reduction potentials for the following half-cell reactions are,



- A. -0.66V
- B. -1.23V
- C. +0.554V
- D. +1.91V

15. Bonding in ammonium chloride is

- A. ionic, covalent and dative
- B. ionic and covalent
- C. covalent and dative
- D. ionic

16. Valence shell electron pair theory through hybridization predicts that boron trichloride is

- A. Arrhenius acid
- B. Lewis base
- C. Lewis acid
- D. Lowry-Bronsted base

17. The basic tenet of valence bond electron pair repulsion theory is that the pairs of electrons making the sigma bonds dictate the shape of molecules. The pi-bonds often encounter in some molecules serve to

- A. distort the shape of molecules
- B. alter the angle between the atoms in molecules
- C. shorten the sigma bonds in molecules
- D. explain the shape of molecules.

18. A chemical equilibrium is established when

- A. concentration of the reactants and products are equal
- B. reactants in the system stop forming the products
- C. concentrations of the reactants and products remain unchanged

D. reactants in the system are completely transformed to products

19. Oxygen is extracted from water by

- A. displacement reaction
- B. oxidation reaction
- C. reduction reaction
- D. decomposition reaction

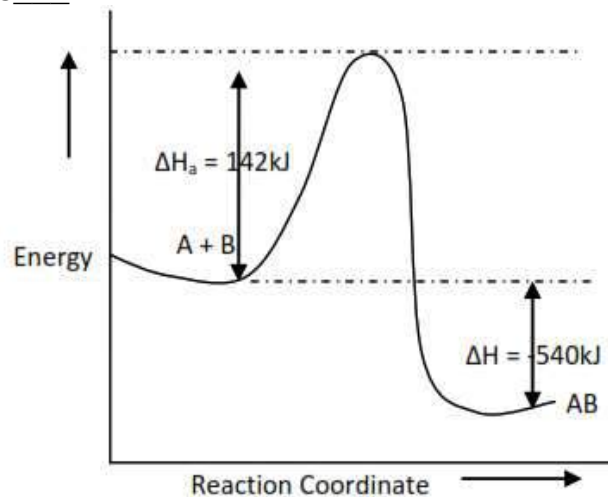
20. Excess ethanol was soaked with 3g of pure oxygen in a combustion chamber. How many molecules of  $CO_2$  are produced? [ $N = 6.02 \times 10^{23}$  molecules  $mol^{-1}$ ]

- A.  $6.02 \times 10^{23}$
- B.  $3.01 \times 10^{23}$
- C.  $3.76 \times 10^{22}$
- D.  $2.84 \times 10^{21}$

21. Forty (40) grams of sodium nitrate were added to  $50cm^3$  of water to give a saturated solution at 298K. If the solubility of the salt is  $10.50 mol dm^{-3}$  at the same temperature, what percentage of the salt is left undissolved? [ $Na = 23, N = 14$  and  $O = 16$ ]

- A. 11.56%
- B. 2.55%
- C. 5.88%
- D. 12.45%

22. The energy for the dissociation of molecule AB in kJ in the diagram of energy against the reaction coordinate shown below is \_\_\_\_\_



- A. 146
- B. -540
- C. 682
- D. 398

## **SOLUTION TO CHEMISTRY 2012**

1. C 2. D 3. B 4. C 5. A 6. C 7. C 8. B 9. A

10. A 11. B 12. B 13. C 14. C 15. A 16. C

17. A 18. C 19. B 20. C 21. - 22. C.

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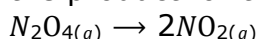
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**2011 POST-UTME SCREENING EXERCISE****CHEMISTRY**

1. What condition favours the formation of the product for the endothermic reaction,



- A. A decrease in pressure
- B. A decrease in volume
- C. An increase in pressure
- D. A constant volume

2. What is the percentage yield of water if 0.90g of water is obtained when 29.0g of butane is burned in excess oxygen?

- A. 0.02%
- B. 0.20%
- C. 2.0%
- D. 10.0%

3. The order of reactivity of five metals is  $P > Q > R > S > T$ . Which of the following reactions can occur spontaneously?

- A.  $T + P^+ \rightarrow T^+ + P$
- B.  $Q + T^+ \rightarrow Q^+ + T$
- C.  $R + Q^+ \rightarrow R^+ + Q$
- D.  $T + R^+ \rightarrow T^+ + R$

4. An element, Y has the electronic configuration of  $1s^2 2s^2 2p^6 3s^2 3p^3$ , \_\_\_\_\_

- A. Y is a period III element
- B. Y contains three electrons in the outer shell
- C. Y is a transition metal
- D. Y can engage in bonding with the s and p orbitals

5. Which of the following is NOT implicated as a major cause of global warming?

- A.  $NO_2$
- B.  $CO_2$
- C.  $CFCl_3$
- D.  $CF_2Cl_2$

6. Which of the following shows little or no net reaction when the volume of the system is decreased?

- A.  $2O_3(g) \rightleftharpoons 3O_2(g)$
- B.  $2NO_2(g) \rightleftharpoons N_2O_4(g)$
- C.  $H_2 + I_2(g) \rightleftharpoons 2HI(g)$
- D.  $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

7. A solution of 0.20 mole of NaBr and 0.20 mole of  $MgBr_2$  in  $2.0 \text{ dm}^3$  of water is to be analysed. How many moles of  $Pb(NO_3)_2$

must be added to precipitate all the bromide as insoluble  $PbBr_2$ ?

- A. 0.30 mol
- B. 0.10 mol
- C. 0.20 mol
- D. 0.40 mol

8. A given volume of methane diffuses in 20s. How long will it take the same volume of sulphur (IV) oxide to diffuse under the same conditions? [C = 12, H = 1, S = 32, O = 16].

- A. 5s
- B. 20s
- C. 40s
- D. 60s

9. The reaction,  $A + B \rightarrow C$ , can be represented by the equation,  $r = k[A][B]$ , k in this equation is \_\_\_\_\_

- A. proportionality constant
- B. rate constant
- C. equilibrium constant
- D. Boltzmann constant

10. The reaction that takes place in Daniel cell is \_\_\_\_\_

- A.  $Zn/Zn^{2+} // Cu^{2+}/Cu$
- B.  $Zn/Zn^{2+} // Cu/Cu^{2+}$
- C.  $Zn^{2+}/Zn // Cu^{2+}/Cu$
- D.  $Zn^{2+}/Zn // Cu/Cu^{2+}$

11. Which of the followings is composed of the elements, H, O, Al, and Si?

- A. Urea
- B. Silica
- C. Bauxite
- D. Clay

12. Which of the followings is not a chemical reaction?

- A. Burning of bush
- B. Rusting of iron
- C. Decay of bitter leaves
- D. dissolution of potassium hydroxide pellets.

13. 100.0g of  $KClO_3$  was added to  $40.0 \text{ cm}^3$  of water to give a saturated solution at 298K. If the solubility of the salt is  $20.0 \text{ mol dm}^{-3}$  at 298K, what percentage of the salt is left undissolved?

- [K = 39, Cl = 35.5, O = 16]
- A. 80%



- B. 60%  
C. 5%  
D. 2%

14. A tertiary amine is \_\_\_\_\_

- A. ethylamine  
B. diethylamine  
C. triethylamine  
D. tetraethylamine

15. Which of the following statements is true when sulphur atom forms its ion?

- A. It achieves an inert configuration  
B. It transfers two electrons in the process  
C. It accepts one electron in the process  
D. It gets oxidized in the process

16. An electron described by the quantum number,  $n = 4, l = 3$  can be located in what orbital?

- A. 4f  
B. 3s  
C. 3d  
D. 4p

17. An aqueous solution of a crystalline salt reacts with dilute HCl to give a yellow precipitate and a gas that turned dichromate paper green. The crystalline salt may be?

- A.  $Na_2S_2O_3 \cdot 5H_2O$ .  
B.  $Na_2S_2O_3 \cdot 10H_2O$   
C.  $Na_2S$ .  
D.  $NaHCO_3$

18. The oxidation states of nitrogen in ammonium nitrate are \_\_\_\_\_

- A. -3, +3  
B. +3, +5  
C. +3, -5  
D. -3, +4

19. Which of these reagents can confirm the presence of a triple bond?

- A. Hypochlorous acid  
B. Bromine water  
C. Acidified  $KMnO_4$   
D. Copper I chloride

20. An excess  $0.10 \text{ mol dm}^{-3}$  HCl was poured into a big beaker containing 2g of limestone. The unreacted acid required  $25 \text{ cm}^3$  of  $0.10 \text{ mol dm}^{-3}$  potassium carbonate to neutralize it. What was the original volume of the acid? [Ca = 40, C = 12, O = 16]

- A.  $250 \text{ cm}^3$

- B.  $260 \text{ cm}^3$   
C.  $400 \text{ cm}^3$   
D.  $450 \text{ cm}^3$

21.  ${}^{226}_{88}\text{Ra} \rightarrow {}^x_{88}\text{Ra} + \alpha - \text{particle}$ . What is the value of x in the nuclear reaction?

- A. 226  
B. 220  
C. 222  
D. 174

22. In the electrolysis of copper (II) sulphate using copper electrodes, the processes that occur at the anode and cathode respectively are \_\_\_\_\_

- A. dissolution and evolution  
B. dissolution and deposition  
C. deposition and evolution  
D. evolution and deposition

## SOLUTION TO CHEMISTRY 2011

1. A 2. C 3. B 4. A 5. A 6. C 7. A 8. C 9. B  
10. A 11. D 12. D 13. D 14. C 15. A 16. A  
17. C 18. B 19. D 20. D 21. C 22. C 23. B

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# 2010 POST-UTME SCREENING EXERCISE

## CHEMISTRY

1. Whose experiment showed that the atom has a tiny positively charged nucleus?

- A. Thompson
- B. Rutherford
- C. Millikan
- D. Dalton

2. Which of the quantum number divides shells into orbitals?

- A. principal
- B. subsidiary
- C. magnetic
- D. spin

3. Which of these statements is/are correct of a proton?

- i. The mass of a proton is one-twelfth the molar mass of carbon
  - ii. The mass of a proton is 1840 times the mass of an electron
  - iii. The mass of a proton is 1.0008g.
- A. ii only
  - B. i, ii and iii
  - C. i only
  - D. and ii only.

4. Candidate devised the following for the separation of the components of some mixtures.

- i. Components of ink; principles involved is chromatography
- ii. Components of water and kerosene principle involved is separating funnel.
- iii. Components of iodine and sodium chloride, principles involved is sublimation.

In which of the above is the principle used correct?

- A. i only
- B. ii only
- C. i only
- D. i, ii, & iii

5. Which of the following procedures will separate a mixture of sand, sodium chloride and iodine into its components?

- A. add water; filter; sublime; evaporate to dryness
- B. add water; sublime; filter; evaporate to dryness
- C. sublime; filter; add water; evaporate to dryness

D. sublime; add water filter; evaporate to dryness

6. The type of bonds in ammonium chloride are \_\_\_\_\_

- A. Covalent and electrovalent
- B. dative and covalent
- C. dative and electrovalent
- D. covalent, dative and electrovalent

7. Which of the following types of bonding does not produce a compound?

- A. ionic bonding
- B. covalent bonding
- C. dative bonding
- D. metallic bonding

8. The combining powers of  $\text{HCO}_3^-$ ;  $\text{O}^{2-}$ ;  $\text{Na}^+$ ;  $\text{Cl}^-$ ; respectively are:

- A. -2, +1, -1, +1
- B. 1, 2, 1, 1
- C. +1, -2, +1, -1
- D. None of these

9. What is the chemical formula of the compound containing:  $6.02 \times 10^{23}$  atoms of Hydrogen, 35g of chlorine, and 4 moles of oxygen atoms?

- A.  $\text{HCl}_4\text{O}$
- B.  $\text{HClOO}$
- C.  $\text{HClO}_4$
- D.  $\text{HCl}_2\text{O}_4$

10.  $200\text{cm}^3$  of hydrogen were collected over water at  $30^\circ\text{C}$  and  $740\text{mmHg}$ . Calculate the volume of the gas at s.t.p. if the vapour pressure of water at the temperature of the experiment is  $14\text{mmHg}$ .

- A.  $168.25\text{cm}^3$
- B.  $176.40\text{cm}^3$
- C.  $185.46\text{cm}^3$
- D.  $172.14\text{cm}^3$

11. A given mass of gas occupies a certain volume at  $300\text{K}$ . At what temperature will its volume be double?

- A.  $400\text{K}$
- B.  $480\text{K}$
- C.  $550\text{K}$
- D.  $600\text{K}$

12. The basic assumption in the kinetic theory of gas that: "forces of attraction and repulsion between gaseous molecules are negligible" implies that:

- A. molecules will continue their motion indefinitely  
 B. gases will occupy any available space  
 C. gases can be compressed  
 D. none of the above

13. Which of the following is true of a sample of hydrogen gas whose mass is 4.00g under a pressure of 2atm and a temperature of 27°C? [H = 1; R=0.082; lit atm. Mol<sup>-1</sup> k<sup>-1</sup>]

- A. Its volume is 24.6 litres  
 B. It contains  $6.02 \times 10^{23}$  molecules  
 C. It exists as atoms because of temperature  
 D. None of the above.

14. The following are chemical entities identifiable during qualitative analysis

- i.  $SO_4^{2-}$   
 ii.  $H_3O^+$   
 iii.  $NH_4^+$   
 iv.  $OH^-$

Which of them can be detected by litmus paper?

- A. ii & iv only  
 B. ii only  
 C. i & iii only  
 D. iv only

15. i.  $NaHCO_3$   
 ii.  $NaHSO_4$   
 iii.  $NaCl$ .

Which of these will dissolve in water to give alkaline solution?

- A. i, ii & iii  
 B. ii only  
 C. i only  
 D. i & ii only

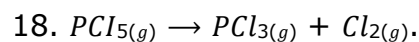
16. Burning of 0.46g of ethanol produced heat that raised the temperature of 100g of water by 30°C. Calculate the heat of combustion of ethanol,  $C_2H_5OH$ . (C = 12; H = 1; O = 16)

- A. 50 KJmol<sup>-1</sup>  
 B. 900 KJmol<sup>-1</sup>  
 C. 1200 KJmol<sup>-1</sup>  
 D. 1000 KJmol<sup>-1</sup>

17. When chlorine is bubbled into potassium iodine solution:

- A. a white precipitate is seen  
 B. reddish brown colour develops

- C. solution remains colourless  
 D. blue colour is seen



In the reaction above, an increase in pressure will \_\_\_\_\_

- A. decelerate the reaction  
 B. Increase the yield of  $PCl_3$   
 C. increase the yield of  $PCl_5$   
 D. accelerate the reaction

19. A saturated solution of silver trioxocarbonate (IV), was found to have concentration of  $1.30 \times 10^{-5}$  moldm<sup>-3</sup>. The solubility product of the trioxocarbonate (IV) is \_\_\_\_\_

- A.  $8.79 \times 10^{-15}$   
 B.  $1.69 \times 10^{-10}$   
 C.  $1.82 \times 10^{-11}$   
 D.  $9.84 \times 10^{-10}$

20. A Zinc half-cell is connected to an iron half-cell through a salt bridge and both are also connected through a copper wire. At which electrode is reduction taking place and which electrode is positively charged?

- A. Zinc, zinc  
 B. Iron, iron  
 C. Zinc, Iron  
 D. Iron, Zinc

21. Which of the following is the difference between an electrolytic cell X and electrochemical cell Y.

- A. Anode in X is -ve while anode in Y is +ve  
 B. In X, oxidation takes place at the anode while in Y reduction takes place at the anode.  
 C. In X, anode is positive while in Y anode is negative  
 D. In X, chemical energy is converted into electrical energy while in Y electrical energy is converted into chemical energy.

22. What mass of bromine will saturate completely 6.8g of 3-methylbut-1-yne? [H = 1; C = 12; Br = 80]

- A. 16g  
 B. 32g  
 C. 12g  
 D. 24g

23. 100cm<sup>3</sup> of oxygen and 10cm<sup>3</sup> of butane measured at room temperature and pressure were mixed and exploded. Determine the volume of the mixture when brought back to the original conditions of

measurements.

- A. 125 cm<sup>3</sup>
- B. 110 cm<sup>3</sup>
- C. 75cm<sup>3</sup>
- D. none of these

24. Sulphur \_\_\_\_\_

- A. forms two alkaline oxides
- B. is spontaneously inflammable
- C. burns with a blue flame
- D. conducts electricity in the molten state

25. Which of the following combination of reagents will react to give chlorine gas?

- A. Sodium chloride, conc  $H_2SO_4$  and Manganese(IV) oxide
- B. Potassium tetraoxomanganate (vii) and conc.  $H_2SO_4$
- C. Potassium trioxochlorate (v) and conc.  $H_2SO_4$
- D. Potassium tetraoxomanganate (VI) and conc.  $H_2SO_4$

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## **SOLUTION TO CHEMISTRY 2010**

1. B 2. B 3. A 4. D 5. D 6. D 7. D 8. B 9. C  
10. D 11. D 12. B 13. A 14. A 15. C 16. -  
17. B 18. C 19. A 20. B 21. C 22. B 23. C  
24. C 25. A

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# 2015 POST-UTME SCREENING EXERCISE

## BIOLOGY

1. Which of the following is not present in RNA?

- A. Adenine
- B. Guanine
- C. Cytosine
- D. Thymine

2. In the evolutionary trend, in which phylum do we begin to see a complete digest tract?

- A. Ctenophora
- B. Platyhelminthes
- C. Nematoda
- D. Mollusca

3. The picture below is an example of a \_\_\_\_\_



- A. capsule
- B. follicle
- C. legume
- D. schizocarp.

4. One of these features is not typical of most animals

- A. heterotrophic
- B. multicellular
- C. sessile
- D. motile at some stage of life cycle.

5. The cnidarians use their nematocysts only for \_\_\_\_\_

- A. capturing prey
- B. courtship
- C. gas exchange
- D. sensing chemicals.

6. The lack of special supportive structures in bryophytes restricts them to one of the following types of growth.

- A. lateral growth
- B. upward growth
- C. downward growth
- D. aerial growth.

7. Which type of placentation does the diagram below represent?



- A. parietal
- B. axial
- C. marginal
- D. free-central.

8. One of these is not a unique feature of meiosis

- A. synapsis
- B. homologous recombination
- C. reduction division
- D. cytokinesis.

9. One of the following is not true

- A. saprophytic nutrition involves feeding on a soluble organic material from inorganic substances
- B. symbiosis is a nutritional relationship in which both organisms involved derive benefit
- C. a parasite causes injuries to its host in the course of getting its food
- D. holozoic mode of nutrition can be seen in animals, carnivorous plants and some protists.

10. In which biome would you expect to have the shortest growing season?

- A. tropical rain forest
- B. guinea savanna
- C. Sudan savanna
- D. deserts.

11. The concept of trophic structure of a community emphasizes

- A. the dominant form of vegetation
- B. the main predator
- C. the feeding relationship within a community
- D. the richness of species in the community.

12. If a human skin cell with 46 chromosomes divide by mitosis, how many chromosomes will each daughter cell have?

- A. 23
- B. 12
- C. 46
- D. 92.

13. Example of genetic diseases include any of the following except \_\_\_\_\_

- A. diabetes
- B. cystic fibrosis
- C. hepatitis
- D. epilepsy.

14. In his theory of evolution, Darwin identified \_\_\_\_\_ as the main cause of natural selection

- A. physiological pressure
- B. ecological pressure
- C. environmental pressure
- D. biological pressure.

15. Absorption is maximum in the small intestine because of \_\_\_\_\_

- A. the presence of villi
- B. its length
- C. its thin walls
- D. all the above.

16. One of these is an agency responsible for conserving natural resources in Nigeria

- A. PDP
- B. NCF
- C. ACC
- D. NEMA

17. Which of these statements about succession is incorrect?

- A. succession is a change of species composition, community structure and function over time and space
- B. succession is usually set in motion by some sort of disturbance
- C. succession is both directional and predictable
- D. succession begins only on a bare ground

18. What happens to a tadpole after 45 days old?

- A. It becomes fully, mouth becomes wider, horny jaw disappears completely
- B. it becomes fully grown, mouth becomes wider, tail disappears completely
- C. it becomes fully grown, mouth becomes wider, external gill disappears completely
- D. it becomes fully grown, mouth becomes wider, slit disappears partially.

19. Effect of air pollutant does not include \_\_\_\_\_

- A. formation of carboxyl haemoglobin
- B. displacement of digested food
- C. lowering plant yield
- D. damage breathing organs.

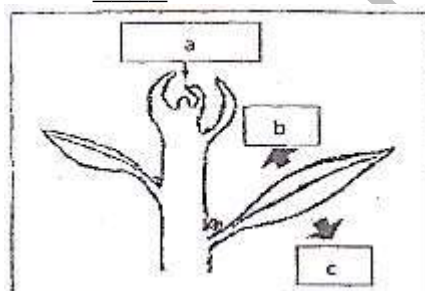
20. Physical observable characteristics of an organism is called

- A. genotype
- B. phenotype
- C. allele
- D. locus.

21. One of these organisms is not an Autotroph

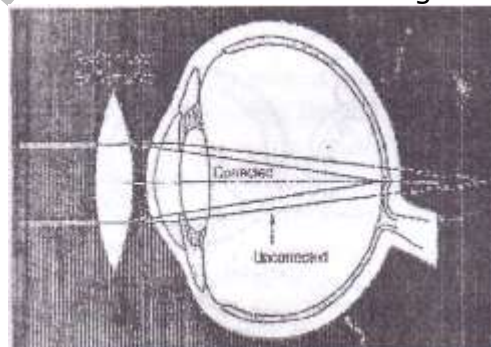
- A. spirogyra
- B. zea mays
- C. rhizobium
- D. mushroom.

22. In the diagram below, the part labelled "a" is \_\_\_\_\_



- A. apex
- B. fruit
- C. apical meristem
- D. flower.

23. The condition in the diagram below is?



- A. hypermetropia
- B. astigmatism
- C. myopia
- D. cataract.

24. In man, abnormality with chromosome 21 often lead to a genetic problem called

- A. respiratory syndrome
- B. carcinoma syndrome
- C. Klinefelter
- D. down syndrome.

25. The presence of extensive amounts of rough endoplasmic reticulum in a cell is an indication that the cell is involved in
- A. synthesis and metabolism of  $\text{CH}_2\text{O}_3$
  - B. synthesis and secretion of proteins
  - C. synthesis of ATP
  - D. contraction.

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## **ANSWERS TO BIOLOGY 2015**

1. D 2. C 3. C 4. C 5. A 6. D 7. A 8. D 9. B  
10. D 11. A 12. C 13. C 14. C 15. D 16. B  
17. D 18. C 19. B 20. B 21. D 22. C  
23. A 24. D 25. B

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# 2014 POST-UTME SCREENING EXERCISE

## BIOLOGY

1. What type of lens is used in the spectacles of the people with this eye defect?



- A. concave lens
- B. convex lens
- C. all of the options
- D. none of the options

2. Which of these components of the phloem has its cytoplasm pushed to the sides while also lacking nucleus?

- A. Companion cell,
- B. Sieve tube elements
- C. Sieve plate
- D. Parenchyma

3. Which of the following statements about phylum Cnidaria is correct?

- A. They are diploblastic animals.
- B. Body is sac-shaped with three openings
- C. They are bilaterally symmetrical.
- D. They are triploblastic animals with two openings.

4. Which of these biological statements is incorrect?

- A. Reflex action are also known as involuntary actions
- B. The forebrain consists of the cerebrum and the olfactory lobes
- C. The right hemisphere of the brain controls the right half of the body
- D. The outer part of the human cerebrum is made up of grey matter

5. The best-known plant species that occur in fresh water swamp vegetation is

- A. *Rhizophora racemosa*
- B. *Acrostichum aureum*
- C. *Mitragyna ciliate*
- D. *Triplochiton scleroxylon*

6. Bacteria that live in the human intestine assist in the digestion and feed on nutrients the human consumed. This relationship might best be described as

- A. Commensalism

- B. Ectoparasitism
- C. Endoparasitism
- D. Mutualism

7. The xylem elements perform the function of transport but they also help to support plants

because they

- A. are internally located
- B. are lobular
- C. have rigid thick wall
- D. Constantly absorb water

8. Biosphere is best described as

- A. all parts of the earth where life exists.
- B. the non-living parts of an ecosystem.
- C. all component of an ecosystem
- D. all the members of a single species in a habitat

9. Muscles fatigue is caused by

- A. Accumulation of ethanol in the muscle cells
- B. Accumulation of methanol in the muscle's cells
- C. Accumulation of lactic acid in the muscle cells
- D. Accumulation of pyruvic acid in the muscle

10. At what stag of the meiotic prophase do the homologous chromosomes attract each other and then pair up?

- A. Leptotene
- B. Pachytene
- C. Zygotene
- D. Diplotene

11. Which of the organelles is not directly connected to cell division process?

- A. centromere
- B. microtubules.
- C. Golgi bodies
- D. spindle apparatus

12. During the light dependent reaction

- A. glucose is formed
- B. carbon IV oxide is fixed
- C. NADPH and ATP are synthesized using electron released from water.
- D. water is split and the electrons produced are used for glucose synthesis.

13. Meiosis II is similar to mitosis in that:

- A. Homologous chromosome synapse



- B. Sister chromatids separate during anaphase  
 C. The chromosome number is reduced  
 D. The daughter cells are diploid
14. The mechanisms of opening and closing the stomata is associated with the  
 A. guard cells  
 B. stoma  
 C. lenticels  
 D. air spaces
15. Holozoic is seen in \_\_\_\_  
 A. Animals, carnivorous plants and protozoans  
 B. Animals, protists and carnivorous plants.  
 C. Animals, carnivorous plants and fungi  
 D. Animals, fungi and protists
16. The part of the tooth that contains blood vessels and nerve fibres is  
 A. Root  
 B. Enamel  
 C. Dentine  
 D. Pulp cavity
17. The food substances that are stored in readiness for time of food shortages are  
 A. Carbohydrates  
 B. Fats and Oils  
 C. Proteins  
 D. Vitamins
18. Which of these is the role of the liver in digestion?  
 A. Synthesis of lipase  
 B. Secretion of trypsin  
 C. Secretion of bile and bicarbonate for emulsification of fats.  
 D. Storage of bile for hydrolyses of starch.
19. Respiratory surfaces generally have the following characteristics with the exception of  
 A. it must be thick but permeable.  
 B. it must be moist  
 C. it must possess a large surface area  
 D. it must be richly supplied with blood vessels
20. Which of these is not a water-soluble vitamin?  
 A. Thiamine  
 B. Riboflavin  
 C. Folic Acid  
 D. Calciferol

21. Which of these following biomes is currently being ravaged by desertification?  
 A. Derived savanna  
 B. southern Guinea savanna  
 C. Northern Guinea savanna  
 D. Sudan savanna
22. Which is the largest of the middle ear ossicles?  
 A. Anvil  
 B. Stipe  
 C. Hammer  
 D. Incus
23. The process by which plants and animals are modified in structure, physiology and behaviour in order to survive is known as  
 A. Evolution  
 B. Adaptation  
 C. Succession  
 D. Aggregation
24. Which of these plants can withstand extreme dryness?  
 A. Cactus dryness?  
 A. Cactus  
 B. Raphia palm  
 C. Triplochiton scleroxylon  
 D. Parkie biglobosa
25. Animals that do not allow their body temperature to vary with the ambient are called?  
 A. Homoiothermic  
 B. Poikilothermic  
 C. Amphibians  
 D. Reptiles.

## ANSWERS TO 2014 BIOLOGY QUESTIONS

1. B 2. B 3. A 4. C 5. B 6. C 7. D 8. C 9. C  
 10. C 11. C 12. C 13. C 14. A 15. A 16. D  
 17. A 18. C 19. A 20. D 21. B 22. C 23. C  
 24. A 25. A

# 2013 POST-UTME SCREENING EXERCISE

## BIOLOGY

- Which of these statements with respect to "individual organism" is most correct?
  - It refers to animals only
  - It refers to either the plants or animals
  - Its ecology can be carried out in zoo only
  - It is used in reference to plant only.
- One of these is not a major biome in West Africa
  - Rain forest
  - Savanna
  - Coniferous forest
  - Mangrove
- The media of transportation in living things include all but
  - Cytoplasm
  - Water
  - Eosin
  - Blood and lymph
- Gaseous exchange through the lungs is called
  - cutaneous breathing
  - buccal breathing
  - pulmonary breathing
  - larynxial breathing
- In saprophytic mode of nutrition
  - organisms feed on insoluble organic material
  - decomposition is not possible at all
  - nutrient recycling is possible
  - no animal is involved
- A macro element which is not directly connected with formation of chlorophyll is
  - nitrogen
  - iron
  - magnesium
  - sulphur
- During the light dependent reaction
  - glucose is formed
  - carbon IV oxide is fixed
  - NADPH and ATP are synthesized using electron released from water
  - water is split and the electrons produced are used for glucose synthesis.
- Eutrophication refers to growth of
  - Bacteria
  - Fungi
  - Protophytes
  - Algae
- All the following statements are consistent with the concept of trophic structure except
  - At every feeding stage some energy is wasted from the chain
  - The nearer the organism to the beginning of a food chain, the greater the available energy of the organism
  - The first trophic level is occupied by the autotrophs
  - There are few numbers of organisms at the start of a food chain.
- All these statements about plants succession are correct except
  - Plant succession is the process of community change at one place over time
  - Plant succession is usually measured over the course of several years to hundred years
  - Succession proceeds from pioneer to climax phases
  - Succession is often not directional and so difficult to predict
- Which of the followings is not true about finger print?
  - It is useful in detecting crime
  - No two individuals have the same finger print
  - It is a heritable character
  - It is environmentally induced
- The factors for two pairs of contrasting characters are inherited independent of each other. This is\_\_\_\_\_
  - Mendel's first aw of inheritance
  - Mendel's second law of inheritance
  - Mendel's law of segregation of germinal units
  - Mendel's law of independent pairing of germinal units
- All of the following green algae are colonial forms except?
  - Gonium
  - Volvox

- C. Pandorina  
D. Anabaena

14. Allele is \_\_\_\_\_  
A. an alternate form of a gene  
B. a unit of inheritance  
C. the position or location of the gene on a chromosome  
D. number of chromosomes in the gamete

15. One of these statements about sympathetic Nervous system is untrue  
A. It stimulates many parts of the body in times of danger  
B. It stimulates the heart beat  
C. It functions like the adrenal glands  
D. It lowers the blood pressure

16. One of the following elements is not associated with leaf chlorosis  
A. Nitrogen  
B. Iron  
C. Calcium  
D. Magnesium

17. Characteristics of continuous variation include all of the following except  
A. Produced by many genes  
B. Influenced by the environment  
C. Occurs in a normal distribution curve  
D. most of the organisms in the population fall at the tail ends of the range

18. Homeostasis is defined as  
A. Regulation of both external and internal conditions of organisms  
B. Maintenance of internal environment of an organism  
C. Maintenance of internal and external environment of an organism  
D. Regulation of the chemical environment of an organism

19. Effectors are \_\_\_\_\_  
A. muscles which work in response to the stimulus received from the motor nerves  
B. glands which work in response to the stimulus received from the motor nerves  
C. muscles or glands which work in response to the stimulus received from the motor nerves  
D. efferent neurons

20. The mechanism of opening and closing the stomata is associated with the  
A. guard cells  
B. stoma

- C. lenticels  
D. air spaces

21. The part of the kidney where each tubule begins is called  
A. Capsule  
B. Cortex  
C. Glomerulus  
D. Ureter

22. The number of cranial nerves that connect the brain to various parts of the body is  
A. 10 pairs  
B. 11 pairs  
C. 12 pairs  
D. 13 pairs

23. The following pair of ions is involved in transmission of impulses by neurons:  
A. K and Na ions  
B. Na and Mg ions  
C. K and Cl ions  
D. K and Ca ions

24. The probability of producing a heterozygote progeny in a cross between two heterozygotes individuals of pea plant is  
A.  $\frac{1}{3}$   
B.  $\frac{1}{4}$   
C.  $\frac{1}{2}$   
D.  $\frac{2}{3}$

25. One of these does not protect the body from harmful effect of disease-causing micro-organisms  
A. Anti-toxin  
B. Phagocytes  
C. Antigens  
D. Antibodies

### ANSWERS TO BIOLOGY 2013

1. B 2. C 3. C 4. C 5. A 6. B 7. C 8. D 9. D  
10. D 11. D 12. B 13. D 14. A 15. D 16. C  
17. A 18. B 19. C 20. A 21. C  
22. C 23. A 24. C 25. C

**2012 POST-UTME SCREENING EXERCISE****BIOLOGY**

1. One of the groups of organisms below is critical in the entire process of nutrient cycling

- A. Aves
- B. Nematoda
- C. Mammalia
- D. Fungi

2. Hierarchical organization of living organisms is in one of the following orders:

- A. Atoms, molecules, compound, cells, tissues, organs, systems, organism
- B. Atoms, molecules, organelles, cells, tissues, organs, systems, organism
- C. Atoms, elements, molecules, cells, tissues, organs, systems, organism
- D. atoms, molecules, elements, cells, tissues, organs, organ systems, organism

3. Sister chromatids are:

- A. two identical copies of a single chromosome produced during s-phase
- B. pairs of chromosomes
- C. points of attachments of centromeres to the chromosomes
- D. chromosomes found in cells of sisters

4. In a monohybrid cross between round seed and wrinkled seed, given that round is dominant over wrinkled, what is the number of wrinkled seeds that would be formed at F<sub>2</sub> if the total number is 7324?

- A. 456
- B. 786
- C. 686
- D. 860

5. Steepness of slope generally affect \_\_\_\_\_

- A. Rainfall
- B. Drainage
- C. Sunlight
- D. All of the options

6. Bacteria differ from eukaryotic forms of life in that they:

- A. are causes of all infectious diseases
- B. have no nuclear membrane
- C. reproduce by binary fission
- D. have a thick cell-wall

7. One of the following organisms exhibits a closed and single circulatory system

- A. Insect

- B. Earthworm
- C. Fishes
- D. Mammals

8. Coelomates are animals with

- A. no body cavity
- B. true body cavity
- C. false body cavity
- D. two gin layers

9. This tissue is made up of tracheids, vessels, fibres and parenchyma. What is it?

- A. Phloem
- B. sclerenchyma
- C. xylem
- D. ground tissue

10. The important processes which bring about recycling of carbon dioxide between the biotic and abiotic components of an ecosystem are all of the following except

- A. photosynthesis
- B. respiration
- C. decay
- D. burning of fossil fuels

11. When a cut is made on the trunks of certain trees, the milky fluid exuded is called

- A. rubber
- B. resin
- C. alkaloid
- D. latex

12. The system of membrane-lined sacs that forms channels throughout the cytoplasm and whose membrane is continuous with the nuclear membrane is the

- A. Mitochondrion
- B. Ribosomes
- C. Endoplasmic reticulum
- D. Golgi apparatus

13. The type of Farming which involves raising livestock only is called

- A. Mixed farming
- B. Subsistence farming
- C. Pastoral farming
- D. Monoculture

14. Which of the following statements is NOT correct? Hormones \_\_\_\_\_

- A. are circulated by blood and lymph
- B. have their effect on target organs

C. complement nervous co-ordination  
D. are not produced in specific glands.

15. If 80 grasshoppers are found in a field with a total area of 100m<sup>2</sup> what is the population density of grasshopper in the field?

- A. 0.08 per m<sup>2</sup>
- B. 0.8m<sup>2</sup>
- C. 80m<sup>2</sup>
- D. 100 m<sup>2</sup>

16. Which of the following is part of the axial skeleton in a mammal?

- A. Phalange
- B. Tarsal
- C. Sacrum
- D. Patella

17. Fruits that develop without fertilization and are seedless are known as

- A. Parthenocarpic fruits
- B. Aggregate fruits
- C. Simple fruits
- D. Epicarpic fruits

18. Grasping fingers and toes as well as eyes positioned in front of the head are features of

- A. Cretaceans
- B. Carnivores
- C. Rodents
- D. Primates

19. One of the major differences between DNA and RNA is that

- A. DNA is made of ribose sugars and double stranded unlike RNA
- B. DNA is made of ribose sugar and single stranded unlike RNA
- C. RNA is made of ribose sugar and double stranded like DNA
- D. RNA is made of ribose sugar and single stranded unlike DNA

20. A major difference between Arachnids and Annelids is that....

- A. In Annelids, body consists of dissimilar segments unlike in Arachnids
- B. In Annelids, body consists of similar segments unlike in Arachnids
- C. In Arachnids, the cephalothorax is not distinct unlike in Arachnids
- D. In Annelids, the cephalothorax is distinct unlike in arachnids

21. The process in which the internal environment of an organism is maintained is called

- A. Co- ordination
- B. Homeostasis
- C. Excretion
- D. Metabolism

22. Which of the following is the hardest material in the body of animals?

- A. Cartilage
- B. Bone
- C. Enamel
- D. Dentine

23. One of these statements is true of caryopsis

- A. Pericarp and seed coat are fused
- B. Pericarp is free from seed coat
- C. pericarp splits open
- D. pericarp with a superior ovary

24. A biological species must possess the following characteristics except

- A. Live only in one place
- B. Must interbreed
- C. Must produce fertile offspring
- D. The mating between members must be free

25. Nerve endings are located in which part of the tooth

- A. crown
- B. Cement
- C. Pulp cavity
- D. Gum

## ANSWERS TO BIOLOGY 2012

1. D 2. B 3. A 4. - 5. D 6. B 7. C 8. B 9. C  
10. D 11. D 12. C 13. C 14. D 15. - 16. C  
17. A 18. D 19. D 20. B 21. B 22. C 23. A  
24. A 25. C

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# 2011 POST-UTME SCREENING EXERCISE

## BIOLOGY

- Which of these groups of animals rivals mammals in the display of parental care features?
  - Birds
  - Reptiles.
  - Pisces.
  - None of the above
- An assemblage of populations of different species which interact through trophic and spatial relationship is best described as an
  - City
  - Community
  - Ecosystem
  - Niche
- In which biome would you expect to have the shortest growing season?
  - tropical rain forest
  - guinea savanna
  - Sudan savanna
  - deserts.
- Which of the following is an incorrect statement about savanna?
  - It occupies about 80% of the land surface of Nigeria
  - It has no woody species.
  - It is usually burnt annually
  - It is a closed or nearly closed cover of grasses.
- Which of the following habitats cannot be used for the study of succession?
  - abandoned farmland
  - a pond
  - savanna grassland
  - well cultivated farmland
- In which of these associations is much harm done to one of the partners?
  - symbiosis
  - commensalisms
  - parasitism
  - mutualism
- Effect of air pollutant does not include:
  - formation of carboxyl haemoglobin
  - displacement of digested food
  - lowering plant yield
  - damage breathing organs
- A typical feature of a plant cell is the presence of
  - chromosome in nucleus
  - cellulose cell wall.
  - mitochondria
  - membrane around the nucleus
- Non seed plants are found in
  - desert and arctic regions only.
  - all environments.
  - cold mountain areas and hot springs
  - tropical and subtropical regions only
- Which of the following phyla has been found to be the most successful in the animal kingdom?
  - phylum Annelida
  - phylum Arthropoda
  - phylum Chordata
  - phylum Mollusca
- In the tropical rainforest, there is little or no litter on the forest floor because of high\_\_\_\_\_.
  - rainfall
  - temperature
  - light intensity
  - rate of decomposition
- Adaptive features of plants to desert conditions include
  - thick barks, succulent stems and sunken stomata
  - thin barks, succulent stems and sunken stomata
  - thin barks, air floats on stems and sunken stomata
  - air spaces on tissues, adventitious roots and thin barks
- The distribution of plants in rainforest is governed mainly by
  - Vegetation.
  - soil types
  - amount of rainfall
  - rainfall pattern
- The greatest influence on a stable ecosystem in nature is
  - man
  - pollution
  - animal
  - rainfall

15. Which of the following is the basic unit of classification?

- A. genus.
- B. species.
- C. phylum.
- D. kingdom.

16. Which two structures are present in a palisade cell but not in a liver?

- A. cell wall and cytoplasm
- B. cell wall and chloroplast
- C. cell membrane and cytoplasm.
- D. cell membrane and chloroplast

17. Workers in deep mines usually suffer from dehydration because

- A. water is lost due to evaporation
- B. water is lost due to defecation
- C. water is lost in the form of sweat
- D. water is lost along with salts in the form of sweat

18. Glucose is reabsorbed in the kidney mainly by

- A. Bowman's capsule
- B. Loop of Henle
- C. Proximal Convoluted Tubule
- D. Distal Convoluted Tubule

19. The most common substrate of respiration is \_\_\_\_\_

- A. Fats
- B. Amino acids
- C. Glucose
- D. Sucrose

20. The rate of heart beat in an adult human being is

- A. 71 beats per minute
- B. 72 beats per minute
- C. 73 beats per minute
- D. 74 beats per minute

21. One of the following is not true

- A. Saprophytic nutrition involves feeding on soluble organic material from inorganic substances
- B. Symbiosis is a nutritional relationship in which both organisms involved derive benefit
- C. A parasite causes injuries to its host in the course of getting its food
- D. Holozoic mode of nutrition can be seen in animals, carnivorous plants and some protists

22. \_\_\_\_\_ is responsible for the direction of growth and development of the organism.

- A. The nucleus
- B. The DNA
- C. The neuron
- D. The RNA

23. The chromosome number in man is

- A. 46
- B. 23
- C. 92
- D. 58

24. Effectors are \_\_\_\_\_

- A. muscles which work in response to the stimulus received from the motor nerves.
- B. glands which work in response to the stimulus received from the motor nerves.
- C. muscles or glands which work in response to the stimulus received from the motor nerves.
- D. efferent neurons.

25. The following are formed in the bone marrow except

- A. platelets
- B. basophils
- C. granulocytes
- D. lymphocytes

## ANSWERS TO BIOLOGY 2011

1. A 2. C 3. D 4. B 5. C 6. C 7. B 8. B 9. C  
10. B 11. D 12. A 13. C 14. A 15. B 16. B  
17. D 18. C 19. C 20. B 21. A 22. B 23. A  
24. C 25. D

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# 2010 POST-UTME SCREENING EXERCISE

## BIOLOGY

1. Which of the following is the basic unit of classification of plants and animals?

- A. genus
- B. species
- C. phylum
- D. kingdom

2. Mendel's first law is known as the law of \_\_\_\_\_

- A. use and disuse
- B. segregation of genes
- C. evolution
- D. independent assortment of genes

3. An interlocking form/pattern of feeding relationship is called

- A. food chain
- B. nutrition
- C. consumer
- D. food web

4. The group of animals described as glorified reptiles is

- A. Pisces
- B. Amphibian
- C. Aves
- D. Mammals

5. The anal and dorsal fins of fish are used for:

- A. steering
- B. buoyancy
- C. upward movement
- D. controlling rolling movement
- E. downward movement

6. The significance of mitosis includes all of the following except

- A. genetic stability
- B. growth
- C. cell replacement
- D. degeneration

7. Which of the following is absent in the prophase stage of meiosis?

- A. leptotem
- B. zygotem
- C. pachytene
- D. triptonema

8. The photosynthetic pigments include:

- A. chlorophyll and carotenoids.

- B. chloroplasts and cytochromes
- C. melanin and haemoglobin.
- D. Carotenoids and haemoglobin

9. Which of the following produces both hormones and enzymes?

- A. pancreas
- B. ileum
- C. gall bladder
- D. kidney

10. Of the following, which one lacks chaetae, tentacles and antennae?

- A. snail
- B. earthworm
- C. millipede
- D. crab
- E. snake

11. Etiolation is caused by the influence of \_\_\_\_\_

- A.  $O_2$
- B. water
- C. mineral salts
- D. HCl
- E. light

12. Epigeal germination can be found in:

- A. sorghum
- B. maize
- C. millet
- D. groundnut

13. \_\_\_\_\_ is not sex-linked

- A. stunted growth
- B. river blindness
- C. haemophilia
- D. colour blindness.

14. The pyrenoid in Spirogyra \_\_\_\_\_

- A. usually contains starch
- B. is suspended by cytoplasmic strands
- C. is mainly used for respiration
- D. excrete waste product

15. Flower is to the angiosperm as \_\_\_\_\_ is to gymnosperm.

- A. pines
- B. cords
- C. cone
- D. anther

16. Alternation of sexual and asexual method of reproduction is found in \_\_\_\_\_

- A. euglena



- B. ferns
- C. blue green algae
- D. grasses

17. \_\_\_\_\_ is not a non-seed plant.

- A. fern
- B. conifer
- C. cycad
- D. none of the above

18. Which type of association is shown by a fern growing on the stem of oil palm?

- A. epiphytism
- B. saprophytism
- C. commensalism
- D. symbiosis

19. Which of the following is likely to encourage inbreeding in plants?

- A. dioecious
- B. protandrous
- C. monoecious
- D. hermaphrodite

20. The biological association that contributes directly to succession in a community is:

- A. competition
- B. predation
- C. parasitism
- D. commensalism

21. Grasses recover quickly from bush fires in the savanna because of their \_\_\_\_\_

- A. fibrous roots
- B. succulent stems
- C. perennating organs
- D. rapid growth rate

22. The ability of an organism to live successfully in an environment is known as \_\_\_\_\_

- A. resistance
- B. competition
- C. succession
- D. adaptation

23. The community of plants in which the same species occur from year to year is the

- A. perennial species
- B. climax species
- C. pioneer vegetation
- D. annual species

24. \_\_\_\_\_ is an autotrophic mode of nutrition.

- A. chemosynthesis

- B. saprophytism
- C. parasitism
- D. symbiosis.

25. Which of the following is not an organ?

- A. leaf
- B. heart
- C. kidney
- D. bone

## ANSWERS TO BIOLOGY 2010

1. B 2. B 3. D 4. C 5. A 6. D 7. D 8. A 9. A  
10. E 11. E 12. D 13. B 14. A 15. C 16. B  
17. B 18. A 19. A 20. A 21. C 22. D 23. B  
24. A 25. D

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# 2014 POST-UTME SCREENING EXERCISE

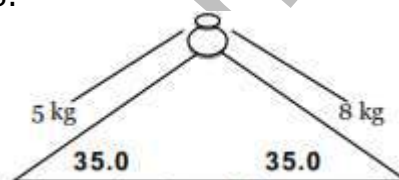
## PHYSICS

- Which of the following statement is not true about the properties of pressure in a liquid? Pressure\_\_\_\_\_
  - at any point in a liquid is at right angle in all directions.
  - is the same at all points on the same horizontal plane in a liquid
  - decreases with height, and independent of shape and volume of the container.
  - is dependent on the shape and volume of the container
- Which of the following is not a Newton's law of motion?
  - The time rate of change of linear momentum is directly proportional to the external force applied and it takes place in the direction of the force.
  - In the absence of external forces, an object at rest remains at rest and an object in motion continues in motion with a constant velocity.
  - If two objects interact, the force  $F_{12}$  exerted by object 1 on object 2 is equal in magnitude and opposite in direction to the force,  $F_{21}$  exerted by object 2 on object 1.
- A force of 20N is applied to a spring of elastic spring constant of 200N/m. Calculate the energy stored in the spring.
  - 2.50J
  - 0.25 J
  - 400 J
  - 40.0 J
- Which of the following is not a self-luminous object?
  - glow-worm
  - star
  - moon
  - sun
- Which of the following is not an application of Total internal Reflection?
  - Mirage
  - Binoculars
  - Optical Fibres
  - Driving mirror
- The reading on ADE temperature scale at the ice melting point is 400A and 800A at

the steam point. Calculate the reading on the Celsius scale equivalent to 500A

- 25°C
  - 40°C
  - 45°C
  - 60°C
- Calculate the heat required to convert 10g of ice at  $-10^{\circ}\text{C}$  to water at  $50^{\circ}\text{C}$ . The specific heat capacity of ice and water are 2100 J/kgK and 4200 J/kgK respectively. The latent heat of Fusion of ice is  $3.4 \times 10^5 \text{JK}^{-1}$ 
    - 2.10 kJ
    - 4.20 kJ
    - 3.21 kJ
    - 5.71 kJ

8.



Calculate the acceleration of the system (in terms of the acceleration due to gravity,  $g$ ), when it is released.

- 0.38g
  - 0.13 g
  - 0.15 g
  - 0.39g
- A train starting from rest accelerates at the rate of  $6 \text{ m/s}^2$  for 20 seconds to attain a constant speed and it further travelled for another 20 seconds and decelerates at rate of  $3 \text{ m/s}^2$  for 20 seconds. Calculate the total distance (in Kilometre) travelled by the train.
    - 4.0km
    - 4.4 km
    - 4.8 km
    - 3.6 km
  - Anomalous behaviour of water refers to
    - Boiling of water at  $100^{\circ}\text{C}$
    - Freezing of water  $0^{\circ}\text{C}$
    - Contraction of water when it is heated between  $0^{\circ}\text{C}$  and  $4^{\circ}\text{C}$
    - Evaporation of water at ambient temperature.

11. Which of the following statements is true about collision event?

- A. Inelastic collision, both linear momentum and kinetic energy are conserved  
 B. In elastic collision, linear momentum is conserved but the kinetic energy is not conserved  
 C. In elastic collision, both linear momentum and kinetic energy are conserved  
 D. In elastic collision, kinetic energy is conserved but the linear momentum is not conserved.

12. Which of the following is the function of a p-n junction semiconductor device?

- A. It transforms a direct voltage to AC voltage  
 B. It steps up an AC voltage  
 C. It steps down an AC voltage  
 D. It transform AC voltage to direct voltage

13. Five  $2\ \Omega$  resistors were connected in two ways, in series and parallel. What is the ratio of the series equivalent resistance to parallel equivalent resistance?

- A. 1:50  
 B. 2:5  
 C. 1:1/25  
 D. 5:6

14. The surface tension of water can be reduced by adding the following except

- A. detergent  
 B. oil  
 C. grease  
 D. sand

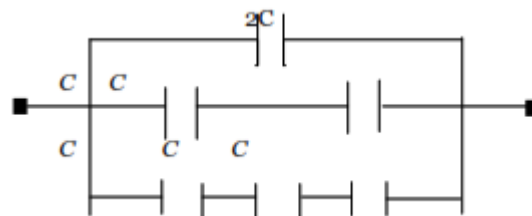
15. Which of the following is not an eye defect?

- A. Astigmatism  
 B. Hypermetropia  
 C. Presbyopia  
 D. Malaopia

16. Calculate the energy stored in a capacitor of capacitance  $50\ \mu\text{F}$  when a voltage of  $220\ \text{V}$  is applied to its terminals.

- A. 2.0 Joule  
 B. 1.21 Joule  
 C. 3.0 Joule  
 D. 4.0 Joule

17.



Calculate the equivalent capacitance between the terminals.

- A.  $6C/11$   
 B.  $C/6$   
 C.  $17C/6$   
 D.  $6C$

18. A material of threshold frequency  $4.5 \times 10^{15}\ \text{Hz}$  was bombarded with Photons of frequency  $8.0 \times 10^{15}\ \text{Hz}$ . What is the kinetic energy of the emitted photoelectrons (in eV)?

( $h = 6.60 \times 10^{-34}\ \text{Js}$ ,  $1\ \text{eV} = 1.6 \times 10^{-19}\ \text{J}$ )

- A. 2.81 eV  
 B. 2.19 eV  
 C. 5.00 eV  
 D. None of the above

19. Which of the following combinations of factors do not affect evaporation?

- (i) Temperature  
 (ii) nature of liquid exposed  
 (iii) Impurities  
 (iv) Pressure  
 (v) Humidity  
 (vi) Drought  
 (vii) linear expansivity  
 (viii) electro negativity

- A. (vii) and (viii)  
 B. (i), (ii), (iii)  
 C. (iii), (iv), (v), (vi)  
 D. (i), (ii), (iii), (iv), (v)

20. A solid is said to sublime if it changes from \_\_\_\_\_

- A. solid to liquid state  
 B. solid to molten state  
 C. solid to gaseous state  
 D. solid to solid state

## SOLUTION TO PHYSICS 2014

1. D 2. D 3. D 4. D 5. C 6. A 7. D 8. B 9. C  
 10. C 11. A 12. D 13. C 14. D 15. D 16. B  
 17. C 18. D 19. D 20. C

# 2013 POST-UTME SCREENING EXERCISE

## PHYSICS

- Adeoye moves a distance of 4.0km from a point, A, on a bearing of  $N30^\circ E$  to a point, B and then a distance of 3.0km on a bearing of  $S60^\circ E$  to a point, C. Calculate Adeoye's resultant displacement from point A.
  - 10km,  $N 60^\circ E$
  - 5km,  $N 67^\circ E$
  - 3km,  $S30^\circ E$
  - 4km,  $S60^\circ E$
- Which of the following statements is true?
  - The unit of mass is Newton (N)
  - Weight of an object is a scalar quantity
  - The weight of an object varies from one place to another
  - The dimensions of weight are  $M^{-2} LT^{-2}$
- Which of the following is not an example of rotational motion?
  - rotation of electric fan blades
  - movement of car wheels
  - rotation of the earth about its axis
  - movement of a loaded spring about its equilibrium position
- An object of mass, 5kg placed on an inclined plane (which is at an angle of  $30^\circ$  to the horizontal) is attached to a 10 kg mass through a pulley, with the 10 kg hanging vertically. Calculate the acceleration of the mass-system in terms of the acceleration due to gravity, g, if there is no friction between the 5kg mass and the plane.
  - $2/5 g$
  - $3/5 g$
  - $1/2 g$
  - $3/4 g$
- Which of the following is not true about the mechanical energy of a system in a conservative field?
  - total energy is zero
  - total energy is the sum of the kinetic energy and the potential energy
  - total energy is equal to the maximum value of kinetic energy
  - total energy is equal to the maximum value of potential energy.
- Surface tension is the
  - pressure per unit length on either side of the imaginary line drawn on the liquid surface at rest
  - force per unit length on either side of the imaginary line drawn on the liquid surface at rest
  - current per unit length on either side of the imaginary line drawn on the liquid surface at rest
  - area per unit length on either side of the imaginary line drawn on the liquid surface at rest
- A machine has an efficiency of 60%. If the machine applied a force of 2000N to overcome a load of 5000N, calculate the velocity ratio of the machine
  - 2.4
  - 3.3
  - 4.2
  - 5.5
- Which of the following statements is true about the hydrostatic pressure?
  - Pressure increases with height
  - Pressure is independent of the shape and volume of the vessel
  - Pressure is the same at all points on the same horizontal plane in a fluid
  - Pressure is independent of the surface area in contact
  - (i), (ii), (iii) and (iv)
  - (i), (ii), and (iii) only
  - (ii), (iii) and (iv) only
  - (i), (ii), and (iv) only
- The resistance of a platinum resistance thermometer is  $160.5\Omega$  at steam point and  $60.5\Omega$  at the melting point of ice. Calculate the resistance of the thermometer at  $70^\circ C$ 
  - $160.5\Omega$
  - $165.5\Omega$
  - $130.5\Omega$
  - $170.5\Omega$
- The wall separating a Bakery Oven and its environment is of h, 10m; breadth, 10m; and thickness, 25cm. If the rate of heat exchange between the Oven and its environment is 1000watt and the temperature of the environment is  $27^\circ C$ , calculate the temperature of the Oven,

given that the Coefficient of thermal conductivity of the wall is  $0.054\text{Wm}^{-1}\text{K}^{-1}$

- A.  $27.3^{\circ}\text{C}$
- B.  $-40.2^{\circ}\text{C}$
- C.  $40.2^{\circ}\text{C}$
- D.  $73.3^{\circ}\text{C}$

11. Which of the following is not an application of expansion of solids?

- A. Rivets
- B. Bimetal strips
- C. Fitting of wheels on rims in Railway Coaches
- D. Regelation.

12. Which of the following is true about melting point of a liquid?

- A. The presence of dissolved impurities increases the melting of a pure solid
- B. An increase in pressure decreases the melting point of a substance that contracts in volume on freezing, more than the one that expands in volume
- C. The melting point is not the same as the solidification of a substance
- D. The presence of the dissolved impurities does not change the melting point of a pure solid.

13. A boy preparing to have his bath mixed 50kg of water at a temperature of  $80^{\circ}\text{C}$  with 70kg of water at a temperature of  $20^{\circ}\text{C}$ . What is the temperature of the water mixture?

- A.  $45^{\circ}\text{C}$
- B.  $75^{\circ}\text{C}$
- C.  $65^{\circ}\text{C}$
- D.  $35^{\circ}\text{C}$

14. Which of the following is not a property of sound wave?

- A. Reflection
- B. Diffraction
- C. Polarization
- D. Refraction

15. A pin at the bottom of a beaker filled with water appeared to be elevated when viewed from the top of the beaker.

Calculate the displacement of the pin from the bottom of the beaker, if the beaker is filled to 8.0cm height and the refractive index of water is  $\frac{3}{4}$

- A. 6.0cm
- B. 2.0cm
- C. 3.0cm
- D. 4.0cm

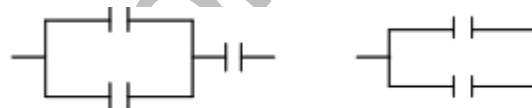
16. A boy stands at a distance,  $x$  from a wall. When he shouted, the echo was heard 2 seconds later. Calculate the distance from the wall, given that the speed of light is 330m/s.

- A. 500m
- B. 340m
- C. 250m
- D. 495m

17. In a 60 prism of refractive index, 1.5, calculate the angle of minimum deviation when light is refracted through the prism

- A.  $40.2^{\circ}$
- B.  $37.5^{\circ}$
- C.  $37.2^{\circ}$
- D.  $40.5^{\circ}$

18. Calculate the resultant capacitance of the capacitor network, if each capacitor has a capacitance of  $2\mu\text{f}$



- A.  $2.0\text{m } 2\mu\text{f}$
- B.  $1.0\text{m } 2\mu\text{f}$
- C.  $2.5\text{m } 2\mu\text{f}$
- D.  $2.3\text{m } 2\mu\text{f}$

19. A cell of e.m.f 4.0V is connected in series to two resistors  $2\Omega$  and  $4\Omega$ , which are connected in parallel. Calculate the current which flows through the  $4\Omega$  resistor

- A. 1.0A
- B. 2.0A
- C. 3.0A
- D. 4.0A

20. A step-down transformer is energized by a 220V a.c supply and supplied a current of 10A to the secondary winding. Calculate the current which flows through the primary winding if the ratio of the primary winding to secondary winding is 10:3.

- A. 10A
- B. 3A
- C. 4A
- D. 5A

21. All the following properties are characteristics of X rays except

- A. they have short wavelength
- B. they have no charge
- C. they are electromagnetic in nature
- D. they do not affect photographic plates

22.  ${}_{92}^{238}\text{U} \rightarrow {}_{90}^{234}\text{Th} + \text{X}$ . What particle is emitted in radioactive decay process shown above?

- A.  $\beta$  particle
- B. X-ray
- C.  $\alpha$  particle
- D.  $\gamma$  ray

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## **SOLUTION TO PHYSICS 2013**

1. B 2. C 3. D 4. C 5. A 6. C 7. C 8. C 9. C

10. D 11. D 12. B 13. A 14. C 15. B 16. B

17. C 18. B 19. A 20. B 21. D 22. C

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# 2012 POST-UTME SCREENING EXERCISE

## PHYSICS

1. A uniform meter rule AB has a mass 15g. A 30g mass is suspended at the 10.0cm mark, and another 5g mass is suspended at the 65.0cm mark. Calculate the position of the fulcrum that will keep the meter rule balanced horizontally.

- A. 50.0cm
- B. 32.0cm
- C. 27.5cm
- D. 17.9cm

2. A rectangular block measures 40cm x 25cm x 5cm and is made of a material of density 7800kg/m<sup>3</sup>. Calculate the pressure the block exerts on the floor when it stands on the smallest of its surfaces.

- A.  $312 \times 10^3 \text{N/m}^2$
- B.  $3.90 \times 10^3 \text{N/m}^2$
- C.  $1.95 \times 10^4 \text{N/m}^2$
- D.  $3.12 \times 10^4 \text{N/m}^2$

3. A ship sinks to the bottom of a 250m deep lake. The atmospheric pressure over the lake is  $1.03 \times 10^5 \text{Pa}$ . Taking the density of water in the lake to be 1000 kg/m<sup>3</sup>, calculate the pressure exerted on the boat [acceleration due to gravity 10 m/s<sup>2</sup>]

- A.  $2.60 \times 10^6 \text{Pa}$
- B.  $2.50 \times 10^6 \text{Pa}$
- C.  $2.60 \times 10^5 \text{Pa}$
- D.  $1.03 \times 10^5 \text{Pa}$

4. Three knives made of steel, plastic and fiat wood respectively is placed on a table for an equal amount of time. The steel knife feels coldest to touch because \_\_\_\_\_

- A. The steel knife has the lowest temperature
- B. The plastic and wooden knives have absorbed more heat from the environment than the steel knife
- C. Both wooden and plastic knives have lower densities than the steel knife
- D. The steel knife conducts heat faster from the finger than the wooden and plastic knives.

5. Two plane mirrors are inclined at angle 45° one to another. A ray of light has incident angle 20° at the surface of the first mirror. The reflected ray is then incident on the second mirror. Calculate the angle of

reflection at the second mirror.

- A. 65°
- B. 45°
- C. 25°
- D. 20°

6. When the length of the string of a simple pendulum is L, its period is 0.5π seconds. The period when the length is increased to 4L will be \_\_\_\_\_

- A. 0.5π seconds
- B. π seconds
- C. 2π seconds
- D. 4π seconds

7. The coefficient of linear expansion of aluminium is  $23 \times 10^{-6} \text{K}^{-1}$ . If the volume of a pot made with aluminium at temperature T<sub>0</sub> is V<sub>0</sub>, what will be the change in temperature resulting in a decrease of 0.20% in volume of the pot?

- A. -87°C
- B. +87°C
- C. +29°C
- D. -29°C

8. A resonance tube is 40cm long. The second resonance is heard when the tube is three-quarter full. What is the frequency of the tuning fork placed near the mouth of the tube? [velocity of sound in air is 334 m/s]

- A. 2511 Hz
- B. 1670Hz
- C. 835 Hz
- D. 345 Hz

9. A coin is at the bottom of a bucket tilled with a liquid whose refractive index is 1.35. The coin appears to be 12.0cm below the surface of the liquid. Calculate the depth of the liquid.

- A. 16.2cm
- B. 13.4cm
- C. 8.9cm
- D. 5.4cm

10. A car accelerates at 5.0 m/s<sup>2</sup> for 6s, the travels at the speed attained for 20s, and comes to rest after another 4.0s. Calculate the average velocity of the car during the motion.

- A. 25.0m/s
- B. 20.0m/s

- C. 1.25m/s  
D. 0.16m/s

11. Which of the following quantities is equal to the area under a velocity-time graph?

- A. Acceleration  
B. distance travelled  
C. Average velocity of motion  
D. total time taken.

12. A 25 N force pulls a 2.0kg body up a 30° inclined plane. If the force is parallel to the plane and the body moves up the plane at constant velocity, calculate the magnitude of the frictional force between the body and the plane [ $g = 10\text{m/s}^2$ ]

- A. 35N  
B. 25N  
C. 20N  
D. 15N

13. Which of the following features is used to minimize heat loss due to conduction in a thermo flask?

- A. The space between the two walls of the vacuum flask is evacuated  
B. The vacuum flask is separated from the outer wall with corks  
C. The surfaces of the vacuum flask are silvered  
D. The inner and outer walls of the flask are made of steel.

14. Which of the following quantities is a scalar quantity?

- A. Electric field  
B. Coulomb force  
C. Electric potential  
D. Acceleration due to gravity

15. The process by which a solid changes directly to vapour is called

- A. Evaporation  
B. Fusion  
C. Condensation  
D. Sublimation

16. A 3.0cm object is placed 12.0cm in front of a bi-convex lens of focal length 8.0cm. Calculate the height of the image of the object.

- A. 3.0cm  
B. 6.0cm  
C. 12.0cm  
D. 24.0cm

17. Five 100-Watt bulbs are put on for 45 days during which the home-owner is on vacation. If 1kW-hour of electricity costs ₦7.50, how much does it cost the home-owner?

- A. ₦168.75  
B. ₦90.00  
C. ₦4050.00  
D. ₦810.00

18. To convert an a.c. generator to a d.c. generator, one needs to \_\_\_\_\_

- A. Remove the brush touching the slip rings  
B. Laminate the armature  
C. Replace the permanent magnets with soft iron-core armature  
D. Replace the slip rings with split rings.

19. To use a multi-ammeter to measure current up to 10A, what connection needs to be made?

- A. A small resistance must be connected in series with the milli-ammeter  
B. A small resistance must be connected in parallel with the milli-ammeter  
C. A high resistance must be connected in parallel with the milli-ammeter  
D. The milli-ammeter must be disconnected from the circuit.

20. Two resistors A and B are made of the same material. The radius of A is three times that of B and the length of A is half of B. The ratio of the resistance of A to that of B is \_\_\_\_\_

- A. 3/2  
B. 2/3  
C. 2/9  
D. 9/2

21. Two 2 $\mu\text{F}$  capacitors are connected in parallel. The combination is connected in series with a 6 $\mu\text{F}$  capacitor. What is the equivalent capacitor for the combination?

- A. 10.0 $\mu\text{F}$   
B. 8.0 $\mu\text{F}$   
C. 1.5 $\mu\text{F}$   
D. 2.4 $\mu\text{F}$

22. A student afraid that the substance near him is radioactive places his lecture note between him and the substance. If truly the substance is radioactive, which of the following radiations can the notebook shield him from?

- A. Gamma rays



- B. Neutrons
- C. Alpha particles
- D. Energetic beta ray

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1. C 2. D 3. A 4. D 5. C 6. B 7. C 8. A 9. A  
10. A 11. B 12. D 13. B 14. C 15. D 16. B  
17. C 18. D 19. B 20. - 21. D 22. C

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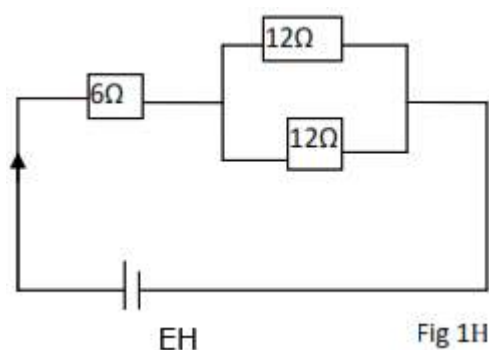
# 2011 POST-UTME SCREENING EXERCISE

## PHYSICS

- A body of mass  $m$  slides down an inclined plane with a constant velocity. If the angle of the incline is  $\theta$ , the coefficient of kinetic friction between the body and the plane is
  - $\cot \theta$
  - $\cos \theta$
  - $\tan \theta$
  - $\sin \theta$
- The density of sea water is  $1030 \text{ kg/m}^3$ . What is the pressure at a depth of 80 m below sea surface? Atmospheric pressure is  $1.013 \times 10^5 \text{ Pa}$  and acceleration due to gravity is  $10 \text{ m/s}^2$ .
  - $9.25 \times 10^5 \text{ Pa}$
  - $8.24 \times 10^5 \text{ Pa}$
  - $7.23 \times 10^5 \text{ Pa}$
  - $8.34 \times 10^9 \text{ Pa}$
- 6000 J of heat is delivered to 10g of dry ice at  $0^\circ\text{C}$ . What is the final temperature if the container has a heat capacity of 20 J/K? [specific heat of water =  $4200 \text{ J/kg} \cdot \text{K}$ , latent heat of fusion of ice =  $3.33 \times 10^5 \text{ J/kg}$ ]
  - $142.9^\circ\text{C}$
  - $63.6^\circ\text{C}$
  - $43.0^\circ\text{C}$
  - $0^\circ\text{C}$
- A sample of radioactive substance, whose half-life is 16 days, registers 32 decays per second. How long will it take for the rate of decay to reduce to 2 decays per second?
  - 80 days
  - 64 days
  - 48 days
  - 32 days
- When white light passes through a triangular prism, the emerging rays of light arranged in order of decreasing angle of deviation are \_\_\_\_\_
  - Red, orange, yellow, green
  - Blue, green, orange, yellow,
  - Red, green, yellow, blue
  - Blue, green, yellow, orange
- The electric field between two parallel plates is  $E$ . A particle of mass  $m$  and carrying charge  $q$  is released at a point half the distance between the plates. The velocity of the particle  $t$  seconds after its

release is \_\_\_\_\_

- $qEt/m$
  - $qEt^2/2m$
  - $mq^2/2E$
  - $mq^2/2E$
- The velocity of a 500 kg car moving along a straight road, changes from 12 m/s to 20 m/s in 5sec. calculate the average force moving the car.
    - 2000 N
    - 1600 N
    - 1200 N
    - 800 N
  - When a 2 kg body is at a height 5 m above the floor, its velocity is 4 m/s. What is its total energy at this height? [acceleration due to gravity =  $10 \text{ m/s}^2$ ]
    - 80 J
    - 100 J
    - 116 J
    - 180 J
  - An airplane increases its speed from 36 km/h to 360 km/h in 20.0 s. How far does it travel while accelerating?
    - 4.4km
    - 1.1km
    - 2.3 km
    - 1.0km
  - In the simple circuit shown in Fig.1,  $E$  is a 24 V battery. Calculate the current  $I$ .



- 0.1A
  - 2.0A
  - $5/6 \text{ A}$
  - 2.0A
- An object is said to be in simple harmonic motion (SHM) if \_\_\_\_\_
    - the acceleration is directly proportional to the displacement and is directed toward the equilibrium position of the object.
    - the acceleration is inversely proportional

to the displacement and directed toward the equilibrium position of the object.

C. the displacement is directly proportional to the momentum and directed toward the equilibrium position of the object.

D. the momentum is directly proportional to the displacement and directed toward the equilibrium position of the object.

12. A wheel and axle is used to raise a weight of 600N with an effort of 300 N. If the radii of the wheel and axle are 50cm and 10cm respectively, what is the efficiency of the system?

- A. 40%
- B. 50%
- C. 20%
- D. 10%

13. The term "Viscosity" is used to describe

- A. surface tension in fluids
- B. friction in fluids
- C. surface tension in solids
- D. moment in solids

14. A particle is in equilibrium under the action of three forces. One force is 40N towards the west and another is 30N towards the south. What is the third force acting on the body?

- A. 40N, N53°E
- B. 50 N, N37°E
- C. 50N, N53°E
- D. 40 N, N37°E

15. A hydraulic press works on the principle of transmission of \_\_\_\_\_

- A. force
- B. Energy
- C. volume
- D. pressure.

16. A cigarette lighter in a car is a resistor that, when activated, is connected across the 12V battery. If the lighter dissipates 33W of power, find the resistance of the lighter.

- A.  $9.90\Omega$
- B.  $6.60\Omega$
- C.  $4.36\Omega$
- D.  $17.50\Omega$

17. A p-n junction can act as \_\_\_\_\_

- A. an amplifier
- B. a rectifier
- C. an inductor
- D. a capacitor

18. Which of the following is not a thermometer?

- A. Thermocouple
- B. Pyrometer
- C. Hydrometer
- D. Platinum resistance thermometer

19. Dry air of column length 10cm is trapped by a pellet of mercury of length 15 cm, with the open end uppermost. When the capillary tube is inverted the length of the air column increased to 25 cm while that of mercury remained constant.

Calculate the atmospheric pressure (in cm of Hg).

- A. 35cmHg
- B. 15cmHg
- C. 20cmHg
- D. 10cmHg

20. Sound waves were sent out from a source and after being reflected from an obstacle were received by a sensor placed beside the source. If the waves were received 10 seconds after they were sent out, calculate the distance between the source and the obstacle.

[speed of sound = 330m/s]

- A. 990m
- B. 660m
- C. 1320m
- D. 1750m.

21. Which of the following is not true about a chemical cell?

- A. In primary cells the process through which current is generated is irreversible.
- B. Secondary cells can be recharged after they run down by passing a current into the cell in the reverse direction
- C. Positive ions are attracted to the positive electrode where they become neutralized by acquiring electrons.
- D. Primary cells can be recharged.

22. Calcium has a work function of 19 eV with a wavelength of 150 nm. Calculate the maximum energy of a photo electron emitted. [ $1\text{eV} = 1.6 \times 10^{-19}\text{J}$ ,  $h = 6.6 \times 10^{-34}\text{Js}$ ]

- A. 6.35eV
- B. 8.25eV
- C. 14.60eV
- D. 2.30eV

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10. D 11. A 12. A 13. B 14. B 15. D 16. C  
17. B 18. C 19. A 20. – 21. D 22. –

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# 2010 POST-UTME SCREENING EXERCISE

## PHYSICS 2010

1. Which of the following phenomena cannot be explained by the molecular theory of matter?

- A. evaporation
- B. expansion
- C. conduction
- D. radiation

2. The most likely measurement of length of an object using a Vernier calliper is:

- A. 3.0 cm
- B. 3.3cm
- C. 3.33 cm
- D. 3.333cm

3. If 21 g of alcohol of density  $0.7 \text{ gcm}^{-3}$  is mixed with 10 g of water, what would be the density of the resulting mixture?

- A.  $780 \text{ gcm}^{-3}$
- B.  $0.78 \text{ gcm}^{-3}$
- C.  $30 \text{ gcm}^{-3}$
- D.  $10 \text{ gcm}^{-3}$

4. For a particle having an x coordinate that varies in time according to the expression  $x = 4t - 2t^2$ . The instantaneous velocity of the particle at  $t = 2.5\text{s}$  is:

- A. 12 m/s
- B. 6m/s
- C. 0 m/s
- D. 10 m/s

5. A long-jumper leaves the ground at an angle of  $20^\circ$  above the horizontal and at a speed of 11 m/s. How far does it jump in the horizontal direction?

- A. 0.384m
- B. 7.94m
- C. 8.45m
- D. 0m

6. A mass of 0.5 kg is attached to one end of a helical spring and produces an extension of 2.5cm. The mass now set into vertical oscillation of amplitude 10 mm. The period of oscillation is: [ $g = 10 \text{ m/s}^2$ ]

- A. 0.33 s
- B. 100 s
- C. 200 s
- D. 280 s

7. A boat is passing under a bridge. The deck of the boat is 15m below the bridge.

A small package is to be dropped from the bridge onto the deck of the boat when the boat is 25m from just below the drop point. What (boat) speed is necessary to have the package land in the boat? ( $g = 9.8 \text{ m/s}^2$ ).

- A. 17 m/s
- B. 14 m/s
- C. 1.7 m/s
- D. 4.9 m/s

8. A 0.60kg rubber stopper is whirled in a horizontal circle of 0.80m radius at a rate of 3.0 revolutions per second. What is the tension in the string?

- A. 14 N
- B. 80 N
- C. 170 N
- D. 24 N

9. An automobile is traveling at 60km/hr. Calculate the angular velocity of the 0.35m radius wheels.

- A. 16.67 rad/s
- B. 47.6 rad/s
- C. 21 rad/s
- D. 171.4 rad/s

10. An air bubble at the bottom of a lake has a volume of  $20 \text{ cm}^3$ , pressure of 4.9Pa, and temperature  $4^\circ\text{C}$ . The bubble rises to the surface where the temperature is  $20^\circ\text{C}$  and the pressure 1.0 Pa. Find the volume as the bubble reaches the surface. (Take  $1\text{atm} = 1.0 \times 10^5\text{N/m}^2$ ).

- A.  $124 \text{ cm}^3$
- B.  $319 \text{ cm}^3$
- C.  $60 \text{ cm}^3$
- D.  $104 \text{ cm}^3$

11. A gas at constant pressure of  $4.0 \times 10^5 \text{ Pa}$  is cooled so that its volume decreases from  $1.6 \text{ m}^3$  to  $1.2 \text{ m}^3$ . What work is performed by the gas?

- A.  $6.4 \times 10^5\text{J}$
- B.  $3.2 \times 10^5\text{J}$
- C.  $1.6 \times 10^5\text{J}$
- D.  $0.4 \times 10^5\text{J}$

12. Highly polished silvery surfaces are:

- A. Poor absorbers but good emitter of radiation.
- B. Good absorbers and good emitters of radiation.
- C. Poor emitters but good reflectors of radiation

D. Poor emitters and poor reflectors of radiation.

13. A 0.040kg string 0.80m long is stretched and vibrated in a fundamental mode with a frequency of 40 Hz. What is the speed (of propagation) of the wave and the tension in the string?

- A. 64 m/s
- B. 340 m/s
- C. 32 m/s
- D. 128 m/s

14. What is the total power output of a source with intensity  $0.050\text{W/m}^2$  at a distance of 3.0m from the source?

- A. 112W
- B. 5.6W
- C. 15W
- D. 30W

15. The superposition of two or more waves to produce a maximum or zero effect at a point is \_\_\_\_\_ known as:

- A. reflection
- B. refraction
- C. diffraction
- D. interference

16. The acceleration due to gravity \_\_\_\_\_

- A. Increases with increasing altitude.
- B. decreases with increasing altitude
- C. increases with increase in the square of the altitude
- D. is not affected by the altitude.

18 Which of the following statements is not true?

- A. Electric field intensity is force per unit charge.
- B. Electric potential is a vector.
- C. The S.I unit of electric field strength is N/C
- D. electric field intensity is equal to potential gradient.

19. Which of the following about electrolysis is false?

- A. Liquid that conduct electricity and are split up chemically by the current are electrolyzed.
- B. The current is brought into the electrolyte by the anode.
- C. The current is taken away from the electrolyte by the cathode.

D. The container which holds the electrolyte and the electrode is the voltmeter.

20. Which of the following is not true about the properties of x-rays?

- A. They are not deflected by magnetic or electric field.
- B. They ionized a gas, making it a conductor.
- C. They are massive.
- D. they have high penetrating power.

21. A transformer is connected to a 240 V supply. The primary coil has 40 turns, and the secondary is found to be 960 V. What is the ratio of the number of turns of the primary coil to the number of turns of the secondary coil?

- A. 1:4
- B. 4:1
- C. 1:6
- D. 6:122

22. Which of the following is not true about an object that is projected upwards at angle  $\theta$ .

- A. the velocity is maximum at the maximum height
- B. the acceleration along the horizontal direction is zero.
- C. the maximum range ( $R_{\max}$ ) for an object moving with speed  $u$  is given by  $U^2/g$
- D. the time it takes to get the maximum height is equal to the time it takes to comes back to the point of projection.

23. When three coplanar non-parallel are in equilibrium,

- I. they can be represented in magnitude and direction by the three sides of a triangle taken in order.
- II. the lines of action meet at a point.
- III. the magnitude of any one force equals the magnitude of the resultant of the other two forces.
- IV. any one force is the equivalent of the other two.

Which of the following statements above are correct?

- A. I and III only
- B. I and I only
- C. I, II, III, and IV
- D. none of them

24. Which of the following statements is not TRUE about a body performing simple harmonic motion?

- A. the linear speed is the product of the angular speed and the radius or amplitude.
- B. The linear acceleration is the product of the square of the angular speed and the displacement.
- C. Frequency is the number of complete revolutions per second made by a vibrating body
- D. The SI unit of amplitude is Hertz (Hz).

25. If the force of gravity on an object of mass  $m$ , the gravitational field strength,  $g$ , is given by the following equation.

- A.  $g = \sqrt{mF}$
- B.  $g = mF$
- C.  $g = \frac{\sqrt{mF}}{m}$
- D.  $g = \frac{F}{m}$

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- 1. D 2. C 3. B 4. B 5. B 6. A 7. B 8. C 9. B
- 10. D 11. C 12. C 13. A 14. B 15. D 16. B
- 18. B 19. D 20. C 21. A 22. A 23. B 24. D
- 25. D

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