2014

FUNAAB POST UTME QUESTION PACK

CONTAINS OVER 400 QUESTIONS AND ANSWERS!

Brought to you by: www.funaabconnect.com

BROUGHT TO YOU

BY

www.funaabconnect.com

Also available:

- FUNAAB CBT practice software
- JAMB CBT PRACTICE SOFTWARE
- FUNAAB Composite Calculator v.1.0.0

ENGLISH LANGUAGE

In questions 1-30, choose the **best option** to fill in the gap.

1. With his reading glasses, he could see the word……..
   (a) much more clearer (b) Much clearly more (c) much more clearer (d) clear
2. Hardly had the journey started,……..the car engine developed a fault.
   (a) That (b) When (c) Than (d) soon
3. The story she was reading made her ……..
   (a) Laughed (b) To laugh (c) Laugh (d) Laughing
4. I am not going to the stadium with you as i……..that team play before
   (a) Am seeing (b) Have seen (c) Had seen (d) Was seeing
5. The visitor was very uncomfortable because of his ……..nose
   (a) Runny (b) Watery (c) Flowing (d) Running
6. _____you should put in some effort to show that you are interested.
   (a) However you are tired
   (b) However tired you are
   (c) However tired are you
   (d) However is you tired
7. The teacher asked_____will have the courage to try and lift that heavy Log?
   (a) whom (b) which (c) who (d) whomever 8. My brother married a loquacious woman.
   (a) quiet (b) noisy (c) talkative (d) beautiful
9. This engine is……..that one.
   (a) Superior (b) More superior than (c) more superior to (d) superior to
10. I could not attend the meeting, so I asked my sister to stand……..for me
    (a) Up (b) By (c) in (d) on
11. Since we were given all the things we requested, we should …….with what we have
    (a) Make up (b) Make on (c) make do (d) make with
12. Must you always … lies? Why don't you … the truth for once?
    (a) speak (b) say (c) talk (d) tell
13. Don't let him bully you, you must stand up…… him
    (a) for (b) before (c) to (d) against
14. In this letter there…….good news about your elder brother
    (a) is some (b) are (c) to (d) against

15. Here's the book you wante(d) Is there anything…….i can get you?

    (a) more (b) against (c) else (d) other

16. My father …….to smoke a lot, but he gave it up several years ago
    (a) was used (b) has been (c) is used (d) used

17. This classic ……with enjoyment for nearly two hundred years.

    (a) has been read
    (b) will have been read
    (c) shall have been read
    (d) was read

18. The bold railway station has been turned……a very smart restaurant.

    (a) in (b) into (c) on (d) onto

19. Let's try to get home quickly before the rain really……. .

    (a) sets in (b) sets on (c) sets off (d) sets down

20. There are too many people sleeping……on the streets of London and other big British cities.

    (a) rough (b) wild (c) hard (d) fierce

21. Are you able to……CDs on your computer

    (a) toast (b) cook (c) bake (d) burn

22. This area of town is beginning to look very ……..and impoverished.

    (a) broken-down (b) put-down (c) run-down (d) marked –down

23. In study hall I ……. Paul Smith, who is captain of the swim team and one of the best swimmers in the state.

    (a) Sit besides (b) Sat beside (c) Have set beside (d) Sit beside

24. Many 19th-century biographers _____ not on real facts.

    (a) Rely on their imagination
    (b) Relied on their imagination
    (c) Have relied on their imagination

(d) could have relied on their imagination.

25. Knock _____ you enter the head of department's office.

(a) As (b) When (c) Before (d) As/when

26. The patient is suffering from _____

(a) Rheumatism (b) rheumatism (c) Rheumantism (d) rehnmantism

27. When he asked her to marry him, Ada was_____ than she had though possible

(a) happier (b) more happier (c) so happy (d) too happy

28. He's a cockney: he was born and _____ up in London.

(a) bread (b) bred (c) brought (d) brought

29. If Kennedy _____ been killed, he would have been president for four years.

(a) had not (b) has not (c) hasn't (d) hadn't

30. When his wife died, he was _____ with grief.

(a) has been overcome (b) been overcame (c) overcome (d) overcame

In question 62-66, choose the option that has the **same vowel sound** as the one represented by the letter(s) underlined.

31. L<u>u</u>ck.

(a). lack (b). tum (c). Lock (d). Brother

32. G<u>ua</u>rd

(a). Guide (b). Argue (c). Chat (d). Gourd

33. B<u>ee</u>r.

(a). Fair (b). Bear (c). Pier (d). Pear

34. N<u>i</u>ne

(a). Pint (b). Gill (c). Pin (d). Click

35. Bear

(a). Beer (b). Steer (c). Rare (d). Fear

In questions 67-71, select the option that best explains the information conveyed in the sentence.

36. He could not have rewarded them more handsomely.

a) He did not reward them very well
b) He rewarded them well and he was also a good looking man
c) He rewarded them very well
d) He spoke to them in a very generous way

37. My advice to Tolu was 'look before you leap'.

a) Tolu was advised to consider her options before reaching any decisions.
b) Tolu was advised to consider possible consequences before taking action.
c) Tolu was advised to weigh her decisions by looking and leaping.
d) Tolu was advised to leap only after looking.

38. The official had allegedly been taking bribes.

a) Some people accused the official of taking bribes
b) The official had been taking bribes without feeling any guilt.
c) It was proved that the official had been taking bribes
d) The official accused some people of taking bribes

39. Emeka hardly ever holds with my view on good governance.

a) Emeka sometimes opposes my idea of good governance
b) My view of what good governance is conforms with that of emeka
c) Emeka never really supports my opinion of good governance
d) Emeka may never hold a view which conflicts with mine on good governance.

40. There's a door at either end of the building.

a) The building has two ends and two doors
b) The building has two ends but only one door
c) The building has two ends but i do not know which of the two has a door
d) The building has many ends, each with a door

In questions 72-76, choose from the options the word that has the same consonant sounds as the underlined letter(s) in each word.

41. Though

    (A) Theater (b). Taught (c). Weather (d). Fate

42. Caliph

    (A) Presently (b). Perhaps (c). Powerful (d). opponent

43. Sure

    (A) Cheer (b). Cheap (c). Charlatan (d). church

44. Past

    (A) Wrestle (b). Preached (c). Castle (d). Pasture

45. Thank

    (A) Though (b). Thought (c). Thames (d). Thomas

In the questions 77-81, choose the most appropriate option **opposite in meaning** to the word(s) or phrases bolded.

46. The chairman's verdict ***redressed*** the injustice mete out by the secretary.

    (A) Corrected (b) restored (c) aggravated (d) addressed

47. Uche could not travel last December because of the ***severity*** of the harmattan.

    (A) Cold (b) mildness (c) warmth (d) moderation

48. Mrs. Koffi is very ***provocative*** in her style of dressing.

    (A) Modest (b) happy (c)angry (d) beautiful

49. Travelling in the night can be ***an ordeal.***

    (A) A great experience (b) a great fear (c) a great endurance (d) a great pleasure

50. Akoso though that her father was ***callous***

    (A) Indifference (b) compassionate (c) wicked (c) careless

In the questions 82-86, choose the option **nearest in meaning** to the words or phrase in italics.

51. Ugo has often been described as ***belligerent.***

    (A) Attractive (b) patient (c) innocent (d) combative

52. While the thugs exchange blows, we looked ***complacently***

    (A) Dejectedly (b) sorrowful (c) questioningly (d) contentedly

53. Tade became ***timorous*** when she was asked to give the valedictory speech

    (A) Excited (b) nervous (c) aggressive (d) happy

54. The players kept on ***gamely*** to the end of the match

    (A) Amateurishly (b) skillful (c) courageously (d) stubbornly

55. Art lies in cherishing the initiative and ***creative power*** of each person.
    (A) Potential (b) strength (c) gift (d) min(d)

In questions 87-91, choose the appropriate **stress pattern** from the option. The syllables are written capitals.

56. Jurisprudence

    (A) JUrisprudence (b) juRISprudence (c) jurisPRUdence (d) jurispruDENCE

57. Suburbanite

    (A) SUburbanite (b) suBURbanite (c) suburBAnite (c) suburbaNITE

58. Departmentalize

    (A) departMENtalize (b) dePARTmentalize (c) Departmentalize (d) departmenTAlize

59. Organise

    (A) ORGAnise (b) orGAnise (c) orgaNISE (d) orGANISE

60. International

    (A) INternational (b) international (c) international (d) international

61. Choose the option that best conveys the meaning of the underlined portion in the following sentence

Being an optimist, our professor always sees the bright side of most things.

(a) charming (b) illumined (c) brilliant (d) pleasing

62. Choose the option that best conveys the meaning of the underlined portion in the following sentence

The state government appointed a commission of inquiry to go into the community's complaints carefully and without prejudice.

(a) investigate (b) search (c) look for (d) account for

63. Choose the option that best conveys the meaning of the underlined portion in the following sentence

The traffic situation in Lagos can lead to disastrous consequences; a man lost a very lucrative job because he was held up by it.

(a) confused (b) delayed (c) annoyed (d) intrigued

64. Choose the option that best conveys the meaning of the underlined portion in the following sentence

The two sprinters were running neck and neck.

(a) exactly level (b) very slowly (c) very fast (d) together

65. Choose the option that best conveys the meaning of the underlined portion in the following sentence

He stared at her.

(a) glanced (b) peeped (c) looked (d) gazed

67. Choose the option that best conveys the meaning of the underlined portion in the following sentence

When the man was caught by the police, he presented a bold front.

(a) he attacked the policeman

(b) he walked up to the policeman

(c) he faced the situation with apparent boldness

(d) he bravely attempted to give them a present

68. Choose the option that best conveys the meaning of the underlined portion in the following sentence

I have been able to observe him at close quarters.

(a) in government house nearby

(b) within a short space of time

(c) in a small family house (d) at close range

69. Complete the following sentence by choosing the option that **most suitably** fills the space.

When the beggar was tired he …. down by the roadside.

(a) lied (b) laid (c) layed (d) lay

70. Complete the following sentence by choosing the option that **most suitably** fills the space.

He did not like … leaving the class early.
(a) we (b) us (c) our (d) ourselves

71. Complete the following sentence by choosing the option that **most suitably** fills the space.

The boy was born before his parents actually got married and so the court has cleared him … . (a) illegal (b) illegitimate (c) illicit (d) unlawful

72. Complete the following sentence by choosing the option that **most suitably** fills the space.

As he was still owing me two Naira, I was careful not to … him any more money.

(a) lend (b) loan (c) borrow (d) credit

73. Complete the following sentence by choosing the option that **most suitably** fills the space.

If you travel by air. You will give an allowance to cover … .

(a) a luggage (b) luggage (c) luggages (d) a baggage

74. Complete the following sentence by choosing the option that **most suitably** fills the space.

Bola and Sade lived about the same time and therefore … poets.

(a) contrary (b) contractual (c) contemporaneous (d) contemporary

75. Complete the following sentence by choosing the option that **most suitably** fills the space.

Remember, this matter is strictly … .

(a) between you and I (b) among you and me (c) between you and me

76. Complete the following sentence by choosing the option that **most suitably** fills the space.

They … receive visitors on short notice.

(a) use to (b) are used to (c) are always (d) are use to

77. Complete the following sentence by choosing the option that **most suitably** fills the space.

His suggestions are completely … the point and cannot be accepted.

(a) to (b) about (c) beside (d) on

78. Complete the following sentence by choosing the option that **most suitably** fills the space.

He went up quickly and returned … .

(a) fastest (b) fastly (c) as fastly (d) as fast

79. Complete the following sentence by choosing the option that **most suitably** fills the space. Invariably, he ends his letters with … amicably. (a) you (b) your's (c) yours' (d) your own

80. Complete the following sentence by choosing the option that **most suitably** fills the space.

Our plane was scheduled to … at 10:00 hrs but it was delayed because of the bad weather.

(a) fly out (b) take off (c) start out (d) shoot off

81. Complete the following sentence by choosing the option that **most suitably** fills the space.

If I went to the cinemas I… early.

(a) shall return (b) am returning (c) would return (d) may return

82. Complete the following sentence by choosing the option that **most suitably** fills the space.

Before we left the train station, each passenger was made to … certain form.

(a) fill in (b) write in (c) enter in (d) go through

83. Complete the following sentence by choosing the option that **most suitably** fills the space.

The managing director did not pay his staff last month, …?

(a) didn't he (b) had he not (c) is not it (d) did he

84. Complete the following sentence by choosing the option that **most suitably** fills the space.

Granted you are my senior by one year, you cannot … around as if I were your servant.

(a) control (b) dribble (c) order (d) ask

85. Complete the following sentence by choosing the option that **most suitably** fills the space.

The train rattled along … full spee(d)

(a) in (b) at (c) with (d) on

86. Complete the following sentence by choosing the option that **most suitably** fills the space.

If this had happened to you, what …?

(a) would you do (b) have you done (c) would you have done (d) will you do

87. Complete the following sentence by choosing the option that **most suitably** fills the space.

There were so many children … .

(a) that she couldn't feed them all

(b) that she could feed

(c) that she couldn't feed

(d) that she could feed them all

88. Complete the following sentence by choosing the option that **most suitably** fills the space.

In West Africa, the … of sickle cell is about 25 percent.

(a) incident (b) incidence (c) accident (d)accidence

89. Complete the following sentence by choosing the option that **most suitably** fills the space.

We got to the hall after the play … .

(a) is started (b) was starting (c) had started (d) has started

90. Choose the option nearest in meaning to the sentence below.

For all he cared, his parent might have been dead for years.

(a) although concern about his parent, he had been unable to find out if they were alive

(b) he cared for no one except his parents, and it was possible that they had died long before

(c) he did not care whether his parents were alive or had died long before

(d) he was concerned about everyone not just his parents who might have died long before

91. Choose the option nearest in meaning to the sentence below.

Had she asked me earlier, I might have been able to employ him.

(a) I employed her

(b) I did not employ him

(c) I employed him

(d) I did not employ her

92. Choose the option nearest in meaning to the sentence below.

As he was a gullible leader, his followers took advantage of him.

(a) He was weak and unable to enforce his authority
(b) He was simple-minded to a fault.

(c) He was partial and unfair in dispensing justice.

(d) He was slow to act

93. Choose the option nearest in meaning to the underlined word(s).

I didn't think she could be so easily <u>taken in</u> by his pretenses.

(a) flattered (b) deceived (c) overcomed (d) blackmailed 94. Choose the option nearest in meaning to the underlined word(s).

The story told by the suspect was <u>difficult to believe</u>.

(a) incredulous (b) credible (c) credulous (d) ridiculous 95. Choose the option nearest in meaning to the underlined word(s).

Most of his observations were <u>wide off the mark</u>.

(a) comprehensive (b) irrelevant (c) pertinent (d) came rather late

96. Choose the option nearest in meaning to the underlined word(s).

He heard a <u>loud noise</u> of the huge air-raid siren.

(a) buzz (b) crack (c) rumble (d) whistle

97. Choose the option nearest in meaning to the underlined word(s).

One of the stages of the creative process is the <u>incubation perio(d)</u> This refers to the period when

(a) the idea is firmly fixed through repetition

(b) the person suddenly comes upon the idea

(c) the person thinks over the idea

(d) the person thinks over the idea

98. Choose the correct option that completes the following sentence.

The young teacher was surprised that his promotion was approved by the old inspector who is generally known to … .

(a) be generous (b) be friendly to young people (c) be hard to please (d) be very careful

99. Complete the following with the appropriate answer to the question.
John, would you mind lifting this box?

(a) yes, I mind (b) no, I don't (c) no, I do (d) yes, I don't mind 100. Choose the

expression or word which best complete the sentence.

It was a long poem but he learnt it … .

(a) off head (b) in memory (c) by heart (d) at heart

101. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

Only the <u>small fry</u> get punished for such social misdemeanours

(a) small boys (b) unimportant people (c) frightened people (d) frivolous people

102. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

He spoke with <u>his heart in his mouth.</u>

(a) courageously

(b) with such unusual cowardice

(c) with a lot of confusion in his speech

(d) with fright and agitation

103. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

His jail terms were run concurrently.

(a) simultenously (b) uniformly (c) laboriously (d) judiciously

104. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

The bill has to wait as we are now insolvent.

(a) overworked (b) bankrupt (c) unsettled (d) affluent

105. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

All his plans fell through.
(a) failed (b) were accomplished (c) had to be reviewed (d) were rejected

106. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

The result of his experiment represents a breakthrough in medical science.

(a) an outstanding success

(b) catastrophe

(c) breaking point

(d) colossal failure

107. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

He was appointed specifically to put the recruits through.

(a) assign them to work

(b) train them

(c) discipline them

(d) assist them at work

108. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

Mrs Dada has been deserted by her husband because he feels she has a heart of stone.

(a) she has a heavy heart

(b) she has little warmth of feeling

(c) she has a hard heart

(d) she is hard-hearted

109. If my Father had not arrived, I would not have starved. This sentence means

(a) my father did arrive and I didn't starve (b) I had to starve

because my father didn't come

(c) my father didn't arrive and I didn't starve
(d) I had starved before my father arrived

110. Choose the option that **most suitably** fills the gap in the sentence below.

Before the operation, the dentist found that his patient's teeth … .

(a) have long decayed

(b) have long been decayed

(c) have long being decayed

(d) had long decayed

111. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

The employer, not the salesman and his representative … responsible for the loss.

(a) are (b) are being (c) are never (d) is

112. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

In order to carry out necessary examination, the dead body was .. .

(a) extracted (b) extradited (c) exiled (d) exhumed

113. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

He went abroad with a view … a business partner.

(a) to find (b) to be finding (c) to have found (d) to finding

114. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

He had just entered the office … the telephone rang.

(a) as (b) before (c) since (d) when

115. Choose the option that best conveys the meaning of the underlined portion of the below sentence.

My father cannot bear the … of the concoction that emanates from my mother's soup pot.

(a) scent (b) aroma (c) smell (d) savour

116. Choose the word or phrase **nearest in meaning** to the word(s) underlined.

In some parts of our society, people are <u>ostracized</u> purely on the basis of their parentage.

(a) hated (b) disrespected (c) shut off from others (d) abandoned

117. Choose the word or phrase **nearest in meaning** to the word(s) underlined.

Sitting majestically on his throne is the Oba of Benin <u>flanked</u> by his wives.

(a) surrounded (b) supported (c) guarded (d) protected

118. Choose the appropriate option to fill the gap in the sentence below.

As a result of the injury sustained on the football field, Sola was … with a broken leg for months.

(a) laid off (b) laid out (c) laid on (d) laid up

119. Choose the word or phrase **nearest in meaning** to the word(s) underlined.

I listened with rapt attention as he never suspected that I knew he was telling me <u>a cock and bull</u> <u>story</u>.

(a) a story about a cock

(b) a story about a bull (c) an incredible story

(d) an interesting story

120. Choose the word or phrase **nearest in meaning** to the word(s) underlined.

When a man is <u>immune</u> to an illness, he is

(a) opposed to it (b) attached to it (c) hated by it (d) protected against it 121. Complete the sentence with the **correct option**.

Shall we go to the union meeting? No thank you, I do not feel like … anywhere.

(a) go (b) going (c) to go (d)to have gone 122. Complete the sentence with the **correct option**.

I started writing this test at 8:00am. It is 10:00am now. By 11:00am, I … it for three hours.

(a) shall be writing (b) have been writing (c) shall have been writing (d) was writing 123. Complete the sentence with the **correct option**.

Don't study on the examination day. What did he tell you? He told me … on the examination day.

(a) no studying (b) don't study (c) not study (d) not to study 124. Choose the **best option** to fill the gaps in the following sentence.

I am a student and … Musa. I left for the university, and … Musa.

(a) was, does (b) so is, so did (c) so was, so does (d) he is, he did 125. Choose the **best option** to fill the gaps in the following sentence.

You have been absent from classes for four months. How can you … for the lost time? (a) make in

(b) make up (c) make off (d) make out

ANSWERS: USE OF ENGLISH

1. C
2. B
3. B
4. B
5. A
6. B
7. C
8. C
9. D
10. C
11. C
12. B
13. C
14. B
15. C
16. D
17. A
18. B
19. A
20. B
21. D
22. A
23. B
24. B
25. C
26. B
27. A
28. B
29. A
30. D
31. D
32. B
33. C
34. A
35. C
36. C
37. B
38. A
39. C
40. C
41. C
42. C
43. C
44. D
45. B
46. A
47. B
48. A
49. A
50. B
51. D
52. D
53. B
54. C
55. A
56. B
57. A
58. B
59. A
60. B
61. D
62. A
63. B
64. A
65. D
66. C
67. C
68. D
69. D
70. C
71. B
72. A
73. B
74. D
75. C
76. C
77. A
78. D
79. D
80. B
81. C
82. D
83. D
84. C
85. A
86. C
87. A
88. B
89. C
90. C
91. B
92. C
93. B
94. C
95. B
96. D
97. C
98. D
99. B
100. C
101. B
102. D
103. A
104. B
105. A
106. A
107. B
108. D
109. A
110. D
111. D
112. D
113. D
114. D
115. C
116. C
117. A
118. A
119. C
120. D
121. B
122. C
123. D
124. B
125. B

MATHEMATICS

1. Solve for p in this following equation given in base two.
11(p+110) = 1001p
(a) 10 (b) 11 (c) 110 (d) 111.

2. In a class, 37 students take at least one of chemistry, economics and government, 8 students take chemistry, 19 take economics and 25 take government. 12 students take economics and government but nobody takes chemistry and economics. How many students take both chemistry and government?
(a) 3 (b) 4 (c) 5 (d) 6.

3. A businessman invested a total of N200,000 in two companies which paid dividends of 5% and 7% respectively. If he received a total of N11,600 as dividends, how much did he invest at 5%?
(a) N160,000 (b) N140,000 (c) N120,000 (d) N80,000.

4. A cyclist rode for 30minutes at *x*km/hr. If the total distance covered is less than 60km, what is the range of values of *x*?
(a) x<14 (b) x<20 (c) x<29 (d) x<28

5. Z is a partly constant and partly varies inversely as the square of d. when d = 1, z = 11 and when d= 2, z= 11. Find the value of z when d = 4.
(a) 2 (b) 3.5 (c) 5 (d) 5.5

6. Factorize $16(3x+2y)^2 - 25(a+2b)^2$
(a) (12x+8y+5a+10b) (12x+8y-5a-10b)
(b) (12x+8y-5a-10b) (12x+8y-5a-10b)
(c) 20(3x+2y-a-2b) (3x+2y+a+2b)
(d) 20(3x+2y+a+2b) (3x+2y+a+2b)

7. A cone has a base radius 4cm and height 3cm. The area of its curved surface is
(a) 12лcm^2 (b) 24 лcm^2 (c) 20 лcm^2 (d) 15 лcm^2

8. Let log *y* + log3 = 3. Then, y is
(a) $(—^{10})$ (b) $(\frac{x}{10})^3$ (c) $(\frac{x}{10})^3$ (d) $(\frac{10}{x})^{-3}$

9. ^{x} Expand the expression $(x^2-2x-3)(x^2+x+1)$
(a) $x^4 - 4x^2 - 5x - 3$
(b) $-x^3 - 4x^2 - 5x - 3$
(c) $x^4 - x^3 - 4x^2 - 5x - 3$ (d) $x^4 - 4x^2 - 5x - 3$.

10. A girl walks 30m from a point P on a bearing of 040^0 to a point Q. She then walks 30m on a bearing of 140^0 to a point R. the bearing of B from P is (a) 90^0 (b) 50^0 (c) 45^0 (d) 40^0

11. A regular polygon has each of it angles as 160^0. What is the number of sides of the polygon?
(a) 36 (b)9 (c)18 (d)20.

12. The interior angles of a pentagon are: 180^0, 118^0, 80^0, 78^0 and x. The value of x is:
(a) 75^0 (b) 108^0 (c) 120^0 (d) 134^0

13. All the vertices of an isosceles triangle lie on a circle and each of the base angles of the triangle is 65^0. The angle subtended at the centre of the circle by the base of the triangle is:
(a) 130^0 (b) 115^0 (c) 100^0 (d) 65^0

14. A square tile measures 20cm by 20cm. How many of such files will cover a floor measuring 5m by 4m.
(a) 500 (b) 400 (c) 320 (d) 250

15. The volume of a certain sphere is numerically equal to twice its surface area. The diameter of the sphere is:

(a) 6 (b) 9 (c) 12 (d) $\sqrt{6}$ **16.** A bearing of 310^0, expressed as a compass bearing is:

(a) $N50^0W$ (b) $N40^0W$ (c) $S40^0W$ (d) $S50^0W$

17. The average of the three children in a family is 9 years. If the average age of their parents is 39 years, the average age of the whole family is:

(a) 20 years (b) 21 years (c)24 years (d) 27 years.

18. Simplify $1 + \frac{2}{3} - 3 \div (1 + \frac{2}{3}\ of\ \frac{6}{7})$

(a) $-\frac{8}{33}$ (b) $\frac{21}{11}$ (c) $\frac{33}{21}$ (d) $-\frac{21}{8}$

19. Evaluate x in base 3 if $41_x - 22_x = 17_x$

(a) 11 (b) 8 (c) 12 (d) 22 **20.** A woman buys 4 bags of rice for ₦56 per bag and 3 bags of beans for ₦26 per bag using the currency "NAIRA" (₦) in base 7. What is the total cost of the items in another currency "ANTI" (₳) in base 8?

(a) M224 (b) M114 (c) M340 (d) M440

21. When the price of egg was raised by ₦2 an egg, the number of eggs which can be bought for ₦120 is reduced by ₦5. The present price of an egg is

(a) ₦6 (b) ₦7 (c) ₦8 (d) ₦10

22. How long will it take a sum of money invested at 8% simple interest to double the original sum?

(a) 8 years (b) 10.5 years (c) 12 years (d) 12.5 years.

23. The journey from Lagos to Ibadan usually takes a motorist 1 hour 30 minutes. By increasing his average speed by 20km/hr, the motorist saves 15 minutes. His usual speed, in km/hr is

(a) 100 (b) 90 (c) 85 (d) 80.

24. The smallest section of a rod which can be cut into exactly equal sections, each of either 30cm 0r 36cm in length is

(a) 90cm (b) 180cm (c) 360cm (d) 540cm

25. If x = 0.0012 + 0.00074 + 0.003174, what is the difference between x and 2 decimal places and x to 1 significant figure?

(a) 0.01 (b) 0.0051 (c) 0.1 (d) 0.005

26. The angle of depression of two point A and B on a plane field from the top of a mast erected between A and B are 30^0 and 45^0 respectively. If A is westward of B, find $|AB|$ if the height of the mast is 15m from the field.

(a) $15\sqrt{3}$ m (b) 5(3+√3_)m (c) $15(1+\sqrt{3}\_)m$ (d) $15(\sqrt{3}_ - 1)$m

27. The radius of a circle is given as 10cm subject to an error of 0.2cm. the error in the are of the circle is

(a) $\frac{1}{4}\%$ (b) $\frac{1}{50}\%$ (c) 2% (d) 4%

28. In a survey of 100 students in an institution, 80 students speak Yoruba, 22 speak Igbo, while 6 speak neither Igbo nor Yoruba. How many students speak Yoruba and Igbo.

(a) 96 (b) 8 (c) 64 (d) 12

29. A bag contains 5 yellow balls, 6 green and 9 black balls. A ball is drawn from the bag. What is the probability that it is a black or yellow ball?

(a) $\frac{37}{160}$ (b) $\frac{133}{400}$ (c) $\frac{77}{800}$ (d) $\frac{133}{800}$

30. The expression $a^3 + b^3$ is equal to

(a) $(a^2 + b)(a – ab – b^2)$

(b) $(a + b)(a^2 – ab + b^2)$

(c) $(a – b^2)(a^2 – ab + b)$

(d)$(a – b)(a^2 + ab + b^2)$

31. A cylinder has height 4cm and base radius 5cm. its volume to 3 significant figure is

(a) 314.2cm^2 (b) 31.42cm^2 (c) 251.4cm^2 (d) 251cm^2

32. Find the value of P if the line joining (P, 4) and (6, -2) is perpendicular to the line joining (2, P) and (-1, 3).

(a) 4 (b) 6 (c) 3 (d) zero

33. Dividing $2x – x – 5x + 1$ by $x + 3$ gives the remainder.

(a) -3 (b) 47 (c) 61 (d) -47

34. Let $f(x) = 2x – 3x – 5x + 6$. If $x – 1$ divides $f(x)$ find the zeros of the function.

(a) 1, 2, $\frac{3}{2}$ (b) 1,2, $-\frac{3}{2}$ (c) -1, 2, 3 (d) 1, -2, $-\frac{3}{2}$

35. The difference of two numbers is 10, while their product is 39. Find these numbers

(a) -3 and 10 or 13 and 10

(b) 3 and -10 or 3 and 13

(c) 3 and -3 or 3 and 13

(d) -3 and -13 or 13 and 3.

36. The average age of x pupils in a class is 14 years 2 months. A pupil of 15 years 2 months joins the class and the average age is increased by one month. Find x.

(a) 12 (b) 6 (c) 11 (d) 14.

37. If the distance covered by a body in time t seconds is $s = t^3 – 6t^2 – 5t$, what is its initial velocity?

(a) 0ms^{-1} (b) -4ms^{-1} (c) (3t – 12t – 5)ms^{-1} (c) 5ms^{-1}

38. In a throw of a fair die the probability of obtaining an even number is

(a) 1 (b) $\frac{2}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$

39. Two fair coins are tossed simultaneously. What is the probability of obtaining *at least 1 tail turns up?*

(a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{1}{2}$ (d) 1

40. One angle of a polygon has each of its angles as 160^0. What is the number of sides of the polygon?

(a) 18 (b) 36 (c) 9 (d) 20

41. One angle of an octagon is 100^0 while the other sides are equal. Find each of these exterior angles.

(a) 80 (b) 60 (c) 140 (d) 40

42. In a right-angled triangle, $\tan \Theta = \frac{3}{4}$, what is the value of $\sin\Theta + \cos\Theta$?

(a) $\frac{7}{3}$ (c) $\frac{7}{4}$ (d) $\frac{5}{7}$

43. If $\sin \Theta = \frac{1}{\sqrt{3}}$, then $\sqrt{1 + \frac{x^2}{a^2}}$ is

(a) sec Θ (b) tan Θ (c) sin Θ (d) a cos Θ

44. The coordinates of the point dividing the line AB (-1, 2) and B(3, 4) extremely in the ratio 3:2 is

(a) (11, 8) (b) (8, 5) (c) (5, 11) (d) (5, 9)

45. The point P (p, 5) lies on the line joining A (1, 2) and B (-4, 7). The ratio AP: AB is

(a) 2:3 (b) 3:2 (c) 4:5 (d) 3:4

46. The ends of a diameter of a circle are (-2, 3) and (4, 7). The equation of the circle is

(a) $x^2 + y^2 – 2x -10y + 15 = 0$

(b) $x^2 + y^2 + 2x – 10y – 13 = 0$

(c) $x^2 + y^2 – 2x – 10y + 15 = 0$ (d) $x^2 + y^2 – 2x -10y -15 = 0$.

47. The centre and radius of the circle with the equation $x^2 + y^2 – 2x + 6y + 5 = 0$ are respectively

(a) (1, 3) and 5 (b) (3, 1) and $\sqrt{5}$ (c) (1, -3) and $\sqrt{5}$ (d) (3, -1) and 5.

48. Evaluate $\frac{log_5(0.04)}{log_3 18 - log_3 2}$

(a) $\frac{2}{3}$ (b) -1 (c) 1 (d) $-\frac{2}{3}$

49. Simplify $\frac{1-x^2}{x-x^2}$

(a) $\frac{1-x}{x}$ (b) $\frac{1+x}{x}$ (c) $\frac{1}{x}$ (d) $\frac{-x-1}{x}$

50. When the expression $pm^2 + qm + 1$ is divided by (m – 1), it has a remainder of and when divided by (m + 1) the remainder is 4. Find *p* and *q* respectively.

(a) 2, 1 (b) 2, -1 (c)-1, 2 (d) 1, 2.

51. If α and β are the roots of the equation $x^2 – 5x – 7 = 0$. $\alpha^2\beta + \alpha\beta^2$ is

(a) 35 (b) -35 (c) 42 (d) -42.

52. If α and β are the roots of the equation $2x^2 + 7x + 3 = 0$. Obtain the equation whose roots are $\frac{1}{\alpha^2}$ and $\frac{1}{\beta^2}$

(a) $9x^2 – 37x + 4 = 0$

(b) $4x^2 + 49x + 9 = 0$

(c) $2x^2 – 7x + 3$

(d) $3x^2 – 37x – 2 = 0$

53. If one root of the equation $27x^2 + bx + 8 = 0$ is the square of the other. Find b

(a) 20 (b) 25 (c) -30 (c) -25

54. For what values of *m* does the equation $x^2 + 9 = (4m + 1)x$ have equal roots?

(a) -2, 10 (b) -2, 10 (c) 2, -10 (d) 2, 10.

55. If $\log_{10}2 = y$, express $\log_{10}12.5$ in terms of y.

(a) 2 – 3y (b) 2(1 – y) (c) 2(1 + y) (d) 2 + 3y.

56. Simplify $\frac{x^2-1}{x^3+2x^2+x-2}$

(a) $\frac{1}{x-2}$ (b) $\frac{1}{x+2}$ (c) $\frac{x-1}{x+2}$ (d) $\frac{1}{x-1}$

57. Find the roots of $x^3 – 2x^2 – 5x + 6 = 0$.

(a) 1, 3, -2 (b) 1, 2, -3 (c) -1, -2, 3 (d) -1, 2, 3

58. Find the remainder when $3x^3 + 5x^2 – 11x + 4$ is divided by x + 3

(a) 4 (b) 1 (c) -1 (d) -4

59. What factor is common to all the expressions $x^2 – x$, $2x^2 – 1$ and $x^2 – 1$?

(a) x (b) x -1 (c) x + 1 (d) no common factor.

60. In class of 40 students, 32 offers Mathematics, 24 offer Physics and offer neither Mathematics nor Physics. How many offer both Mathematics and Physics?

(a) 4 (b) 16 (c) 20 (d) 8

61. The probability of a student passing any exam is 2/3. If the student takes three exams, what is the probability that he will not pass any of them?

(a) 2/3 (b) 4/9 (c) 8/27 (d) 1/27

62. Find the mean of the data: 7, -3, 4, -2, 5, -9, 4, 8, -6, 12.

(a) 3 (b) 4 (c) 1 (d) 2

63. Find the value of *a* if the line 2y – ax + 4 = 0 is perpendicular to the line y + (x/4)-7=0

(a) -4 (b) 4 (c) 8 (d) -8

64. A hunter 1.6m tall, views a bird on top of a tree at an angle of 45 degrees. If the distance between the hunter and the tree is 10.4m, find the height of the tree.

(a) 9.0m (b) 12.0m (c) 8.8m (d) 10.4m

65. The sum of the interior angles of a polygon is 20 right angles. How many sides does the polygon have?

(a) 12 (b) 20 (c) 40 (d) 10

66. A bucket is 12cm in diameter at the top, 8cm in diameter at the bottom and 4cm deep. Calculate its volume.

(a) $304\pi/3$ cm^3 (b) $144\ \pi/3$ cm^3 (c) $128\ \pi/3$ cm^3 (d) $72\ \pi/3$ cm^3

67. If $\tan\theta = 4/3$, calculate $\sin^2\theta - \cos^2\theta$

(a) 16/25 (b) 24/25 (c) 7/25 (d) 9/25

68. If x varies directly as $\sqrt{n}$ and x = 9 when n = 9, find x when n = (17/9).

(d) $\sqrt{17}$

69. The binary operation * is defined on the set of integers p and q by p * q = pq + p + q.

Find 2 * (3 * 4).

(a) 59 (b) 19 (c) 67 (d) 38

70. The inverse function f(x) = 3x + 4 is

(a) (x-4)/3 (b) (x-5)/5 (c) (x+3)/4 (d) (x+4)/3

71. If the 9^{th} term of an A.P. is five times the 5^{th} term, find the relationship between a and d.

(a) 2a + 2 = 0 (b) 3a + 5d = 0 (c) a + 3d = 0 (d) a + 2d = 0.

72. Evaluate $\int \sin 3x\, dx$

(a) (2/3) cos 3x + c (b) (1/3) cos 3x + c (c) (-1/3) cos 3x + c (d) (-2/3) cos 3x + c

75. Find the derivative of $y = \sin^2(5x)$ with respect to x.

(a) 10 sin 5x cos 5x (b) 5 sin 5x cos 5x (c) 2 sin 5x cos 5x (d) 15 sin 5x cos 5x

76. A circle with radius 5cm has its radius increasing at the rate of 0.2 m/s. What will be the corresponding increase in the area?

(a) 2π (b) 5π (c) π (d) 4 π

77. The slope of the tangent to the curve $y = 3x^2 – 2x + 5$ at the point (1, 6) is

(a) 4 (b) 1 (c) 6 (d) 5

78. If dy/dx = 2x – 3 and y = 3 when x = 0, find y in terms of x.

(a) $2x^2 – 3x$ (b) $x^2 – 3x$ (c) $x^2 – 3x – 3$ (d) $x^2 – 3x + 3$

79. Evaluate: (0.21 x 0.072 x 0.00054) ÷ (0.006 x 1.68 x 0.063), correct to 4 s.f.

(a) 0.01286 (b) 0.01285 (c) 0.1286 (d) 0.1285

80. If log 10 to base 8 = X, evaluate log 5 to base 8 in terms of X.

(a) (1/2) X (b) X – (1/4) (c) X – (1/3) (d) X – (1/2)

81. If $\{(a^2b^{-3}c)^{(3/4)})/a^{-1}b^{-4}c^5\} = a^pb^qc^r$. What is the value of p + 2q?

(a) (5/2) (b) –(5/4) (c) –(25/4) (d) -10

82. A trader bought 100 oranges at 5 for N1.20, 20 oranges got spoilt and the remaining were sold at for N1.50. Find the percentage gain or loss.

(a) 30% gain (b) 25% gain (c) 30% loss (d) 25% loss

83. If $2_9 \times (3Y)_9 = 3_5 \times (3Y)_5$, find the value of Y.

(a) 4 (b) 3 (c) 2 (d) 1

84. If m*n = (m/n –n/m) for m, n belongs to R, evaluate -3*4.

(a) -25/12 (b) -7/12 (c) 7/12 (d) 25/12

85. Factorize completely $X^2 + 2XY + Y^2 + 3X + 3Y – 18$

(a) (x+y+6) (x+y+3) (b) (x-y-6) (x+y+3) (c) (x-y+6) (x-y-3) (d) (x+y-6) (x+y+3)

86. Tope bought X mangoes at N5.00 each and some apples at N4.00 each. If she bought twice as many apples as mangoes and spent at least N65.00 and at most N130.00, find the range of values of X.

(a) $4 \leq X \leq 5$ (b) $5 \leq X \leq 8$ (c) $5 \leq X \leq 10$ (d) $8 \leq X \leq 10$

87. Express $1/(x^3 - 1)$ in partial fraction.

(a) $1/3 \{(1/x-1) - (x - 2/x^2 - x + 1)\}$

(b) $1/3 \{(1/x - 1) - (x + 2/x^2 + x + 1)\}$

(c) $1/3 \{(1/x - 1) - (x - 2/x^2 + x + 1)\}$

(d) $1/3 \{(1/x - 1) - (x - 2/x^2 - x - 1)\}$

88. Divide $4x^3 - 3x - 1$ by $2x - 1$.

(a) $2x^2 - x + 1$ (b) $2x^2 - x - 1$ (c) $2x^2 + x + 1$ (d) $2x^2 + x - 1$#

89. In ΔMNO, MN = 6 units, MO = 4 units and NO = 12 units. If the bisector of N and M meets NO at P, calculate NP.

(a) 4.8 units (b) 7.2 units (c) 8.0 units (d) 18.0 units

90. From a point P, the bearings of two points Q and R are 67^0W and N23^0E respectively. If the bearing of R from Q is N68^0E and PQ = 150m, calculate PR.

(a) 120m (b) 140m (c) 150m (d) 160m

91. A two-digit number, say AB was mistakenly written as BA by an overworked student. Due to this error, the student was working with a number bigger in value, and its difference with the actual number is one less than the actual number. If the sum of the two digits is half a score. What is the actual number?

(a) 43 (b) 34 (c) 73 (d) 37

92. Evaluate $\int_0^z (sin\ x - \cos x)\, dx$. Where letter z = π/4.

(a) $\sqrt{2} + 1$ (b) $\sqrt{2} - 1$ (c) $-\sqrt{2} - 1$ (d) $1 - \sqrt{2}$

93. Let P = {1, 2, u, v, w, x}; Q = {2, 3, u, v, w, 5, 6, y} and R = {2, 3, 4, v, x, y}.

Determine (P - Q) n R.

(a) {1, x} (b) {x, y} (c) {x} (d) 0.

93. If $(2\sqrt{3} - \sqrt{2})/(\sqrt{3} + 2\sqrt{2}) = m + n\sqrt{6}$, find the values of m and n respectively.

(a) 1, -2 (b) -2, 1 (c) -2/5 (d) 2, 3/5

94. A man wishes to keep his money in a savings deposit at 25% compound interest so that after three years he can buy a car for N150,000. How much does he need to deposit?

(a) N112,000.50 (b) N96,000.00 (c) N85,714.28 (d) N76,800.00

95. If $314_{10} - 256_7 = 340_x$, find x.

(a) 7 (b) 8 (c) 9 (d) 10

96. The third term of an A.P. is 4x – 2y and the 9^{th} term is 10x – 8y. Find the common difference.

(a) 19x – 17y (b) 8x – 4y (c) x – y (d) 2x

97. A trader realizes $10x - x^2$ naira profit from the sale of x bags of corn. How many bags will give him the desired profit?

(a) 4 (b) 5 (c) 6 (d) 7

98. Solve the inequality $2 - x > x^2$

(a) $x < -2$ or $x > 1$ (b) $x > 2$ or $x < -1$ (c) $-1 < x < 2$ (d) $-2 > x < 1$

99. If α and β are the roots of the equation $3x^2 + 5x - 2 = 0$, find the value of $1/\alpha + 1/\beta$.

(a) -5/3 (b) -2/3 (c) ½ (d) 5/2

100. An equilateral triangle of side $\sqrt{3}$ cm is inscribed in a circle. Find the radius of the circle.

(a) 2/3 cm (b) 2 cm (c) 1 cm (d) 3 cm

101. If $y = 2x - \sin 2x$, find dy/dx when $x = \pi/4$.

(a) π (b) $-\pi$ (c) $\pi/2$ (d) $-\pi/2$

102. If the volume of a hemisphere is increasing at a steady rate of 18 π m/s, at what rate is its radius changing when it is 6m?

(a) 2.30 m/s (b) 2.00 m/s (c) 0.25 m/s (d) 0.20 m/s 103. If the mean of the numbers 0, (x + 2), (3x + 6) and (4x + 8) is 4, find their mean deviation.

(a) 0 (b) 2 (c) 3 (d) 4

104. In how many ways can the word MATHEMATICS be arranged?

(a) 11!/(9!2!) (b) 11!/(9!2!2!) (c) 11!/(2!2!2!) (d) 11!/(2!2!)

105. The variance of x, 2x, 3x, 4x and 5x is

(a) $x\sqrt{2}$ (b) $2x^2$ (c) x^2 (d) 3x

106. Find the sum of the range and the mode of the set of numbers: 10, 9, 10, 9, 8, 7, 7, 10, 8, 10, 8, 4, 6, 9, 10, 9, 10, 9, 7, 10, 6, 5.

(a) 16 (b) 14 (c) 12 (d) 10

107. In how many ways can a delegation of 3 be chosen from among 5 men and 3 women, if at least one man and at least one woman must be included?

(a) 15 (b) 28 (c) 30 (d) 45

108. Simplify $(\sqrt{0.7} + \sqrt{70})^2$

(a) 84.7 (b) 70.7 (c) 217.7 (d) 168.7

109. Find the range of these fractions: 1/6, 1/3, 3/2, 2/3, 8/9 and 4/3

(a) ¾ (b) 5/6 (c) 7/6 (d) 4/3

110. Find the number of ways of selecting 8 subjects from 12 subjects for an examination.

(a) 490 (b) 495 (c) 496 (d) 498

111. Teams P and Q are involved in a game of football. What is the probability that the game ends in a draw?

(a) 2/3 (b) ½ (c) 1/3 (d) ¼

112. Find the rate of change of the volume V of a sphere with respect to its radius r, when r = 1.

(a) 12 π (b) 4 π (c) 24 π (d) 8 π

113. Differentiate $(2x + 5)^2 (x – 4)$ with respect to x.

(a) 4 (2x + 5) (x – 4)

(b) 4 (2x + 5) (x – 3)

(c) (2x + 5) (2x – 13) (d) (2x + 5) (6 – 11)

114. P (-6, 1) and Q (6, 6) are the two ends of the diameter of a given circle. Calculate the radius.

(a) 6.5 units (b) 13.0 units (c) 3.5 units (d) 7.0 units

115. Find the number of sides of a regular polygon whose interior angle is twice the exterior angle.

(a) 6 (b) 2 (c) 3 (d) 8

116. A sector of a circle of radius 7.2 cm which subtends an angle of 300^0 at the centre is used to form a cone. What is the radius of the base of the cone?

(a) 8 cm (b) 6 cm (c) 9 cm (d) 7 cm

117. Solve the equations: $m^2 + n^2 = 29$, $m + n = 7$

(a) (2,3) and (3,5) (b) (2,5) and (5,2) (c) (5,2) and (5,3) (d) (5,3) and (3,5)

118. Find the principal which amounts to N5,500 at a simple interest in 5 years at 2% per annum.

(a) N4,900 (b) N5,000 (c) N4,700 (d) N,4800

119. If x = (y/2), evaluate $\{(x^3/y^3) + (1/2)\} \div \{(1/2) - (x^2/y^2)\}$

(a) 5/8 (b) 5/2 (c) 5/4 (d)5/16

120. Expression $ax^2 + bx + c$ equals 5 at x = 1. If its derivative is 2x + 1, what re the values of a, b, c respectively?

(a) 1, 3, 1 (b) 1, 2, 1 (c) 2, 1, 1 (d) 1, 1, 3

121. Evaluate $\int_{-2}^{1}(x-1)^2\,dx$

(a) -10/3 (b) 7 (c) 9 (d) 11

122. If the minimum value of $y = 1 + hx - 3x^2$ is 13, find h.

(a) 13 (b) 12 (c) 11 (d) 10

123. In a youth club with 94 members, 60 like modern music, and 50 like traditional music. The number of members who like both traditional and modern music is three times that of those who do not like any type of music. How many members like only one type of music?

(a) 8 (b) 24 (c) 62 (d) 86

124. Simplify $3(2^{n+1}) - 4(2^{n-1}) \div 2^{n+1} - 2^n$

(a) 2^{n-1} (b) 2^{n-1} (c) 4 (d) ¼

125. If (x – 1), (x + 1) and (x – 2) are factors of the polynomial $ax^3 + bx^2 + cx - 1$, find a, b, c in that order.

(a) -1/2, 1, ½ (b) ½, 1, 1/2 (c) ½, 1, -1/2 (d) ½, -1, 1/2 **ANSWERS:**

MATHEMATICS

1. A	38. C	75. A	112. B
2. A	39. C	76. A	113. C
3. C	40. C	77. A	114. A
4. B	41. C	78. D	115. A
5. B	42. A	79. A	116. B
6. A	43.	80. C	117. B
7. A	44.	81. D	118. B
8. A	45.	82. B	119. B
9. C	46.	83. D	120. D

10. B*
11. D
12. D
13. B
14. A
15. A*
16. A
17. D
18. A
19. A
20. B
21. C
22. B
23. B
24. B
25. A
26. A
27. B
28. B
29. B
30. D
31. B
32. A
33. D
34. B
35. D
36. A
37. C

47. B*
48. A
49. B*
50. B
51. B
52. A
53. B
54.
55. B
56. B
57. A
58. B
59. D
60. C
61. D
62. D
63. C
64. D
65. A
66. A
67. C
68. D
69. A
70. A
71. D
72. C
73. C
74. A

84. C
85. A
86. C
87. C
88. D
89. B
90. C
91. D
92. B
93. B
94. D
95. A
96. C
97. B
98. D
99. D
100. C
101. D
102. C
103. C
104. C
105. B
106. A
107. D
108. A
109. D
110. B
111. D

121. C
122. C
123. C
124. C
125. D

BIOLOGY

1. The micronucleus of paramecium is primarily involved in___.
   (a) heredity and reproduction (b) growth (c) metabolism (d) feeding.
2. ___-carry impulse from the main nervous system towards a gland.
   (a) motor nerve (b) effectors (c) response (d) muscle.
3. The interaction of different kinds of organisms that occur together at a particular place is called___ (a) ecosystem (b) community (c) biome (d) ecology.
4. The presence of two distinct types of nuclei is called___
   (a) nuclear metamorphosis (b) nuclear dimorphism (c) nuclear polymorphism (d) nuclear reaction.
5. ___--is the site of information processing.
   (a) central nervous system (b) peripheral nervous system (c) cerebral hemisphere (d) dicephalon.
6. The set of organisms together with the non-living factor with which it interacts is___ (a) ecology (b) community (c) biome (d) ecosystem.
7. Which of the following organisms does not exist as a single living cell?
   (a) chlamydomonas (b) euglena (c) endorina (d) amoeba.
8. Muscles or glands which on receiving impulse from the brain or spinal cord contract or secrete substances.
   (a) effectors (b) response (c) receptors (d) nerve.
9. Spirogyra, Euglena and Chlamydomonas share many characteristics except ___.
   (a) nutrition (b) reproduction (c) mobility (d) irritability.
10. A wave of electrical disturbance that travels across the nerve cell and its fibres___.
    (a) sensory (b) nerve (c) motor (d) impulse.
11. Inbreeding endangers a small population than a large population.
    (a) true (b) false (c) undecided (d) a and b
12. Which of the following organisms exist as a filament?
    (a) euglena (b) volvox (c) eudorina (d) spirogyra.
13. An agent that results in the change of the activities of the organism is___.
    (a) stimulus (b) impulse (c) response (d) nerve.
14. The portion of the cell cycle in which the condensed chromosomes are not visible___.
    (a) chiasmata (b) metaphase (c) interphase (d) prophase.
15. Anaerobic respiration in yeast produces___.

(a) carbon dioxide and ethanol

(b) carbon dioxide and water (c) carbon dioxide and glucose (d) ethanol and water.

16. Change in the activity of the organism caused due to stimulus ___.

(a) gland (b) neurons (c) motor (d) response.

17. Mammals that lay eggs are called___.

(a) marsupial (b) amphibians (c) placental (d) monotremes.

18. The following animals have four chamber in their heart except ___.

(a) lizard (b) man (c) goat (d) dog.

19. The following living organisms are eukaryotic except ___.

(a) spirogyra (b) amoeba (c) bacteria (d) volvox.

20. Animals which have true body cavity are referred to as ___.

(a) coelomate (b) acoelomate (c) choelomate (d) pseudocoelomate.

21. The following are cold blooded animals except ___.

(a) lizard (b) toad (c) duck (d) snake.

22. Annelids are commonly called ___.

(a) roundworms (b) ringworms (c) flatworms (d) wrinkle worms.

23. The end product of glycolysis is ___.

(a) citric acid (b) pyruvic acid (c) malic acid (d) acetic acid.

24. Anaerobic respiration in yeast produces___.

(a) carbondioxide and ethanol

(b) carbondioxide and water (c) carbondioxide and glucose (d) ethanol and water.

25. Stomata pores open when there is___.

(a) an increase in the sugar content of guards cells (b) a decrease in osmotic concentration of guard cells

(c) a decrease in the sugar content of mesophlyll cells.

(d) an increase in the sugar content of mesophyll cells.

26. A ___ sphincter controls the rate of flow of chime from the stomach into the small intestine.

(a) cardiac (b) pyloric (c) pylocardiac (d) cardiac.

27. The parotid gland is found in the __.

(a) small intestine (b) rectum (c) mouth (d) colon

28. Bile is involved in the digestion of ___.

(a) protein (b) fat (c) glucose (d) carbohydrate.

29. Major digestion of food takes place within the ___.
    (a) liver (b) small intestine (c) colon (d) none of the above
30. ___ is the organ responsible for the production of insulin.
    (a) gastric gland (b) pancreas (c) duodenum (d) liver.
31. Hydrochloric acid is found in ___.
    (a) sputum (b) rectum (c) colon (d) none of the above.
32. ___ is the semi-liquid found in the stomach.
    (a) chime (b) cylli (c) chyme (d) chile.
33. The submaxillary gland belong to a group of glands found in the ___.
    (a) stomach (b) small intestine (c) mouth (d) all of the above.
34. Deamination is a process that is carried out in the ___.
    (a) liver (b) colon (c) ileum (d) pancreas.
35. If a cell is placed in a solution of higher concentration, the solution is said to be ___.
    (a) hypotonic (b) isotonic (c) maltonic (d) hypertonic
36. The scientist who first made an attempt to classify living things is called___.
    (a) Carl Linneaus (b) Charles Darwin (c) Aristotle (d) Theodor
37. The system of giving a two-word name to an organism is called___.
    (a) polynomial nomenclature
    (b) dinomial nomenclature
    (c) binomial nomenclature
    (d) biennial nomenclature
38. Scientific names are written in what language?
    (a) German (b) Latin (c) English (d) Grammar.
39. Which of these types of skeleton is most appropriate to the cockroach?
    (a) hydrostatic skeleton
    (b) exoskeleton
    (c) endoskeleton
    (c) cartilaginous skeleton
40. Proteins are broken down to provide ___.
    (a) oxygen (b) carbohydrate (c) energy (d) amino acids.
41. The function of the lenticels is ___.

(a) to receive excess water in the plant
(b) to absorb water from atmosphere
(c) for gaseous exchange (d) to absorb light.

42. One of the functions of xylem is ___.
    (a) strengthening the stem
    (b) manufacturing food
    (c) conducting manufactured food (d) none of the above.
43. People suffering from myopia ___.
    (a) can see near objects clearly
    (b) can see far away
    (c) cannot see any objects clearly
    (d) are color-blind
44. The cilia in paramecium are used for ___.
    (a) respiration (b) locomotion (c) protection (d) excretion
45. The study of the organisms and the environment of an abandoned farmland is the ecology of ___. (a) a community (b) a population (c) a species (d) an ecosystem
46. At fertilization ___.
    (a) One chromosomes from the male joins another from the female
    (b) One gene from the male combines with the gene from another female
    (c) The male nucleus fuses with the female nucleus.
    (d) One set of chromosomes combines with another the female set from the female
47. The neck region of the tapeworm (*Tapeworm* spp) is responsible for the
    (a) the production of eggs
    (b) the storage of eggs
    (c) the formation new segments
    (d) the development of the suckers
48. Which of the following is characteristic is of the animal cell?
    (a) presence of chloroplasts
    (b) possession of cellulose cell wall
    (c) absence of large vacuoles
    (d) presence of large vacuoles

49. In the life history of Schistosoma (Bilharzia), one of the following is the intermediate host.

    (a) man (b) snail (c) mosquito larva (d) fish

50. The hormones which tones up the muscles of a person in the time danger is from the ___.

    (a) thyroid gland (c) pancreas (c) adrenal gland (d) spleen

51. The movement of molecules from a region of higher concentration to one of lower concentration is ___.

    (a) diffusion (b) transpiration (c) osmosis (d) plasmolysis

52. The region of cell division in a root is ___.

    (a) root cap (b) endodermis (c) xylem (d) meristem

53. Which of the following is not an excretory organ?

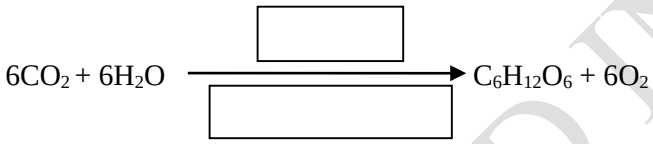
    (a) lungs (b) kidney (c) leaf (d) large intestine

54. The part of the mammalian brain responsible for maintaining balance is ___.

    (a) cerebellum (b) medulla oblongata (c) cerebrum (d) hypothalamus

55. A plant which grows on another plant without apparent harm to the host plant is called ___.

    (a) a parasite (b) a epiphyte (c) a saprophyte (d) a predator



56. The oxygen given off during the process in the above equation is derived from ___.

    (a) sunlight (b) water (c) carbon dioxide (c) atmosphere

57. When testing a leaf for starch, why is it first placed in boiling water?

    a) To extract the chlorophyll
    b) To remove colour from the leaf
    c) To dissolve the starch
    d) To stop chemical reaction

58. The petals of a flower are collectively called ___.

    (a) calyx (b) capsule (c) carpel (c) corolla

59. Osmosis can be defined as diffusion of:

    a) Water molecules from an area of high concentration to an area of low concentration
    b) Water molecules from a dilute solution to a concentrated solution across a permeable membrane
    c) Water molecules from a concentrated solution to a dilute solution a semi-permeable membrane

d) Water molecules from a dilute solution to a concentrated solution through a semipermeable membrane.

60. Structures found in cells are below:

i.	Cell wall	iv.	Cytoplasm
ii.	Cell membrane	v.	Nucleus
iii.	Chloroplast	vi.	Sap vacuole

Which of these structures are found in both animal cells and plant cells?

(a) I, ii, iii, iv and vi

(b) ii, iii, iv, v, and vi

(c) ii, iv, and v

(d) all of the above

61. The network of microtubules formed between opposite poles of the cell which determines the place in which the cell divide is___.

(a) centromere (b) kinechore (c) cytokinesis (d) spindle apparatus

62. The end product of glycolysis in plants and animals is___.

(a) citric acid (b) pyruvic acid (c) malic acid (d) oxalacetic acid

63. ___is concerned with the physical balance of the body.

(a) cochlea (b) vestibule (c) tympatum (d) malleus

64. The close pairing of homologous chromosomes that take place in early prophase II meiosis is ___.

(a) synatonemal complex (b) synapsis (c) chiasmata (d) cytokinesis

65. Stomata pores open where there is___.

(a) an increase in the sugar content of guard cells

(b) a decrease in osmotic concentration of guard cells

(c) a decrease in the sugar content of mesophyll cells (d) an increase in the sugar content of mesophyll cells.

66. The canals of the cochlea are filled with a fluid called ___.

(a) cerebrospinal liquid (b) aqueous liquid (c) endolymph (d) endofluid

67. The physical division of the cytoplasm into two daughter cells is ___.

(a) prophase (b) metaphase (c) cytokinesis (d) telophase

68. Complete oxidation of glucose molecule yields ___.

(a) 2 ATP molecules (b) 34 ATP molecules (c) 38 ATP molecules (d) pyruvic acid

69. ___ bring the impulse from the receptor to the main nervous system.

(a) brain (b) effectors (c) sensory nerve (d) motor

70. During respiration in man, the intercoastal muscles ___.
    (a) relax (b) contrast (c) expand (d) flattened
71. The stage of mitosis characterized by the alignment of the chromosomes in a ring along the inner circumference of the cell is ___.
    (a) prophase (b) interphase (c) metaphase (d) anaphase
72. Myopia is a ___ of the eye.
    (a) defect (b) nature of image (c) ciliary body (d) cornea
73. The characteristics of population include ___.
    (a) niche (b) dispersion (c) biome (d) biotic potential
74. The type II survivorship curve where the highest mortality occur in life is represented by ___.
    (a) hydra (b) oyster (c) man (d) none
75. The binomial classification was introduced by ___.
    (a) Antonio van Leewenhoek in 1674
    (b) Robert Hooke in 1665
    (c) Caroleus Linneaus in 1753
    (d) Schwann Pasteur in 1874
76. Which of the following classification is based on evolutionary relationships.
    (a) phonetics (b) phylogenetic (c) natural (d) artificial
77. All of the following are characteristics of living things except
    (a) interaction (b) evolution (c) organization (d) sleeping
78. Group of closely related family is called ___.
    (a) kingdom (b) class (c) order (d) genus
79. The highest taxonomic rank in the hierarchy is ___.
    (a) phylum (b) class (c) kingdom (d) species
80. All the following are kingdom except ___.
    (a) monera (b) fungi (c) yeastae (d) plantae
81. The phylum is the same as ___.
    (a) division (b) kingdom (c) genus (d) order
82. Maintenance of a constant internal environment is known as ___.
    (a) buffer (b) balancing (c) homeostasis (d) maintenance
83. All the following are in the kingdom plantae except ___.
    (a) mosses (b) ferns (c) flowering plants (d) fungus

84. Movement of nutrients from mother to foetus through the placenta is by ___.

(a) osmosis (b) diffusion (c) dilution (d) none of the above.

85. The following are multicellular organism except ___.

(a) yeast (b) mucor (c) cockroach (d) fungi

86. An aggregate of cells is called ___.

(a) organ (b) system (c) tissue (d) heart

87. DNA is made of the following except ___.

(a) phosphate group (b) nucleic acid (c) ribose sugar (d) lipid

88. Chloroplast is found in the following organism except ___.

(a) spirogyra (b) pride of Barbados (c) amoeba (d) chromosome

89. Photosynthetic material in green-sulphur bacteria is called ___.

(a) ribosome (b)lysosome (c) chloroplast (d) chromosome

90. Eukaryotic chromosome is complexed with ___.

(a) histone (b) histantine (c) protein (d) peptone

91. Heat resistant in bacterial endospore is due to ___.

(a) dipicclinic acid (b) diphenylamine (c) dimethyloxide (d) cellulose

92. Plant cell and animal cell have the following organelles in common except ___.

(a) nucleus (b) lysosomes (c) mitochondria (d) centrosomes

93. The following organisms exist at the tissue level except ___.

(a) hydra (b) euglena (c) sponges (d) algae

94. The chemical reaction from which an organism obtain its energy is ___.

(a) external respiration

(b) cellular respiration

(c) internal respiration

(d) aerobic respiration

95. Hydrochloric acid in stomach kills ___.

(a) kills micro organism (b) destroy enzymes (c) enhances digestion (d) all of the above. 96. Villi increases absorption in ___.

(a) large intestine (b) stomach lining (c) small intestine (d) none of the above.

97. Oxygenated blood is carried by all ___.

(a) arteries (b) veins (c) pulmonary arteries (d) pulmonary veins

98. Formation of glycogen is in the ___.

(a) liver (b) gall bladder (c) small intestine (d) pancreas

99. Antibodies are produced by ___.

(a) leucocyte (b) lymphocyte (c) neutrophiles (d) none of the above

100. Bile is found in the intestine ____.

(a) at all times (b) during digestion (c) at no time (d) during churning.

101. Normally any character shown by an organism is due to the effects of

(a) hormones and chromosomes

(b) chromosomes

(c) mutation

(d) hormones and genes

102. In a bakery, yeast is added to flour to make bread rise. This is possible because yeast produces

(a) alcohol (b) oxygen (c) carbon dioxide (d) energy

103. The two types of human tapeworm can be distinguished by the presence or absence of

(a) scolex (b) hook (c) head (d) sucker

104. The rate of transpiration of a leafy shoot would be highest under

(a) damp, cold, still air

(b) damp, warm, moving air

(c) dry, cold, moving air

(d) dry, warm, still air

105. Which of the following instruments is used to demonstrate the response of roots and shoots to gravity?

(a) Klinostat (b) Manometer (c) Porometer (d) Potometer

106. Which of the following is NOT a function of the liver?

(a) Regulation of blood sugar

(b) storage of iron

(c) formation of bile

(d) breakdown of excess amino acids

107. What is the function of the contractile vacuole in paramecium?

(a) produces enzymes

(b) gets rid of excreta

(c) stores and digests food

(d) gets rid of excess water

108. Which of the following insects has an incomplete metamorphosis during its life cycle?

(a) butterfly (b) bee (c) mosquito (d) housefly

109. Which of the following is the dental formula of man?

(a) i(2/2) c(0/1) pm(2/2) m(3/3)

(b) i(2/2) c(1/1) pm(2/0) m(3/3) (c) i(2/2) c(1/1) pm(3/3) m(3/3)

(d) i(2/2) c(1/1) pm(3/3) m(2/2)

110. What is the genetic ratio of a cross between homozygous tall plant and a homozygous plant? (a) 0 tall : 4 short

(b) 3 tall : 1 short

(c) 2 short : 2 tall

(d) 4 tall : 0 short

111. Which of the following is NOT true of wind-pollinated flowers?

(a) a large amount of pollen produced

(b) light smooth pollen grains

(c) small inconspicuous flowers

(d) large pendulous anther

112. The amount of water loss from a leaf can be detected using

(a) lime-water

(b) red litmus paper

(c) blue litmus paper

(d) blue cobalt chloride paper

113.Below are some group of diseases. Which group of diseases is caused by bacteria?

(a) tuberculosis, small pox

(b) gonorrhea, measles

(c) sleeping sickness, measles

(d) syphilis, gonorrhea

114. A few grams of dried soil were first heated until red hot and then further heated until no more smoke was released. This experiment was to determine

(a) amount of water in soil

(b) percentage of water in soil

(c) presence of humus in soil

(d) resistance of laterites to heat

115. Leguminous plants, e.g. Mucana, are usually planted in cultivated farmlands because they

(a) enrich the soil with phosphates

(b) provide animals with food

(c) enrich the soil with organic nitrogen

(d) protect the soil from being overheated

116. If three 30 cm lengths of glass tubing are tightly packed with clay, sand and loamy soils respectively and then stood in a beaker of water for one week, the level of water will be

(a) lowest in the tube with clay

(b) the same in all tubes

(c) lowest in the tube with loamy soils

(d) lowest in the tube with sandy soil

117. An organism X lives entirely on the waste products in another organism Y. In this association X is a

(a) symbiont (b) commensal (c) saprophyte (d) parasite

118. The centre which controls respiratory activities the mammalian brain is the

(a) cerebrum (b) olfactory lobe (c) pituitary organ (d) medulla

119. The following are connected with the movement of a reflex action

(1) Central nervous (2) Muscles (3) Skin (4) Sensory nerve (5) Motor

(a) 1-2-3-4-5 (b) 2-1-4-5-3 (c) 3-4-1-2-5 (d) 3-4-1-5-2

120. Which part of the human brain is concerned with reflexes controlling the rate of heart beat and breathing?

(a) Medulla (b) Cerebrum (c) Cerebellum (d) Pineal body

121. If the bark and phloem tissue of a woody shoot are peeled off by ringing, the whole plant will die eventually because?

(a) water does not reach the leaves

(b) water and salts remained in the ringed portion

(c) there is a withdrawal of water from the root by soil

(d) manufactured food does not reach the roots

122. In anaerobic respiration, glucose is converted to one of the following

(a) Carbon dioxide and water

(b) Carbon dioxide only

(c) Carbon dioxide and alcohol

(d) Alcohol and water

123. A green plant growing in a compost pit is feeding

(a) holozoically (b) parasitically (c) saprophytically (d) holophytically

124. Which one of the following parts of the mammalian body is most closely associated with the production of urine?

(a) Malphigian capsule (b) Urinary bladder (c) Ureter (d) Urethra

125. The conversion of excess amino acids into urea occurs in the

(a) Kidney (b) pancreas (c) villi (d) liver

ANSWERS: BIOLOGY

1. C
2. B
3. B
4. B
5. A
6. D
7. C
8. A
9.
10.
11. A
12. D
13.
14. A
15. A
16. D
17. D
18. A
19. C
20. A
21. C
22. B
23. B
24. A
25. A
26. A
27. C
28. B
29. B
30. D
31. D
32. C
33. C
34. A
35. D
36. C
37. B
38. B
39. B
40. D
41. C
42. C
43. A
44. B
45. A
46. D
47. C
48. D
49. B
50. C
51. A
52. D
53. A
54. D
55. B
56. A
57. C
58. C
59. D
60. C
61.
62. B
63. A
64.
65. A
66. C
67. C
68. C
69. C
70. B
71. D
72. C
73. C
74. A
75. A
76. A
77. A
78. D
79. A
80. C
81. D
82. B
83. D
84. C
85. A
86. C
87. C
88. D
89. B
90. C
91. D
92. B
93. B
94. D
95. A
96. C
97. B
98. D
99. D
100. C

CHEMISTRY

1. Each 325mg tablet of aspirin consists of 195.0mg carbon, 14.6mg hydrogen and 115.4mg oxygen. Determine its empirical formula (C=12, H=1, O=16).

   (a) $C_8H_9O_4$ (b) $C_9H_8O_4$ (c) $C_6H_8O_4$ (d) $C_9H_4O_8$.

2. Identify the number of reacting units in the reaction. $Cr_2O_7^{2-} + 6H \longrightarrow 2Cr^{3+} + 7H_2O$

   (a) 4 (b) 8 (c) 6 (d) 2.

3. Zinc oxide is a

   (a) basic oxide (b) acidic oxide (c) amphoteric oxide (d) neutral oxide

4. The periodic classification of elements is an arrangement of the elements in order of their

   (a) atomic weights

   (b) isotopic weights

   (c) molecular weights

   (d) atomic numbers

5. A small quantity of solid ammonium chloride (NH_4Cl) was heated gently in a test tube, the solid gradually disappears to produce two gases. Later, a white cloudy deposit was observed on the cooler part of the test tube. The ammonium chloride is said to have undergone

   (a) Distillation (b) sublimation (c) precipitation (d) evaporation

6. A volume of 42.5ml 0.125M KOH is needed to neutralize completely 37.2ml of H_3PO_4 solution. Find the molar concentration of H_3PO_4.

   (a) 0.480M (b) 0.068M (c) 0.048M (d) 0.084M.

7. The number of dissolved particles in solution does not depend on one of the following

   (a) Strong electrolyte

   (b) weak electrolyte

   (c) non-electrolyte

   (d) oxidation number.

8. For a 0.262m solution of maltose in water, calculate the freezing point of the solution.
   $K_f = 1.855^0C$; $K_b = 0.512^0Cm^{-1}$

(a) -0.686^0C (b) 0.456^0C (c) -0.886^0C (d) -0.486^0C

9. For a 0.222m solution of sucrose in water, calculate the boiling of the solution; $K_{b=}$ 0.512^0Cm^{-1}; $K_f = 1.855^0C^{-1}$.
   (a) 100^0Cm^{-1} (b) 100.114^0C (c) 99.89^0C (d) 123.5^0Cm^{-1}
10. An element X forms the following compounds with chlorine XCl_4, XCl_3, XCl_2. This illustrates the
    (a) Law of multiple proportion
    (b) Law of chemical proportions
    (c) Law of simple proportions
    (d) Law of conservation of mass
11. When air which contains the gases oxygen, nitrogen, carbondioxide, water vapour and the rare gases, is passed through alkaline pyrogallol and then over quicklime, the only gases left are;
    (a) Nitrogen and carbondioxide
    (b) The rare gases
    (c) Nitrogen and oxygen
    (d) Nitrogen and the rare gases
12. When large hydrocarbon molecules are heated at high temperature in the presence of a catalyst to give smaller molecules, the process is known as
    (a) Disintegration (b) polymerization (c) cracking (d) degradation
13. When each of the nitrates of potassium, magnesium and iron is heated,
    (a) All the nitrates dissolve to their oxides
    (b) the nitrate of magnesium gives the nitrite and oxygen
    (c) the nitrates of magnesium and iron give the oxides
    (d) the nitrate of iron gives the nitrite and oxygen
14. Consider the reaction represented by the equation $N_2O_4 \longrightarrow 2NO_{2(g)}$

(a) $K_p=PT$ (b) $K_P=K_C$ (c) $K_c= RT\ K_P$ (d) $K_P = K_C\ (RT)$

15. A sample of hard water contains some calcium sulphate and calcium hydrogen carbonate. The total hardness may therefore be removed by
    (a) Boiling the water

(b) Adding excess calcium hydroxide

(c) Adding a calculated amount of calcium hydroxide

(d) Adding sodium carbonate

16. What process would coal undergo to give coal gas, coal tar, ammoniacal liquor and coke?

(a) steam distillation (b) destructive distillation (c) liquefication (d) hydrolysis.

17. Detergents have the general formula ___.

(a) $R(CH_2)_nOH$ (b) $RSO_3^-Na^+$ (c) $RCO_2^-Na^+$ (d) RCO_2H.

18. The formula of the compound formed in a reaction between a trivalent metal M and a tetravalent non-metal X is ___.

(a) MX (b) M_3X_4 (c) M_4X_3 (d) M_3X_2.

19. 2.25g of a sample of an oxide of copper on reduction gave 2.0g of copper. 2.50g of another oxide of copper on reduction also gave 2.0g of copper. These results are in accordance with the law of __. (a) constant proportion

(b) definite proportion (c) multiple proportions

(d) conservation of matter.

20. One mole of propane is mixed with five moles of oxygen. The mixture is ignited and the propane burns completely. What is the volume of the product at s.t.p?

(a) $112.0dm^3$ (b) $67.2dm^3$ (c) $56.0dm^3$ (d) $44.8dm^3$ [GM.V = $22.4dm^3mol^{-1}$]

21. The rate of a reaction is proportional to the number of effective collisions occurring per seconds within the reactants. This statement is associated with the

(a) Kinetic theory (b) rate law (c) gas law (d) collision law.

22. A zero order reaction is one

(a) In which the reaction rate does not depend on the concentration of the reactants (b) In which the reaction rate depends on the concentration of the reactants.

(c) In which the rate depends on the temperature of the reaction mixture.

(d) All of the above.

23. Which of the following physical properties decreases across the periodic table?
    (a) ionization potential
    (b) electron affinity
    (c) electronegativity (d) atomic radius.

24. What are the possible oxidation numbers for an element if its atomic number is 17?
    (a) -1 and 7 (b) -1 and 6 (c) -3 and 5 (d) -2 and 6.

25. The energy change accompanying the addition of an electron to a gaseous atom is called?
    (a) first ionization energy
    (b) second ionization energy
    (c) electron affinity
    (d) electronegativity.

26. The reaction between an organic acid and an alcohol in the presence of an acid catalyst s known as
    (a) Saponification (b) dehydration (c) esterification (d) hydrolysis

27. If $30cm^3$ of oxygen diffuses through a porous pot in 7 seconds, how long will it take $60cm^3$ of chlorine to diffuse through the same pot, if the vapour densities of oxygen and chlorine are 16 and 36 respectively?
    (a) 9.3 secs (b) 14 secs (b) 21 secs (d) 30.3 secs

28. The electronic configuration of the specie underlined as in the molecule H_2S is
    (a) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^4$
    (b) $1s^2 2s^2 2p^6 3s^2 3p^4$
    (c) $1s^2 2s^2 2p^6 3s^2 3p^2$
    (d) $1s^2 2s^2 2p^6 3s^2 3p^6$

29. The functional group(s) of an amino acid is/are ___.
    (a) NH_2, -COOH
    (b) $C_nH_{2n+1,}$ -COOH
    (c) –COCl, COOH
    (d) COOH, $CONH_2$

30. A student while trying to identify two gases labeled A and B, found that gas A is acidic to litmus paper and turn acidified potassium dichromate solution green, while gas B turns red litmus paper blue and forms dense white fume with hydrogen chloride. The correct identity of A and B respectively are

    (a) CO_2 and N_2 (b) SO_2 and NH_3 (c) HCl and NH_3 (d) NO_2 and PCl_5.

31. Which of the following titrations will have a solution with a pH greater than 7 at the end point (equivalence point) of the titration?

    (a) Titration of sodium hydroxide with tetraoxosulphate (VI) acid.
    (b) Titration of sodium trioxocarbonate (IV) with hydrochloric acid. (c) Titration of sodium hydroxide with oxalic acid (ethanedoic acid) (d) Titration of ammonium hydroxide and trioxonitrate (V) acid.

32. 9.0dm^3 0f a gas at s.t.p was subjected by means of a movable piston to two times the original pressure with the temperature being now at 364K. What is the volume of the gas in dm^3 at this pressure?

    (a) 2.0 (b) 4.5 (c) 6.0 (d) 8.3

33. An increase in the temperature causes an increase in the pressure of a gas because there is an increase in the

    (a) average velocity of the molecules
    (b) number of collisions between the molecules
    (c) free mean path between each molecules and other.
    (d) none of the above

34. The forces holding naphthalene crystals together can be overcome when naphthalene is heated to a temperature of 354K resulting in the crystals melting. These forces are known as ___.

    (a) coulombic (b) ionic (c) covalent (d) Van Der Waals

35. A metallic ion X^{2+} with an inert gas structure contains 18 electrons. How many protons are there in this ion?

    (a) 20 (b) 18 (c) 16 (d) 2.

36. The dependence of rate reaction on temperature is given by

    (a) Le Chaterlier's equation
    (b) Law of mass action (c) Arrchenius equation (d) Rate equation.

37. Which of the following gases may not be dried with concentrated sulphuric acid?
    (a) HCl (b) N_2 (c) Cl_2 (d) NH_3
38. Metal salts of long chain fatty acids are known as
    (a) Detergents (b) double salts (c) soaps (d) grease.
39. Cellulose and starch can be classified as one of the following:
    (a) Hydrocarbons (b) sugars (c) carbohydrates (d) alkaloids.
40. Which of the following in NOT a redox reaction?
    (a) $2HNO_2 + 2HI \longrightarrow 2H_2O + 2NO + I_2$
    (b) $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$
    (c) $BaCl_2 + 2AgNO_3 \longrightarrow AgCl_2 + Ba(NO_3)_2$
    (d) $4FeO + O_2 \longrightarrow 2Fe_2O_3$
41. Which of the following processes leads to increase in entropy?
    (a) mixing of a sample of NaCl and sand
    (b) condensation of water vapour
    (c) boiling of a sample of water
    (d) cooling a saturated solution.
42. Which of the following statements is true?
    (a) Most solids have low densities
    (b) most gases are ionic compounds
    (c) solids, like liquids and gases, do not have fixed shapes and fixed volumes.
    (d) gases do not have their own shape but rather expand to fill the shapes of their containers uniformly.
43. A liquid begins to boil when
    (a) Its volume is slightly decreased.
    (b) Its vapour pressure is lower than the external pressure.
    (c) Its vapour pressure equals the external pressure.
    (d) Its molecules start escaping from the surface.
44. An element which exists in more than crystalline form is said to exhibit
    (a) Polymorphism (b) isotopy (c) allotropy (d) isomerism.

45. A mixture of starch solution and potassium oxide was placed in a test tube. On adding dilute tetraoxosulphate (VI) acid then $K_2Cr_2O_7$ solutions, a blue-black colour was produced. In this reaction, the

    (a) iodide is oxidized

    (b) tetraoxosulphate (VI) acid acts as an oxidizing agent (c) starch has been oxidized.

    (d) (d) $K_2Cr_cO_7$ is oxidized.

46. Which of the following statements is true?
    (a) The heat of solution of NaOH is positive?

    (b) The NaOH gains heat from the surrounding.

    (c) The heat of solution of NaOH is negative.

    (d) The dissolution of NaOH in water is endothermic.

47. Which property of a reversible reaction is affected by a catalyst?

    (a) Heat content (enthalpy)

    (b) energy activation (c) free energy change

    (d) equilibrium position.

48. Which of the following is used in fire extinguishers?

    (a) Carbon (ii) oxide (b) carbon (iv) oxide (c) sulphur (iv) oxide (d) ammonia.

49. When H_2S gas is passed into a solution of iron (iii) chloride, the colour changes from yellow to green. This is because (a) H_2S is reduced to S

    (b) Fe^{3+} ions are oxidized by H_2S (c) Fe^{3+} ions are oxidized by Fe^{2+} ions (d) Fe^{3+} ions are reduced to Fe^{2+} ions.

50. Suitable reagents for the laboratory preparation of nitrogen are ___.

    (a) sodium dioxonitrate (III) and ammonium chloride

    (b) sodium trioxonitrate (V) and ammonium chloride

    (c) sodium chloride and ammonium trioxonitrate (V) (d) sodium chloride and ammonium diozonitrate.

51. The thermal decomposition of copper (II) trioxonitrate (V) yields copper (II) oxide, oxygen and ___.

(a) nitrogen (II) oxide (b) nitrogen (I) oxide (c) nitrogen (IV) oxide (d) nitrogen.

52. Which of the following is an example of a chemical change?
    (a) freezing of water
    (b) dissolution of NaCl
    (c) rusting of iron
    (d) separation a liquid mixture by distillation.
53. The electronic configuration in the ground state of the chloride ion (Cl^-) is
    (a) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$
    (b) $1s_2\ 2s_2\ 2p_6\ 3s_2\ 3p_6$
    (c) $1s_2\ 2s_2\ 2p_6\ 3s_2\ 3p_7$
    (d) $1s_2\ 2s_2\ 2p_6\ 3s_2\ 3p_7$
54. Which of the following is not a member of the homologous series of paraffins (alkanes)?
    (a) C_3H_6 (b) C_5H_{12} (c) C_7H_{16} (d) $C_{24}H_{48}$
55. Which of the following statement is an exception in the assumptions of the kinetic theory of gases?
    (a) The particles are of negligible size
    (b) The particles are in constant random motion
    (c) The particles are of negligible mass
    (d) The particles collide with each other.
56. An example of alcohol is
    (a) CCl_4 (b) CH_3COOH (c) $CHCl_3$ (d) CH_3OH
57. Hypochlorous acid is used as a bleach because
    (a) It is a strong acid
    (b) It yields chlorine readily in pure water
    (c) It is an oxidizing agent
    (d) It is a weak acid
58. Which of the following compounds will form a solution if exposed to air?
    (a) $Na_2CO_3.10H_2O$ (b) $NaNO_3$ (c) $CuSO_4$ (d) $CaCl_2$
59. Consider the following exothermic reaction

$2SO_{2(g)} + O_{2(g)} \longleftrightarrow 2SO_{3(g)}$

If the temperature of the reaction is reduced from 800^0C to 500^0C, and no other change takes place, then

(a) the reaction rate increases

(b) concentration of SO_3 decreases

(c) concentration of SO_3 increases

(d) O_3 gas becomes unreactive

60. Alkanoates are formed by the reaction of alkanoic acid with ___.

(a) alkyl halides (b) alkanols (c) ethers (d) sodium.

61. Methylethanoate reacts with ammonia to yield __.

(a) methylamine and ethanol

(b) ethylamine methanol (c) methanamide and ethanol

(d) ethanamide and methanol.

62. Crude copper can be purified by the electrolysis of $CuSO_4$ if

(a) Platinum electrodes are used

(b) The crude copper is made the anode of the cell (c) The crude copper is made the cathode of the cell (d) Crude copper are used.

63. Aluminium is extracted commercially from its ore by

(a) Heating aluminium oxide with coke in a furnace

(b) The electrolysis of fused aluminium oxide in cryolite

(c) Treating cryolite with sodium hydroxide solution under pressure.

(d) Heating sodium aluminium silicate to a high temperature

64. Which of the following is used in the manufacture of glass?

(a) Sodium chloride

(b) sodium trioxocarbonate

(c) sodium tetraoxosulphate (VI)

(d) sodium trioxonitrate (V)

65. Chlorine is produced commercially by

(a) electrolysis of dilute hydrochloric acid

(b) electrolysis of brine

(c) neutralization of hydrogen chloride

(d) heating potassium trioxochlorate (V).

66. Three solutions contain carbonate, sulphate and sulphide ions respectively. One test that will identify just ONE of them completely is by addition to each of them of

(a) barium chloride solution

(b) dilute hydrochloric acid

(c) lead nitrate solution

(d) calcium chloride solution

67. The following equation $H_2O + 2Fe^{2+} + Cl_2 \longleftrightarrow 2Fe^{3+} + 2Cl^- + H_2O$

The only ion which behaves as an oxidizing agent is

(a) Fe^{2+} (b) Cl_2 (c) Fe^{3+} (d) Cl^-

68. Which of the following changes is physical?

(a) adding iron filling to water

(b) adding sodium metal to water

(c) cooling a solution of iron (II) sulphate to obtain

(d) iron (II) chloride

69. In titration involving sodium hydroxide and dilute hydrochloric acid, where would you place the base?

(a) In the beaker

(b) In the conical flask

(c) In a burette

(d) In the standard flask

70. You are provided with five jars containing SO_2, CO_2, H_2, CO and NO respectively. Select a test from A to E which will identify ANY ONE of the gases completely.

(a) pass each gas into lime water

(b) pass each gas into water and test with litmus

(c) pass each gas into concentrated sulphuric acid

(d) expose each gas to atmospheric air

71. 200cm^3 each of 0.1M solutions of lead (II) trioxonitrate (V) and hydrochloric acid were mixed. Assuming that lead (II) chloride is completely insoluble, calculate the mass of lead (II) chloride that will be precipitated. [Pb = 207, Cl= 35, N = 14, O = 16]

(a) 2.78g (b) 5.56g (c) 8.34g (d) 11.12g

72. Which of the following gases will diffuse fastest when passed through a porous plug?
[H = 1, C = 12, N = 14, O = 16]

(a) propane (b) oxygen (c) methane (d) ammonia

73. Which of the following will have its mass increased when heated with air?

(a) helium (b) magnesium (c) copper pyrites (d) glass

74. A gaseous metallic chloride MCl_x consists of 20.22% of M by mass. The formula of the chloride is [M = 27, Cl = 35.5]

(a) MCl (b) MCl_2 (c) MCl_3 (d) M_2Cl_6

75. In order to remove one electron from a 3S orbital of gaseous sodium atom, about 496KJMol^{-1} of energy is required. This energy is referred to as

(a) electron affinity
(b) ionization energy
(c) activation energy
(d) activation energy

76. The method that can be used to convert hard water to soft water is

(a) chlorination
(b) passage over activated charcoal
(c) the use of an ion-exchange resin
(d) aeration

77. Given that electronegativity increases across a period and decreases down a group in the periodic table, in which of the following compounds will the molecules be held together by the strongest hydrogen bond?

(a) $HF_{(g)}$ (b) $NH_{3(g)}$ (c) $CH_{4(g)}$ (d) HC $l_{(g)}$

78. The correct order of increasing oxidation number of the transition metal ions for the compounds $K_2Cr_2O_7$, V_2O_5 and $KMnO_4$ is

(a) $V_2O_5 < K_2Cr_2O_7 < KMnO_4$

(b) $K_2Cr_2O_7 < KMnO_4 < V_2O_5$

(c) $KMnO_4 < K_2CrO_7 < V_2O_5$

(d) $KMnO_4 < V_2O_5 < K_2Cr_2O_7$

79. What is observed when aqeous solutions of each of tetraoxosulphate (VI) acid, potassium trioxoiodate (V) and potassium iodide are mixed together?

(a) a white precipitate is formed

(b) a green precipitate is formed

(c) the mixture remains colourless

(d) the mixture turns reddish brown

80. The solubility product of $Cu(IO_3)_2$ is 1,08 x 10^{-7}. Assuming that neither ions react appreciably with water to form H^+ and OH^-, what is the solubility of the salt?

(a) 2.7 x 10^{-8} mol dm^{-3}
(b) 9.0 x 10^{-8} mol dm^{-3}

(c) 3.0 x 10^{-3} mol dm^{-3}

(d) 9.0 x 10^{-3} mol dm^{-3}

81. $2SO_{2(g)} + O_{2(g)} \leftrightarrow 2SO_{3(g)}$.

In the chemical reaction above, the substance that will increase the rate of production of of sulphur (VI) oxide is

(a) manganese (VI) oxide (b) finely divided iron (c) vanadium (V) oxide (d) nickel 82. What quantity of electricity will liberate 0.125 mole of oxygen molecules during the electrolysis of dilute sodium chloride solution? [F = 96 500 C mol^{-1}]

(a) 24 125 coulombs

(b) 48 250 coulombs

(c) 72 375 coulombs

(d) 96 500 coulombs

83. When a current I was passed through an electrolyte solution for 40 minutes, a mass Xg of a univalent metal was deposited at the cathode. What mass of the metal will be deposited when a current 2I is passed through the solution for 10 minutes?

(a) X/4 g (b) X/2 g (c) 2X g (d) 4X g

84. Which of the following statements is true of the electrochemical series?

(a) electropositivity of metals increase down the series

(b) electropositivity of non-metals decrease down the series

(c) electronegativity of non-metals decrease down the series

(d) electropositivity of metals decrease down the series

85. Chlorine, Bromine and Iodine resemble one another in the way they

(a) dissolve in alkalis

(b) react violently with hydrogen without heating

(c) are liquids

(d) displace one another from solutions of their salts

86. A pair of compounds that can be used to generate a gas which has physiological effect on human beings is

(a) sodium trioxonitrate (V) and calcium chloride

(b) sodium dioxonitrate (III) and ammonium chloride

(c) sodium trioxonitrate (V) and ammonium chloride

(d) sodium dioxonitrate (III) and potassium chloride

87. What properties of Duralumin makes it more useful than its constituent metals?

(a) it is heavy with a high melting point

(b) it is malleable and has high density

(c) it is strong and light

(d) it is hard and ductile

88. A metal that can be extracted from casssitertite is

(a) calcium (b) magnesium (c) tin (d) copper

89. The hydrocarbon that burns in air with a sooty flame is

(a) C_2H_6 (b) C_3H_8 (c) C_4H_{10} (d) C_6H_6

90. Which of the following is a solvent for perfumes?

(a) C_5H_{12} (b) C_4H_6 (c) CH_3COOH (d) C_2H_5OH

91. An eruption polluted an environment with a gas suspected to be H_2S, a poisonous gas. A rescue team should spray the environment with

(a) water

(b) moist SO_2

(c) acidified $KMnO_4$ and water

(d) water, acidified $KMnO_4$ and oxygen.

92. 1.34 of hydrated sodium tetraoxosulphate (vi) was heated to give an anhydrous salt weighing 0.71g. The formula of the hydrated salt is ___. [Na = 23, S = 32, O=16 H = 1].

(a) $Na_2SO_4.3H_2O$

(b) $Na_2SO_4.7H_2O$

(c) $Na_2SO_4.2H_2O$

(d) $Na_2SO_4.H_2O$

93. The ion that may be assumed to have negligible concentration in a sample of water that lathers readily with soap is ___.

(a) Mg^{2+} (b) K^{+} (c) CO_3^{2+} (d) HCO_3

94. A substance S is isomorphous with another substance R. When a tiny crystal of S is added into a supersaturated solution of R, (a) S dissolves in the solution (b) crystals of R are precipitated (c) there is no observable change (d) R and S react to generate heat.

95. Which of the following dilute solutions has the lowest Ph value?

(a) calcium trioxocarbonate (iv) (b) hydrochloric acid (c) ethanoic acid (d) all of the above

96. Which of the following is a basic salt?

(a) Na_2CO_3 (b) $Mg(OH)Cl$ (c) $NaHCO_3$ (d) $K_2SO_4.Al(SO_4)_3.24H_2O$.

14. Which of the following acts as both reducing and oxidizing agent?

(a) H_2 (b) SO_2 (c) H_2S (d)CO_2

97. Which of the following is neutral to litmus paper?

(a) NH_4Cl (b) Na_2CO_3 (c) $FeCl_3$ (d) NaCl

98. Bronze is an alloy of ___.

(a) copper and zinc

(b) copper and carbon

(c) copper and tin

(d) zinc and tin.

99. Polyvinyl chloride is used to produce

(a) bread (b) pencils (c) ink (d) pipes

100. When two end alkyl groups of ethyl ethanoate are interchanged, the compound formed is known as

(a) methyl ethanoate (b) ethyl propanoate (c) methyl propanoate (d) propyl ethanoate.

101. Phosphorus is stored under water to prevent it from
(a) dehydrating (b) becoming inert (c) smelling (d) catching fire

102. The chemical used for coagulating in water purification is

(a) aluminium tetraoxosulphate (IV)

(b) copper tetraoxosulphate (VI)

(c) sodium tetraoxosulphate (IV)

(d) calcium tetraoxosulphate (IV)

103. What is the decrease in volume of air when pyrogallol is shaken with $30.00cm^3$ of air?

(a) $15.00cm^3$ (b) $6.30cm^3$ (c) $0.63cm^3$ (d) $0.06cm^3$

104. Deliquescent substance are used for

(a) cooling (b)wetting (c) melting (d) drying

105. Which of the following statements is correct about the average kinetic energy of the molecules of a gas?

(a) it increase with increase in pressure

(b) it increase at constant temperature

(c) it increase with increase in temperature

(d) it increase with increase in volume

106. Four elements **W**, **X**, **Y** and **Z** have atomic number 2, 6, 16 and 20 respectively. Which of these elements is a metal?

(a) **X** (b) **W** (c) **Z** (d) **Y**

107. An oxide $\mathbf{X}O_2$ has a vapour density of 32. What is the atomic mass of **X**?

(a) 32 (b) 20 (c) 14 (d) 12

108. A particle that contains 9 protons, 10 neutrons and 10 electrons is a

(a) negative ion
(b) positive ion

(c) neutral atom of non-metal

(d) neutral atom of metal

109. $25cm^3$ of a gas **X** contains **Z** molecules at 15^0C and 75mmHg. How many molecules will $25cm^3$ of another gas **Y** contain at the same temperature and pressure?

(a) 2 **Y** (b) 2 **Z** (c) **Z** (d) **Y**

110. Alkanones are generally obtained by the oxidation of

(a) primary alkanols (b) secondary alkanols (c) tertiary alkanols (d) alkanoic acid

111. The chlorinated alkane often used industrially to remove grease is

(a) tetrachloromethane (b) chloromethane (c) trichloromethane (d) dichloromethane

112. Unsaturated organic compounds are identified by decolourization of

(a) silver bromine and potassium tetraoxomanganate (VII) solutions

(b) bromine water and acidified potassium tetraoxomanganate (VII) solution

(c) silver bromide solution and alkaline potassium

(d) bromine water and alkaline potassium tetraoxomanganate solution (VII)

113. The least easily oxidized of the metals below is

(a) Ca (b) Na (c) Zn (d) Al

114. A common characteristics of copper and silver in their usage as coinage metals is that they

(a) have high metallic lustre

(b) are not easily oxidized

(c) are easily oxidized

(d) are not easily reduced

115. Synthesis gas a mixture of

(a) CH_4 and H_2O (b) CH_4 and H_2 (c) CO_2 (d) CO and H_2

116. The refreshing and characteristic taste of soda water and other soft drinks is as a result of the presence in them of

(a) carbon(IV)oxide (b) carbon(II)oxide (c) soda (d) glucose

117. The substance often used for vulcanization of rubber is

(a) chlorine (b) hydrogen peroxide (c) sulphur (d) tetraoxosulphate(IV)acid

118. For a reaction in equilibrium, the species involved in the equilibrium constant expression are

(a) gaseous and solid species

(b) liquid and solid species

(c) solid and dissolved species

(d) gaseous and dissolved species

119. Powdered marble reacts faster with hydrochloric acid solution than the granular form because the powdered form has

(a) more molecules (b) more atoms (c) larger surface area (d) relatively large mass

120. Given that **M** is the mass of substance deposited in an electrolysis and **Q** the quantity of electricity consumed, then Faraday's law can be written as

(a) M = Z/Q (b) M = Q/Z (c) M = Z/2Q (d) M = QZ

121. $MnO_{4(aq)} + 8H^{+}_{(aq)} + Y \rightarrow Mn^{2+}_{(aq)} + 4H_2O_{(l)}$ Y in the

equation above represents

(a) $2e^-$ (b) $3e^-$ (c) $5e^-$ (d) $7e^-$

122. In which order are the following salts sensitive to light?

(a) Agl > AgCl > AgBr

(b) AgCl > Agl > AgBr
(c) AgBr > AgCl > Agl

(d) AgCl > AgBr > Agl

123. Hydration of ions solutions is associated with

(a) absorption of heat

(b) reduction of heat

(c) conduction of heat

(d) liberation of heat

124. The air pollutant unknown in nature is

(a) NO (b) CO (c) HCHO (d) DDT

125. A side effect of soft water is that

(a) it gives offensive taste

(b) excess calcium is precipitated

(c) it attacks lead contained in pipes

(d) it encourages the growth of bacteria

ANSWERS: CHEMISTRY

1. B
2. B
3. C
4. D
5. B
6. D
7. D
8. C
9. B
10. C
11. A
12. D
13. C
14. C
15. C
16. B
17. C
18. C
19. C
20. B
21. D
22. A
23. B
24. A
25. C
26. B
27. D
28. B
29. A
30. C
31. C
32. C
33. B
34. D
35. A
36. C
37. D
38. C
39. C
40. A
41. C
42. D
43. C
44. B
45. A
46. C
47. B
48. B
49. B
50. A
51. C
52. C
53. C
54. D
55. D
56. D
57. C
58. D
59. B
60. B
61. D
62. B
63. B
64. B
65. B
66. C
67. C
68. C
69. D
70. B
71. A
72. B
73. C
74. B
75. C
76. B
77. C
78. A
79. A
80. A
81. D
82. B
83. B
84. C
85. D
86. A
87. C
88. C
89. D
90. D
91. B
92. A
93. C
94. B
95. C
96. B
97. B
98. D
99. D
100. C
101. C
102. D
103. D
104. D
105. C
106. D
107. C
108. D
109. C
110. A
111. D
112. B
113. D
114. B
115. A
116. B
117. C
118. A
119. A
120. C
121. C
122. D
123. B
124. A
125. D

PHYSICS

1. A convex lens of focal length 10.0cm is used to form a real image which is half the size of the object. How far from the object is the image?
   (a) 45cm (b) 30cm (c) 15cm (d) 20cm 2. A diverging lens of a focal length 20cm forms an image halve of the size of the object. What is the object distance?
   (a) 11.11cm (b) 100cm (c) 60cm (d) 8.71cm
3. The principle of operation of a coil is based on
   (a) ohms law (b) ampere law (c) faradays law (d) coulombs law
4. A malaria patient has a temperature of 39.5°C. What is the person temperature in K?
   (a) 103.1 (b) 312.65 (c) -273.15 (d) 373.15
5. The force between the molecules of a liquid in contact with that of a solid is
   (a) adhesive (b) cohesive (c) magnetic (d) repulsive
6. Combination of the three gas laws is known as?
   (a) equation of state (b) kinetic theory of gases (c) zeroth law of thermodynamics
7. What is the dimension of pressure?
   (a) $ML^{-1}T^{-2}$ (b) MLT^{-2} (c) $ML^{2}T^{-3}$ (d) ML^{-3}
8. A body is projected from the earth's surface with the hope of letting it escape from the earth's gravitational field. What is the minimum escape velocity?
   (A) 680J (b) 200J (c) 100J (d) 400J
9. Two bodies have masses in the ratio 3:1. They experience forces which impart to them acceleration in the ratio 2:9 respectively. Find the ratio of forces the masses experienced.
   (a) 1:4 (b) 2:1 (c) 2:3 (d) 2:5
10. When temperature of a liquid increases, its surface tension
    (a) decreases (b) increases (c) remain constant (d) increases then decrease 11. A 5 kg block is released from rest on a smooth plane inclined at an angle of 30^0 to the horizontal. What is the acceleration down the plane?
    (a) 5.0 ms^{-2} (b) 8.7 ms^{-2} (c) 25.0 ms^{-2} (d) 5.8ms^{-2}
12. A man stands 4m in front of a plane mirror. If the mirror is moved 1m towards the man, the distance between him and his new image is
    (A) 3m (b) 5m (c) 6m (d) 10m
13. An electric cell has an external resistance of 2Ω. A current of 0.5Ampere was measured when a resistor of resistance 5 Ω was connected across it. Determined the electromotive force of the cell.

    (a) 3.5V (b) 2.5V (c) 4.5V (d) 2.35

14. Calculate the acceleration of a particle of mass 4kg which is acted upon by a force 5N.

    (a) 2.0 ms^{-2} (b) 1.25ms^{-2} (c) 12.5ms^{-2} (d) 20.0ms^{-2}

15. It is known that an atomic nucleus comprises of positively charged protons. Which of the following also exist in the nucleus

(a) beta particle (b) alpha particle (c) neutron (d) electron

16. The electromagnetic waves that are sensitive to temperature changes are

(a) Ultra-violet rays (b) gamma-ray (c) infra-red rays (d) x-rays

17. The silver wall of a vacuum flask prevents heat loss due to

(a) Diffraction (b) Conduction (c) convection (d) radiation

18 The coefficient of kinetic friction between smooth, dry surface of steel and wood is approximately 0.02. Calculate the force require to pull 15kg block of steel along a horizontal wooden surface at a steady speed of 0.2m/s.

(A) 1.94N (b) 2.49N (c) 1.52N (d) 2.94N

19 Which of the following radiation cannot be deflected by an electric field or a magnetic field?

I. Alpha particle II. beta particle III. gamma particle IV. x-ray (a) I, II and III (b) I and III (c) III and IV (d) I and III

20. A vehicle of mass m is driven by an engine of power p from rest. Find the minimum time t it will take to acquire a speed V.

(a) mv^2/p (b) $mv^2/2p$ (c) mv/p (d) $MV/2p$

21. A body accelerates uniformly from rest at $6ms^{-2}$ for 8sec and then decelerates uniformly to rest in the next 5se(c) The magnitude of the deceleration is

(a) $9.6ms^{-2}$ (b) $48ms^{-2}$ (c) $24.0ms^{-2}$ (d) $39.4ms^{-2}$

22. A coil of copper wire N turns in a kept rotating between the poles of a permanent magnet such that the magnetic flux linking the coil changes continuously. Which of the following statement is TRUE?

(a) an E.M.F is induced in the coil such that when the change of flux is positive the emf is positive, and when the change of flux is negative, the emf is negative

(b) An emf is induced in the whose coil magnitude is inversely proportional to both the number of turns in the coil and the rate of change of magnetic flux

(c) An emf is set in the permanent magnet which reduces the flux in the coil to zero

(d) A current flows in the coil and an emf is setup proportional to both the rate of change of the flux and the number of turns

23. The half-life of a radioactive element is 9 days. What fraction of atoms has decayed in 36 days?

(a) 1/16 (b) 1/4 (c) 1/2 (d)15/16

24. Two nearly equal masses are connected by a string passing over massless, frictionless pulley. This physical system is called Atwood machine. The two masses are 195g and 205g, determine the acceleration of the masses.

(a) 0.250.m/s^2 (b) 0.025m/s^2 (c) 0.35m/s^2 (d)0.35m/s^2

25. A jar 20m deep is full of liquid of relative density 1.3. At what depth below the liquid surface is the pressure equal to the pressure exerted by a column of 5cm of mercury of relative density 13.6.

(a) 0.52mm (b) 6,670.80m (c) 981m (d) 0.05m.

26. An object moves along a circle from point P1 and point P2, if the distance travelled is one quarter of the circumference, determine the angular displacement.

(a) 2π rad (b) π/4rad (c) π/8rad (d) π/3rad

27. Compute the final temperature in degree Celsius of a mixture of 100g of water at 20^0 and 2.0kg of copper at 100^0C

(a) 331.67 (b) 273.15 (c) 58.52 (d) 373.1

28. Which of the following statement is true?

(a) As the slope of an incline plane increases the velocity ratio decreases

(b) The efficiency of an incline plane decreases also

(c) The effort required to push a given load up an inclined plane increases as the slope increases

(d) The mechanical advantage of a smooth inclined plane depends on the ratio of the length of the height of the plane

29. Which of the following are the two forces experienced by an object immersed in a fluid?

I. weight II. Tension III. Buoyant force IV. Frictional force

(a) I (b) II (c) I and III (d) III and IV

30. Which of the following are the characteristics of pressure liquid?

I. increases with depth

II. Varies with depth

III. The pressure act equally
IV. Pressure at all point at the same depth is the same

(a) I (b) II (c) III (d) I, II, III and IV

31. Calculate the force required to pull 15kg block of steel along a horizontal wooden surface at a steady speed of 0.2m/s.

(a) 1.94N (b) 1.49N (c) 1.52N (d) 2.94N

32. Which of the following factor are used in the classification of matter?

I. intermolecular attractive forces

II. mean thermal energy

III. viscosity

IV. pressure

(a) I (b) II (c) I and II (d) III

33. The mass of a specific gravity bottle is 7.6g when it is empty. It is 12.4g when filled with kerosene and 13.6g when filled with distilled water. Calculate the relative density of kerosene.

(a) 1.25 (b) 1.0 (c) 0.90 (d) 0.80

34. A piece of solid substance weighs 80g in air, 60g when totally immersed in a liquid water and 66g in liquid X. Calculate the relative density of liquid X.

(a) 0.7 (b) 1.33 (c) 1.21 (d) 0.83

35. The triple point of water is a thermodynamic temperature at which of the following values

(a) 279.15 (b) 100^0C (c) 37.5K (d) 273.16K

36. A quantity of ice at -10^0C is heated until the temperature of the heating vessel is 90^0C. Which of the following constants is NOT required to determine the quantity of heat supplied to the vessel? (a) specific latent heat of vaporization

(b) specific capacity of ice

(c) specific latent heat of fusion

(d) specific latent heat of water

37. The scent from a jar of perfume opened in one corner of a room is picked up in another part of the room. The perfume moves through the air molecules by

(a) Evaporation (b) Osmosis (c) Diffusion (d) Convection

38. The ice and steam points of the thermometer are 20mm and 100mm respectively. A temperature of 75^0C corresponds to Y mm on the thermometer. What is Y?

(a) 100mm (b) 70mm (c) 80mm (d) 60mm

39. The most suitable type of mirror used for the construction of a searchlight is the

(a) Concave mirror (b) Convex mirror (c) spherical mirror (d) parabolic mirror

40. An astronomical telescope is said to be in normal adjustment when the

(a) eye is accommodated

(b) focal length of objective lens is longer than that of an eye piece

(c) final image is at the near point of the eye

(d) final image is at infinity

41. Light waves and ripples of water are similar because both

(a) are longitudinal (b) have the same velocity (c) have the same frequency (d) can be diffracted and refracted

42. A hydrogen tank of volume $0.08m^3$ at constant temperature is filled to a pressure of 30,000kpa. What was the original volume of the hydrogen when it was at a pressure of 2 atmosphere? (1 atm =100kpa)

(a) 12.00m^3 (b)120.00m^3 (c)24.00m^3 (d)2.40m^3

43. An object of height 3.00cm is placed 10cm in front of a biconvex lens of a focal length 15cm. The image of the object is

(a) Real and 3.00cm tall (b) Virtual and 3.00cm tall (c) virtual and 9.00cm tall (d) Real and 9.00cm tall

44. A 3000W electric cooker is to be used on a 200V mains circuit. Which of the fuses below can be used safely with the cooker?

(a) 2A (b) 5A (c) 10A (d) 20A

45. Which of the following is not a fundamental quantity in physics?

(a) Amount of substance (b) Electric voltage (c) luminous intensity (d) Time

46. On a velocity time graph, a straight line drawn parallel to the time axis represents

(a) uniform velocity (b) uniform acceleration (c) uniform acceleration (d) uniform displacement

47. A body is thrown up with an initial velocity of 30m/s. What is its velocity in (m/s) at maximum height?

(a) 100 (b) 80 (c) 50 (d) 30

48. For a body performing circular motion, its

(a) speed is uniform (b) acceleration is centrifugal (c) force is restoring (d) displacement is constant

49. At what temperature do the Fahrenheit and Kelvin scales have the same numerical value?

(a) 120 (b) -40 (c) 573.25 (d) 40

50. An astronaut experience weightlessness in space when he

(a) does not hold anything mile in space

(b) is midway between the sun and the earth

(c) is free from the earth gravitational field

(d) is walking on the moon

51. The friction which operates when solid surface slides over another is called

(a) Solid friction (b) Static friction (c) Limiting friction (d) Dynamic friction

52. Which of the following conclusion can be drawn from Newton second law of motion?

(a) Force is proportional to acceleration

(b) Force is proportional to extension

(c) Force is proportional to the product of mass and velocity

(d) Force is proportional to the product of pressure and areas

53. In which of the following transitions does a solid changes directly into gases?

I. fusion II. condensation III. sublimation IV. solidification

(a) I (b) II (c) III (d) I and II

54. If M and R are the masses and radius of the earth respectively and G is the universal gravitational constant, the earth gravitational potential at an altitude H above the ground level is (a) –GM/R (b) –GM/(R+H) (c) –GM /2H (d) –GM/(R-H)

55. An electric kettle with negligible heat capacity is rated at 2000 W. If 2.0kg of water is put in it how long will it take temperature of water to rise from 20^0 to 100^0C.

(S.H.C of water = 4200 J Kg^{-1} k^{-1})

(a) 336s (b) 420s (c) 168s (d) 84s

56. The tendency of a body to remain `at the state of rest when a force is applied to it is called

(a) impulse (b) momentum (c) inertia (d) motion

57. A man pulled from a wall with a string tied to the nail tied to the nail. If the string is inclined at an angle of 30^0 to the wall and the tension in the string is 50N, the effective force used in pulling the nail is

(A) 25N (B) $25\sqrt{3}$ N (C) 50N (D) $50\sqrt{3}$N

58.

(a) 1/16H (b) 1/8H (c) 1/64H (d) 1/32H

59. Under constant tension and constant mass, the note produced string is 500Hz when the length of the string is 0.90 m at what length of the frequency 150H

(a) 6 (b) 5 (c) 3 (d) 4

60. Two bodies P and Q are projected on the same horizontal plane, with the same initial speed but at different angles of 300 and 600 respectively to the horizontal neglecting air resistance, what is the ratio of range of P to that of Q?

(a) 1:1 (b) $1:\sqrt{3}$ (c) $\sqrt{3}:1$ (d) 1:2

61. A constant force of 6N is applied parallel to a 5kg mass initially at rest. The mass moves through a horizontal distance of 5.0m. What is the work done by the force?
(a) 3J (b) 6J (c) 12J (d) 30J

62. A smooth steel ball is dropped from height of 3.0m. How long does it takes to fall 3.0m if it is released from rest?

(a) 0.61s (b) 0.66s (d) 0.785 (d) 0.81s

63. A gas would serve as an electrical conductor under

(a) reduced pressure and high current

(b) increased magnetic field

(c) reduced pressure and reduced potential difference

(d) exposure to visible light

64. A stationary stone at a height of *x*cm above the ground possess one of the following types of energy.

(a) potential energy (b) stationary energy (c) vibrational energy (d) mechanical energy 65 Which of the following types of waves cannot travels through a vacuum?

(a) sound waves (b) light waves (c) infra-red waves (d) X-rays

66. When a jar containing a certain gas is opened, the motion of the escaping gas is

(a) translational (b) random (c) rectilinear (d) circular

67. I. Low pressure II. High pressure III. High p.d IV. Low p.d

Which of the combination of the above is true of the conduction of electricity through gases?

(a) I and IV only (b) I and III only (c) II and III only (d) II and III only 68. The current through a resistor in an a.c circuit is given as 2 sin wt. Determine the d.c equivalent of the current.

(a) $A/\sqrt{2}$ (b) $2/\sqrt{A}$ (c) 2 A (d) $\sqrt{2}\ A$

69. The process of energy production in the sun is

(a) nuclear fission (b) nuclear fusion (c) electron collision (d) radioactive decay

70. Energy losses through eddy currents are reduced by using
(a) low resistance wires (b) insulated soft iron wires (c) few turns of wires (d) high resistance wires

71. The inner diameter of a test tube can be measured accurately using a

(a) micrometer screw gauge (b) pair of dividers (c) meter rule (d) pair of vernier calipers

72. A bullet of mass 0.1kg is thrown vertically upwards with a speed of $10ms^{-1}$ from the top of a tower 10m high. Neglecting air resistance, its total energy just before hitting the ground is (take $g=10ms^{-2}$)

(a) 5 J (b) 10 J (c) 15 J (d) 20 J

73. A solid weigh 10.00N in air, 6N when fully immersed in water and 7.0N when fully immersed in a liquid X. Calculate the relative density of the liquid X.

(a) 5/3 (b) 4/3 (c) ¾ (d) 7/10

74. The temperature gradient across a copper rod of thickness 0.02m, maintained at two temperature junctions of 20^0C and 80^0C respectively is

(a) $3.0 \times 10^2 Km^{-1}$ (b) $3.0 \times 10^3 Km^{-1}$ (c) $5.0 \times 10^3 Km^{-1}$ (d) $3.0 \times 10^4 Km^{-1}$

75. If a sound wave goes from a cold region to a hot air region, its wavelength will

(a) increase (b) decrease (c) decrease then increase (d) remain constant

76. Which of the following electromagnetic waves is least energetic?

(a) Infra-red rays (b) X-rays (c) Ultra-violet rays (d) Gamma rays

77. At what frequency would a 10H inductor have a reactance of 2000Ω?

(a) π/2000Hz (b) π/100Hz (c) 100/ πHz (d) 100πHz

78. Gamma rays are produced when

(a) high velocity electrons are abruptly stopped in metals

(b) energy changes occur within the nucleus of atoms

(c) energy changes occur within the electronic structure of atoms

(d) electrons are deflected in very strong magnetic fields

79. What is the speed of a particle of mass 10^{-27}kg whose wavelength is 10^{-8}m?

[h = 6.63 x 10^{-34} Js]

(a) 6.63 ms^{-1} (b) 66.30 ms^{-1} (c) 663.0 ms^{-1} (d) 6630.0 ms^{-1}

80. When a ship sails from salt water into fresh water, the fraction of its volume above the water surface will

(a) increase (b) decrease (c) remain the same (d) increase then decrease

81. The velocity ratio of a machine is 5 and its efficiency is 75%. What effort would be needed to lift a load of 150 N with the machine?

(a) 20 N (b) 30 N (c) 40 N (d) 50 N

82. A rope is being used to pull a mass of 10kg vertically upward. Determine the tension in the rope if, starting from rest, the mass acquires a velocity of 4 ms^{-1} in 8s. [g = 10 ms^{-2}]

(a) 5 N (b) 50 N (c) 95 N (d) 105 N

83. A boy observes a piece of stone at the bottom of a river 6.0m deep. If he looks from the surface of the river, what is the apparent distance of the stone from him? [Refractive index of water = 4/3]

(a) 8.0m (b) 5.5m (c) 5.0m (d) 4.5m

84. The main reason for making the cover of a vacuum flask airtight is to prevent heat loss by

(a) convection (b) conduction (c) radiation (d) evaporation

85. If a charged ion goes through combined electric and magnetic fields, the resultant emergent velocity of the ion is

(a) E/B (b) EB (c) B/E (d) E-B

86. In a thermonuclear reaction, the total initial mass is 5.02×10^{-27}kg and the total final mass is 0.01×10^{-27}kg. The energy released in the process is

[$c = 3.0 \times 10^{8}ms^{-1}$]

(a) 9.0×10^{-13}J (b) 9.0×10^{-12}J (c) 9.0×10^{-11}J (d) 9.0×10^{-10}J

87. A 2H inductor has negligible resistance and is connected to a $50/\pi$ Hz A.C supply. The reactance of the conductor is

(a) 200 Ω (b) 50 Ω (c) $100/\pi$ Ω (d) $25/\pi$ Ω

88. The height at which the atmosphere cease to exist is about 80 km. If the atmospheric pressure on the ground level is 760mmHg, the pressure at the height of 20 km above the ground level is?

(a) 380mmHg (b) 570mmHg (c) 190mmHg (d) 480mmHg

89. Ice cubes are added to a glass of warm water. The glass and water are cooled by

(a) conduction only (b) convection only (c) conduction and convection (d) convection and radiation

90. The thermometric substance of an absolute thermometer is

(a) alcohol (b) mercury (c) helium (d) platinum

91. In a Daniel cell, the depolarizer, positive and negative electrodes are respectively

(a) copper sulphate, copper and zinc

(b) manganese dioxide, carbon and zinc

(c) sulphuric acid, lead oxide and lead

(d) potassium hydroxide, nickel and iron

92. A transistor function mainly as a

(a) switch and amplifier

(b) rectifier and an amplifier

(c) charge storer and an amplifier

(d) charge storer and a switch

93. A cell of internal resistance 0.01Ω can be measured accurately using the

(a) Ohm meter (b) meter bridge (c) potentiometer (d) electroscope

94. An electric generator with a power output of 3.0 kW at a voltage 1.5 kV distributes power along cables of resistance 20.0Ω. The power loss in the cables is

(a) 80.0 W (b) 40.0 W (c) 10.0 W (d) 0.1 W

95. The resultant of two forces acting on an object is maximum if the angle between them is

(a) 45^0 (b) 0^0 (c) 90^0 (d) 180^0

96. A string is fastened tightly between two walls 24cm apart. The wavelength of the second overtone is

(a) 24cm (b) 16cm (c) 12cm (d) 8cm

97. A resistance R is connected across the terminal of an electric cell of internal resistance 2Ω and the voltage was reduced to 3/5 of its nominal value. The value of R is

(a) 3 Ω (b) 2 Ω (c) 1 Ω (d) 6 Ω

98. Which of the following metals will provide the greatest shield against ionizing radiation?

(a) Iron (b) Manganese (c) Aluminium (d) Lead

99. Vibration in a stretched spring cannot be polarized because they are

(a) stationary waves (b) transverse waves (c) longitudinal waves (d) mechanical waves

100. A gas at a volume of V_0 in a container at a pressure P_0 is compressed to one-fifth of its volume. What will be its pressure if the magnitude of its original temperature T is constant?

(a) $P_0/5$ (b) $4P_0/5$ (c) P_0 (d) $5P_0$

ANSWERS: PHYSICS

1. C
2. A
3. C
4. B
5. A
6. A
7. A
8. D
9. C
10. A
11. C
12. A
13. A
14. B
15. C
16. A
17. D
18. C
19. C
20. B
21. A
22. B
23. B
24. A
25. D
26. B
27. C
28. A
29. C
30. D
31. D
32. C
33. D
34. A
35. D
36. B
37. C
38. C
39. B
40. C
41. A
42. A
43. D
44. C
45. B
46. C
47. D
48. A
49. C
50. C
51. C
52. C
53. C
54. D
55. A
56. C
57. A
58. B
59. B
60. B
61. D
62. D
63. A
64. A
65. A
66. B
67. B
68. B
69. B
70. B
71. D
72. C
73. C
74. A
75. B
76. A
77. C
78. B
79. B
80. B
81. C
82. A
83. D
84. A
85. A
86. A
87. A
88. B
89. C
90. B
91. A
92. B
93. B
94. A
95. B
96. B
97. A
98. D
99. D
100. D