ANSWER ALL QUESTIONS TIME ALLOWED:

Shade the answer sheet as appropriate with HB pencil only

PHYSICS

1. A simple pendulum makes 50 oscillations in one minute. What is the period of oscillation?
A. 0.02s B.0.20s C. 0.83s
D. 1.20s E. 50.00s

2. A girl whose mass is 55kg stands on *a* spring-weighing machine inside a lift. When the lift starts to ascend, its acceleration is 2ms-2. What will be the reading on the machine? (Take g = 10ms')
A. 66kg B. 55kg C. 44kg D. 22kg E. 11kg

3. A boy pulls a nail from a wall with a string tied to the nail. The string is inclined at an angle of 600 to the wall. If the tension in the string is 4N.what is the effective force used in pulling the nail?
A. 2N C. 4N
E. 8N

4. Which of the following is not a vector quantity?
A. momentum B. force C. velocity D. temperature E. displacement

5. A real image of an object formed by a converging lens of focal length 15cm is three time the size of the object..What is the distance of the object from the lens?
A. 30cm B. 25cm C. 20cm
D. 15cm E. 10cm

6. Which of the following remain(s) unchanged as light travels from one medium to another?
I. speed II. Wavelength III Frequency
A. I only B. II only C. Ill only D. I and II only E. II and III only

7. A concave mirror of radius of curvature 20cm has a pin placed at 15cm from its pole. What will be the magnification of the image formed?
A. 4.00 B. 2.00 C. 1.33 D. 1.50 E. 0.25

8. The image in a pin-hole camera is always
A. diminished B. enlarged C. upright D. inverted E. blurred

9. An object weighs 10.0N in air and 7.0N in water. What is its weight when immersed in a liquid of relative density 1.5? A. 4.50N B. 4.67N C. 5.50N D. 6.67N E. 8.50N

10. A converging lens of focal length 5cm forms a virtual image which is 10cm from the lens. How far from the lens is the object? A. 2.0cm B. 3.3cm C. 5.0cm D. 10.0cm E. 15.0cm

11. The count rate of an alpha-particle source is 400 per minute. If the half-life of the source is 5 days, what would be the count rate per minute after I5 days? A. 20 B. 25 C. 50 D. 200 E. 400

12. The nucleon number and the proton numbers of a neutral atom of an element are 238 and 92 respectively. What is the number of neutron in the atom? A. 330 B. 238 C. 146 D. 119 E.73

13. In 24 days a radioactive isotope decreases in mass from 64g to 2g. what is the half life of the radioactive material? A. 0.75 days

B. 2.58 days C. 4.00 days D. 4.80 days E. 6.00 days
14. When an atom gains or loses a charge, it becomes
A. an ion B. an electron C. a neutron D. a proton E. a deuteron
15. Beta particles are A. electrons B. protons C. neutrons D. helium nuclei E. tritium, nuclei
16. Which of the following has the shortest wavelength?
A. infrared ray B. gamma rays C. ultra violet ray D. radio wave E. visible light
17. The inability of the eye to focus near objects is known as
A. long sight B. astigmatism
C. presbyopia D. glaucoma
E. short sight
18. A ball is projected horizontally from the top of a hill with a velocity of 20ms-1. If it reaches the ground 4 seconds later, what is the height of the hill? (g = 10ms).
A. 20m B. 40m C. 80m
D. 160m E. 200m
19. Calculate the resistance of the filament of a lamp rated 240V40W.
A. 2400 B. 36000 C. 7200
D. 14400 E. 28800
20. A cube made of a metal of linear expansivity initial 'volume of the cube is V, what is the increase in volume of the cube?
D. 2aVt

CHEMISTRY

21. When sucrose is warned with Fehling solution.
A. a silver mirror is produced
B. the turns milky
C. a brick-red precipitate is formed
D. There is no precipitate
E. a blue black coloration
22. Which of the following gases will have the highest rate of diffusion under the same conditions (H = 1, C = 12, *O = 16, S = 32,* Cl = 35.5) A. O2 B. C12 C. HC1 D. H2S E. CO2
23. Which of the following involves the decomposition of a sugar by enzymic action?
A. Esterification B.Fermentation
C. Dehydration D. Polymerization
E. Saponification
24. When iron rusts, it undergoes
A. Deliquescence B. Chemical Decomposition C. hydrolysis D. Redox reaction
E. Combustion
25. Hydrogen is used for the following except
A. manufacturing of ammonia
B. synthesis of hydrochloric acid
C. extinguishing fire
D. conversion of coal to petrol
E. manufacture of magarine
26. Petrol can be obtained from diesel by
A. distillation B. cracking
C. polymerization D. dehydrogenation E. catalysis
27. The following metals are attracted by electrolytic method except
A. potassium B. calcium C. sodium D. tin E. magnesium
28. The complex salt formed when aluminum dissolves in sodium hydroxide solution is
A. Na3Al(OH)4 B. Na2Al(OH)3
C. NaAl(OH)3 D. Na4Al(OH)4
E. NaAl(OH)4

29. Which of the following is a waste product in the solvay process for the manufacture of sodium trioxocarbonate(IV)?
A. Ammonium chloride B. brine C. limestone D. calcium oxide E. calcium oxide
30. Which of the following is not a naturally occurring Iron ore?
A. FeCl2 B. Fe2O3 C. Fe2O3 D. FeCO3 E. FeS2
31. Which of the following materials cannot be extracted from its ore by using carbon or carbon (II) oxide as the reducing agent? A. Cu B. Zn C. Al D. Pb E. Fe
32. Chlorine is used in water treatment as
A. a germicide B. a decolorizing agent C. an anti-oxidant D. a coagulating agent E. an aerating agent
33. The properties of electrovalent compounds include the following except
A. a high melting and boiling point
B. conduction of electricity in the molten state
C. high volatility at room temperature
D. ionization of aqueous solution
E. decomposition of their solutions by electric current
34. Alkanes are used mainly
A. in the production of plastics
B. as domestic and industrial fuels
C. in the textile industry
D. in the hydrogenation of oils E. as line chemicals
35. Which of the following solids has a network structure?
A. diamond B. iodine C. sulphur D. graphite E. iron
36. Which of the following separation is routine applied in the petroleum industry? A. filtration B.chromatography C. fractional crystallization D. evaporation E. fractional distillation
37. Which of the following observation is not correct about the reaction of sodium metal with cold water?
A. The reaction is spontaneous
B. the reaction is endothermic
C. hydrogen is produced
D. the sodium melts and dissolves
E. the resultant solution is alkaline
38. The formula (CH3)3COH is that of
A. polyhydric alcohol B. secondary alkanol C. tertiary alkanol D. primary alkanol E. trihydricalkanol
39. What is the number of oxygen atoms in 32g of th gas? (O = 16, L = 6.0 x 1024mor').
A. 3.2x 1023 B. 6.0 X 1023 C. 1.2 0 X 1024 D. 1.60 X 1024 E. 2.0 X 1024
40. The ionic radii of metals are usually
A. greater than their atomic radii
B. unaffected by the charge of the ion
C. less than their atomic radii
D. greater than those of non-metals
E. the same as their atomic radii

ENGLISH

From the words lettered A to E below each of the following sentences, choose the group of words that is nearest in meaning to the underlined expression as it is used in the sentence.

41. She tried to settle the quarrel but the man remained obstinate to listen to her.
A. offensive B. angry C. stubborn D. unstable E. impolite
42. Okon attempted to entice Eno with the promise a handsome sum of money
A. deceive B. enchant C. force D. trick E. tempt
43. I am very proud to speak before this august assembly.

A. Ignominious C. monthly D. untrue E. popular
44. It is University of Ibadanrd to suggest that Tunde should marry that saucy lady.
A. pitiable B. hopeless C. humorous D. untrue E. ridiculous
45. The principal's orders are imperative. A. lenient B. authoritative C. genuine D. E. necessary
46. The suspect was made to walk in front of the anxious crowds.
A. surprised B. astonished C. engrossed D. curious E. questionable
47. The lawyer's argument of the case was exhaustive
A. Interesting B. exaggerating C. exhilarating D. thorough E. fascinating
48. The superintendent was appalled by the attitude of some of the employees towards their work.
A. annoyed B. disappointed C. shocked D. provoked E. depressed
49. Death is inevitable for a man. A. unavoidable B. essential C. necessary D. immoral E. imminent
50. The decision taken by the panel is irrevocable.
A. irreversible B. unexpected C. acceptable D. irresponsible E. unacceptable

From the words or group of words lettered A to E, choose the one that best completes each of the following sentences

51. .....is the owner of this pair of shoes? A. who B. whom C. which D. whose E. when
52. My uncle is an expert ..... Mechanical engineer A. at B. in C. with D. for E. on
53. The PTA meeting did not adjourn until it had discussed all the matters placed ZZ it
A. by B. with C. before D. over E. on
54. Nobody was surprised that the thief was convicted ZZ. All the charges
A. on B. with C. of D. over E. for
55. It has been rough so far ZZ? A. hasn't it B. B. hadn't it C. isn't it D. wasn't it E. haven't it
56. The master says he's accountable Z the president, and nobody else A. from B to C. with D. by E. for
57. You were punished because you .... ..last week without permission.
A. ought not to have traveled
B. must not have travelled
C. Ought not to travel
D. will not have travelled
E. ought to have travelled
58. The president's speech ZZ At 7pm yesterday.
A. is broadcast B. has been broadcast C. were broadcast D. was broadcast
59. She Z.... . .before I entered the office.
A. has to be questioned
B. has been questioned
C. have been questioned
D. had been questioned
E. is being questioned
60. The suspect ....when I entered the office.
A. has been questioned
B. have been questioned
C. was being questioned
D. is being questioned
E. will be questioned

MATHEMATICS

61. The angle of the sector of a circle of diameter 8cm is 135°. Find the area of the sector. (TC= 22/7)
A. 3/20 B.lfi C. 1/4 D. 3/10 E. 3/4

62. Calculate, correct to three significant figures, the length of an arc that subtends an angle of 70° 22/7)
A. 2.44cm B. 4.89cm
C. 9.78cm D. 25.1cm E. 50.3cm

63. A number is chosen at random from the set {1,2,3,...9,10}. What is the random probability that the number is greater than or equal to 7? A. 1/10 B. 3/10 C. 2/5 D. 3/5 E. 7/10

64. A fair die is rolled once. What is the probability of obtaining 4 or 6?
A. 1/12 B. 1/6 C. 1/3 D. ½ E. 2/3

65. S = {1,2...5,6}, T= {2,4,5,7} and R = {1,4,5}, find {S
A. {1,4,5} B.{2,4,5} C. {1,2,4.5} D. {2,3,4,5} E. {1,2,3,4,5}

66. Simplify ¾ *x* (1½ - 2/3) A. 7/30 B. 7/24 C. 9/25 D.1/2 E.18/25

67. Solve the inequality 3m + 3>9
A. m > 2 B.m>3 C. m >6 D. m > 6 E. m > 12

68. Convert 89 in base ten to a number in base two
A. 1101001 B. 1011001
C. 1001111 D. 101101 E. 1101

69. The nth term of a sequence is given by (-l)n-1, find the sum of the second and third terms
A. -2 B. 1 C. 2 D. 6 E. 12

70. In an arithmetic progression, the first term is 2 and the sum of the 1st and 6th terms is 614. What is the 4th term?
A. 12 B.91/2 C. 8 D. 7 E. 51/2

71. While doing his Physics practical Chioma recorded a reading of 1.12cm instead of 1.21cm calculate his percentage error.
A. 1.17% B. 6.38% C. 7.44%
D. 8.05% E. 9.00%

72. From the top of a building 10m high, the angle of depression of a stone lying on the horizontal, ground is 69°. Calculate, correct to one decimal place, the distance of the stone from the foot of the building.
A. 3.6m B. 3.8m C. 6.0m D. 9.3m E. 26.1m

73. Factorize 3a2 – 11a + 6
A. (3a-2)(a-3) B. (2a-2)(a-3) C. (3a-2)(a + 3) D. (3a + 2)(a – 3) E. 2a - 3)(a + 2)

74. Solve the equation 3a + 10 = a2 A. 5, 2 B. -5, 2 C. 10, 0 D. 5, -2 E. -5, -2

75. The common ratio of a geometrical progression is 2. if the 5th term is greater than the 1st term by 45, find the 5th term. A. 3 B.6 C. 45 D. 48 E. 90

76. Which of the following about a rhombus may not be true?
A. The diagonals are equal
B. the diagonals bisect the angles through they pass
C. the diagonals bisect each other
D. the adjacent sides are equal E. opposite angles are equal

77. Evaluate log,025 + log,032 - Iog108 A. 0.2 B. 2 C. 100 D. 409 E. 490

78. Construct a quadratic equation whose roots are -1/2 and 2.
A. 3x2 – 3x + 2 = 0 B. 3x2 + 3x - 2 = 0 C. 2x2 + 3x - 2 = 0 D. 2x2 – 3x + 2 = 0 E.2x2 – 3x - 2 = 0
79. What must be added to the expression x2 – 18x to make it a perfect square?
A. 3 B. -9 C. 36 D. -72 E. 81
80. Solve the equation m/3 + ½ = ¾ + m/4. A. -3 B. -2 C. 2 D. 3 E. 4

SOLUTIONS TO POST UME 2006/2007

PHYSICS

1. Period T = t/n = 60/50 = 1.20s **=B**
2. = B There is no change in mass
3. Effective force Fx = Fcos 60 = 4cos 60 = 4(0.5) = 2N **= A**
4. Temperature **= D**
is positive for a converging lens. Distance of real object and real image are positive
= 1/5
u = 60/3 = 20cm **= C** 6. =A
- 1/u = 1/10 – 1/15 = 1/30 and v = +30cm; v is positive so image is real.
Magnification m = v/u = 30/15 = 2.00 **= B** 8. = E
9. Rel. Density = weight – in – air
Weight – of – equal – volume – of – water
1.5 = 10/ b; 1.5b = 10 and b = 6.67N **=D**
- 1/v = 1/5 – 1/10 = 1/10. u = 10cm **= D**
11. 15/5 = 3 400/2 = 200 1st half of decay = 5days
200/2 = 100 2nd half of decay = 5days 15 days
100/2 = 50 3rd half of decay = 5days **= C**
12. Proton and neutron constitute the nucleon.
Hence neutrons = Nucleon – Proton = 238 – 92 = 146 **= C**
13. 14/2 = (½)24/t
1/2 => 3.2 = (0.5)24/t 1/2
14. A 16. B
15. A 17. A
18. S = ut + ½ gt2 = 20.4 + ½ . 10.16
S = 80 + 80 = 160m
19. P = IV = V2/R = I2R where V = 240, P = 4W
R =V2= 2402 = 1440**= D** P 40
- Vt V1t
= E

CHEMISTRY

21. – 28. E 35. D
22. A 29. B 36. E
23. B 30. A 37. B
24. B 31. C 38. C
25. C 32. A 39. C
26. B 33. C 40. C
27. D 34. B

ENGLISH

41. Obstinate (often disapproving) refusing to change your opinions, way of behaving etc. when other people try to persuade you to; showing this: ANS stubborn = C
42. Entice: to persuade somebody/something to go somewhere or to do something, usually by offering them something ANS tempt = E
43. august: (Note this is different from August – the 8th month) Impressive, making you feel respect ANS popular = E
44. University of Ibadanrd: completely ridiculous, not logical and sensible ANS ridiculous = E
45. Imperative: very important and needing immediate attention or action (2) expressing authority: expressing an order ANS authoritative = B
46. Anxious: feel worried or nervous ANS curious = D

47. Exhaustive: very thorough, looking at a every detail ANS thorough = D
48. Appalled: feeling or showing horror or disgust at something unpleasant or wrong ANS shocked = C
49. Inevitable: that you cannot avoid or prevent ANS unavoidable = A
50. Irrevocable: that cannot be changed; final ANS irreversible = A
51. Note: 'whom' is used instead of 'who' as the object of a verb or proposition while who is usually used as the object pronoun, especially in questions. It is much more natural to use who and put the preposition at the end of the sentence ANS who = A
52. B 56. B 60. C
53. C 57. A
54. C 58. D
55. A 59. D

MATHEMATICS

61. Area of a sector A = 186/7
360 360 7
4.89cm = **B**
360 360 7
63. x> 7(8,9,10) = P(x) = 3
x = 7(7) = P(x) = 1
x > 7 = 3 + 1 =4 = 2
10 10 10 5 = **C**
6 6 6 6 6 3 = **C**
65. S = {1,2,3,4,5,6}; T = {2,4,5,7}; R = {1,4,5}
= **C** 66. = D
67. 3m + 3 > 9; 3m> 9 – 3; 3m > 6; and m > 2 = **A** 68. = B
69. Second term = (-1)2-2. 22-1 = 1.2 = 2
Third term = (-1)3-2. 23-1 = -4
Hence their sum is 2 + (-4) = -2 = **A**
70. a = 2, a + U6 = 614 = 2 + U6 and U6 = 612
U6 = a + (n – 1)d
612 = 2 + (6 – 1)d; 612 – 2 = 5d; and d = 610/5 = 122
The fourth term U4 = 2 +(4 – 1)122 = 368 Z Question is mixed up, but you can use this method
71. 1.21 – 1.12 x 100 = 7.44% = **C** 1.21
72. tan 21 = x ; x = 10tan 21 = 3.8 = **B**
73. 3a2 – 11a + 6 ; 3a2 – 9a – 2a + 6 = (3a – 2)(a – 3) = **A**

73. 3a2 – 11a + 6 ; 3a2 – 9a – 2a + 6 = (3a – 2)(a – 3) = **A**
74. 3a – 10 = a2 ; a2 – 3a – 10
a(a + 2) - 5(a – 2)
a = 5 or a = -2 = **D**
75. r = 2, U5 – a = 45; ar4 – a = 45
a(24 – 1) = 45; hence 15a = 45 and a = 3
U5 = ar4 = 3(24) = 48 = **D** 76. A
77. log1025 + log1032 – log108 = log1025 x 32 = log10800
Log10100 = 2log1010 = 2 = **B**
78. x = -½ , x = 2
(x + ½)(x – 2) = 0; x2 – 2x + x(½) – 1 = 0
x2 – 3/2x – 1 = 0 Multiply through by
2x2 – 3x – 2 = 0 = **E**
– – 4.1.c = 0 square both sides
182 – 4c = 0; 324 – 4c = 0 hence 324 = 4c and c = 81 = **E**
80. m +1 = 3 + m
3 2 4 4 Multiplying through by 12 gives
4m + 6 = 3(3) + 3m

73. 3a2 – 11a + 6 ; 3a2 – 9a – 2a + 6 = (3a – 2)(a – 3) = **A**
74. 3a – 10 = a2 ; a2 – 3a – 10
a(a + 2) - 5(a – 2)
a = 5 or a = -2 = **D**
75. r = 2, U5 – a = 45; ar4 – a = 45
a(24 – 1) = 45; hence 15a = 45 and a = 3
U5 = ar4 = 3(24) = 48 = **D** 76. A
77. log1025 + log1032 – log108 = log1025 x 32 = log10800
Log10100 = 2log1010 = 2 = **B**
78. x = -½ , x = 2
(x + ½)(x – 2) = 0; x2 – 2x + x(½) – 1 = 0
x2 – 3/2x – 1 = 0 Multiply through by
2x2 – 3x – 2 = 0 = **E**
– – 4.1.c = 0 square both sides
182 – 4c = 0; 324 – 4c = 0 hence 324 = 4c and c = 81 = **E**
80. m +1 = 3 + m
3 2 4 4 Multiplying through by 12 gives
4m + 6 = 3(3) + 3m

UNIVERSITY OF IBADAN 2007/2008 POST UME SCREENING EXERCISE
INSTRUCTION TO CANDIDATES
PLEASE ENSURE THAT YOU HAVE SUBMITTED ONLINE REGISTRATION FORM BEFORE AND AFTER THE EXAMINATION.
ANSWER ALL QUESTION TIME ALLOWED 1 ½ HOURS
Shade the answer sheet as appropriate with HB pencil Only
MATHEMATICS

1. Simplify 12 B. 2 -
2. Without using tables, the numerical value of log749 + log7(1/7) is A. 0 B. -1 C. 1 D. ½ E. 36
3. If x2 – 6x + 1 = 0, has coincident roots, the value of n is A. 9 B. -9 C. 3 D. 4 E. 36
4. The roots of y2 – y – 12 = 0 are A. 4, -3 B. -4, 3 C. -4, -3 D. 4,3 E. 36
- C. -
6. If 8x/2 = 23/8 x 43/4 the value of x is A.1 B.11/4 C. 15/8 D. ¼ E. ½
7. In set theory, an empty set is represented with B. { } C. {.} D. A and B E. All of the above
8. If A = {xeN:x2 – 3X + 2 = 0}, B = xeN: x(x – 3) = 0}, AB us A. {3} B. {12} D. {2} E. {1,2,3}
9. What value of x satisfy the inequality 2x + 2 < 5. A. x<1 B. x<1 C. x>1 D. x>1 E. 0<x<1
10. If the 39th term of an arithmetic progression is 141, what is the first term if the common difference is 2
A. 65 B. 141 C. 39 D. None of the above E. All of the above
11. The sum to infinity of the series 1 + ½ + ¼ + 1/8 Z. Is
A. 1 B. 2 C. 3 D. ½ E. 1/3
12. The value of sin 3000 is A. B. ½ C. –½ E. 1
13. How many sides has a rectangular polygon whose interior angle is 144?
A. 12 B. 9 C. 8 D. 10 E. 11
14. Simplify 272/3 x 322/5 A. 36 B. 9 C. 4 D.1/36 E. None of the above
15. The equation n2 – 16n + 64 has
A. equal roots B. imaginary roots C. Distinct roots D. No roots E. None of the above
16. The values of C for which 2c2 – 11c + 12 = 0 are
A. 4, ½ B. -4, 3/2 C. 4, -3/2 D. -4, -3/2 E. 4,3
17. Which of the following is not a surd E. None of the above
18. Simplify 4 – 1 1 C. 1 - D. 4 – 1
19. Solve 7/8 of 2¼ + (25/16 – 17/24) A.12/27 B. 15/22 C.63/32 D.48/77 E. 17/24
20. For what values of x and y are x + y = 2 and 2x – y = 7?

A. x = 3, y = -1 B. x = -3, y = 1 C. x = -3, y = -1 D. x = 1, y = 3 E. x = -1, y = 3

Use the following data to answer: questions 21 – 25

6,0,1,2,6,8,2,1,5,1,4,9,6,1,5,6,5,6,8,6,6

21. The range of the values is A. 8 B. 9 C. 6 D. 7 E. 5

22. The sum of the numbers and the number of items are

A. 85, 20 B. 85, 19 C. 80, 20 D. 95, 21 E. 80,19

23. The mean value is A. 4.47 B. 4.0 C. 4.25 D. 4.05 E. 4.21

24. The medium mark is A. 6 B. 5 C. 7 D. 8 E. 4

25. The mode of the marks is A. 7 B. 6 C. 8 D. 5 E. 4

CHEMISTRY

1. Rhombic sulphur, monoclinic sulphur and amorphous sulphur are:

A. Isomels B. Isotopes C. Allotropes D. Monomers E. Polymorphs

2. Laughing gas is

A. nitrogen (II) oxide B. Nitrogen (I) oxide C. Nitrogen (III) oxide D. Nitrogen (V) oxide E. Ammonia

3. The correct name of the compound $CH_3CH_2CONH_3$is

A. N-methyl-propionyl amide

B. Propionyl amide

C. Methyl propanamide

D. Methyl propionylamide

E. Propionylmethamide

4. The name pentanone is not specific and proper because it can refer to

A. 2-pentanone and 3-pentanone

B. 1- pentanone and 5-pentanone

C. Methyl propanone and propyl methanone

D. Methyl propanonne and methyl propyl butanone

5. The oxide that remains unchanged when heated with hydrogen is

A. CUO B. Fe_2O_3 C PoO_2 D. ZnO E. Ag_2O

6. What is the most metallic element in the set A. Na B. Ar C. P D. A E. Mg

7. What is the mole fraction of water in a solution prepared by mixing 12.5g of H_2O with 220g of acetone?

A. 0.817 B. 0.845 C. 0.183 D. 0.155 E. 0.205

8. A consequence of global warming is:

A. Air pollution B. Wafer pollution C. Increased humidity D. Flooding E. Little sunshine

9. Gunpowder is made from charcoal, Sulphur and Potassium trioxonitrate(V). The salt in the mixture perform^ function of: A. An oxidant B. A reductant C.A solvent, D. A catalyst E. Exploder

10. Which one of the following group II elements has the highest first ionization energy?

A. Be B. Mg C. Ca D. Sr E. B

11. In which one of the following compounds does sulphur have an oxisation number of +4?

A. H_2SO_4 B. H_2S C. SO_2 D. Na_2SO_3 E. $H_2S_2O_7$

12. Which one of the following does not show allotropy at room temperature and pressure?

A. Nitrogen B. Phosphorous C. Oxygen D. Carbon E. Sulphur

13. Cellulose and starch can classified as one of the following:

A. Sugar B. Sucrose C. hydrocarbon D. Carbonydrates E. Fibres

14. What mass of anhydrous solution of sodium trioxocarbonate (IV) is required to prepare 250cm3 of 0.10m solution? (Na = 23, C = 12, O = 16)

15. How many isomers can be formed from organic compounds with molecular formular C3H8O?
A. 2 B. 3 C. 4 D. 5 E. 6

16. Which of the following is not a property of magnesium oxide?
A. High melting point
B. Dissolution in polar solvent
C. Pressure of ionic bonds
D. Possession of crystal lattice
E. low binding energy

17. Catalytic hydrogenation of alkenes produces compounds with general formula
A. CnH2n+1OH. B. CnH2n+1 C. CnH2n+2 D. CnH2n-1 E. Cn(H20)y

18. Tetraoxosulphate (VI) acid is described as strong acid because it is highly
A. Corrosive B. Concentrated
C. Reactive D. Soluble in water
E. Ionized in water

19. Which of these metals. Mg, Fe, Pb, and Cu will dissolve in diluteHCl if air is blown through the solution?
A. Mg and Fe only B. All the metals
C. Mg, Fe and Cu D. Mg, Fe and Pb
E. Mg, Pb and Cu. —

20. A correct electrochemical series can be obtained from K, Na, Ca, Al, Mg, Zn, Fe, Pb, H. Ag, Au by interchanging
A. Zn and Fe B. Zn and Pb C. Al and Mg
D. Au and Ag E. None of the above. '

21. The oxidation of CH3CH2(CH3)OH gives:
A. 2-Butanone E. Methyl butane
B. 2-butanal *C.* Butane D. Butanoic

22. The solubility of alkanols in water is due to:
A. Their ionic character
B. Their covalent nature
C. Ability to form hydrogen bond
D. Their low boiling points
E. Their low dielectric com

23. The gas that is not associated with global warming is
A. CO2 B. H2 C. CH4 D. SO

24. In which order are the following salts sensitive to light:
A. AgBr>AgCl>Agl
B.AgCl>Agl>AgBr
C. Agl>AgCl>AgBr
D. AgCl>AgBr>Agl
E. AgBr>Agl>AgCl

25. A phenomenon where an element exists in different forms in the same physical state known as:
A. Isomerism B. Amorphism
C. Isotopy D. Allotropy E. Enantiomerism

PHYSICS

1. A piece of rubber 10cm long stretches 6mm when a load of 100N is hung from it. What is the strain?
A. 6 x 10'2 B. 60 C. 6 D. 0.6 E. 2 x 10-2

2. Which of the following does not cause a reduction of the surface tension of water?
A. Soap solution B. Alcohol C. Camphor D. Grease E. Solvent

3. The amount of heat required to raise the temperature of a body is
A. Thermal capacity B. Thermal energy
C. Specific heat capacity D. Heat lost E. heat gain

4. Water shows anomalous behaviour
A. below 100C B. At exactly 4°C C. between 4°C and 100°C D. Between 0°C and 4°C E. Above 1000C
5. Which of the following phenomena cannot be explained by the molecular theory of matter?
A. Radiation B. Conduction
C. Convection D. Evaporation
E. Saturation
6. A gas occupies a volume of 300cm3 at a temperature of 27°C. What is its volume at 540C, when the pressure is constant?
A. 150cm3. B 273cm3 C.327cm3
D. 600cm3 E. 125cm3
7. A man clapping his hands at regular intervals observes that the echo of a clap coincides with the next clap. If the reflecting cliff is 160m away and the speed of the sound is 320mS-1, what is the frequency of the clapping?
A. 2HzK B.4Hz C. 8Hz D. 1Hz E. 12Hz
8. Which of the fallowing properties is/are common to all waves? I Diffraction II Refraction III Frequency
A. IIonly B. I and II only C.I, II and III only D. I and III only E. II only
9. Which of the following factors affects the speed of sound in air? I Temperature II Pressure III Frequency
A. II only B.I and II only C. I only D. II and III only E. Ill only :
10. When white light is dispersed by a spectrometer, the component having the shortest wavelength is
A. Orange B. Green C. Red D. Violet E. Black
11. Shadows and eclipses result from the
A. Refraction of light
B. Diffraction of light
C. Rectilinear propagation of light
D. Reflection of light
12. Which of the following media allow the transmission of sound waves through them: I Air II Liquid III Solid.
A. I, II and III B. I and II only
C. I and III only D. II and III only
E. Ill only
13. The power dissipated in an a.c circuit with an r.m.s of 5A, r.m.s voltage of 10V and a phase angle of 60° is
A. SOW B. 120W C. 125W D. 25W E. 12W
14. A light of energy 5eV falls on a metal and the electrons with a maximum kinetic energy of 2eV are ejected. The work fraction of the metal is A. 0.4eV B. 7.0eV C. 2.5eV D. 3.0eV E. 1.0eV
15. In semiconductors, the carriers of current at temperature are
A. Electrons only B. Electrons and holes
C. Holes only D. Electrons and ions E. Ions only
16. The temperature at which water vapour present in the air saturates the air and begins to condense is known as
A. Boiling point B. Melting point
C. Dew point D. Triple point E. Violet light
17. Which of the following pairs is not part of the electromagnetic spectrum?
I Radio wave II Beta waves III Gamma rays IV Alpha rays
A. I and II B. II and IV C. Ill and IV
D. I and III E. all of the above
18. A wave of frequency 10Hz forms a stationary wave pattern in a medium where the velocity is 20cmS-1. The distance between the adjacent modes is
A. 15cm B. 1.0cm C. 2.0cm

D. 5.0cm E. 6.0cm
19. The length of a displaced pendulum bob which passes its lowest point twice every second, assuming g = 10ms-1 is A. 0.25m B. 0.45m C. 0.58m D. 1.00m E. 1.2m
20. The inner diameter of a small test tube can be measured accurately using a
A. micrometer screw gauge B. Pair of dividers C. Meter rule D. Pair of vernier calipers E. meter screw
21. An object is projected with a velocity of 80ms-1 at an angle of 300 to the horizontal. The maximum height reached, assuming g = 10m/s, is A. 20m B. 80m C. 160m D. 320m E. 40m
22. A cone in an unstable equilibrium has its potential energy,
A. Decreased B. Increased
C. Oscillating D. Unchanged
E. Undulating
23. A car of mass 800kg attains a speed of 25ms-1 in 20 seconds. The power developed in the engine is
A. 12.5KW B. 25.0KW C. 1.25MW
D. 2.50MV E. 1MV
24. When a ship sails from salt water into fresh water, fraction of its volume above the water surface will
A. Decrease B. Remain the same
C. Increase D. Increase then decrease
E. All of the above
25.A machine gun with a mass of 5kg fires a 50g bullet at a speed of 100ms-1. The recoil speed of the machine gun is A. 0.5m/s B. 3.5m/s C. 1m/s D. 2m/s E. 4m/s

ENGLISH

A. In the flowing questions choose the expression or word which best completes each sentence.

1. The student who went home without an exit has apologized ___ his misconduct.
A. On B. At C. About D. For E. It
2. The man has atoned ___ his sins.
A. Upon B. On C. For D. At E. Against
3. I am ___ seeing your family.
A. Forward to B. Ahead to C. Forward on
D. Ahead to E. At
4. These folk tales have been landed ___ from generation to generation
A. In B. At C. Over D. Over E. Eat
5. The young lovers first met ____ the University of Ibadan Night dancer
A. In B. At C. Inside D. In course of E. From
6. I have not seen my house master ____ the beginning of this session
A. From B. In C. For D. Since E. Concerning
7. Get _____ the untimely death of his son
A. Off B. By C. Through D. Over E. Eat 8.
8. If you keep playing with this door handle, it will get ___
A. lose B. Loose C. lost D. Loosing
E. Renewed

(B) In each of the following questions, choose the option nearest in meaning to the underlined word.

9. She was dressed in a gorgeous costume
A. Richly coloured B. Loose
C. Badly sewn D. Tight fitting E. Bad Colour
10. Obi's reaction is too subtle to be understood
A. Violet B. Real C. Clever D. Wild E. Cold
11. Many people are often deceived by superficial knowledge
A. Cheap B. Shallow C. Attractive
D. Penetrating E. All of the above
12. His subjects rejoiced in the end of his tyrannical rule
A. Cruel B. Long C. Just
D. Peaceful E. Ancient
13. Danqual is a very versatile scholar things
A. Dull B. Clever at his special field C. Interested in many different things D. Slow E. lazy
14. Nigerian sailors are very virile
A. Strong and manly B. Vindictive C. Virtuous D. Vicious and cunning
E. Friendly
15. I have to wade through that stream
A. Walk hurriedly B. Swain C. Toddle D. Walk with difficulty E. Walk up
16. His rise to fame was metoric
A. Well deserved B. Very gradual
C. Very swift D. Too slow E. All of the above
17. Martha came late this morning but she gave plausive excuse
A. Reasonable B. Very interesting
C. Detailed D. Pathetic E. Stupid

(C) In each of the following questions choose the optio opposite in meaning to the underlined word

18. A tentative date was given
A. definite B. A provisional
C. An amicable D. Convincing E. None of the
19. Obi was the hero of the story
A. Assassin B. Villain C. Devil
D. Criminate E. Goliath
20. The man drew a sword as people congregated round him
A. Fled from B. Praised
C. Gathered round D. Mobbed E. Bent
21. The point you have made is quite apt
A. Helpful B. Irrelevant C. Illogical D. Insensitive E. All of the above
22. That little boy has become quite chubby
A. Intelligent . B. Tall C. Thin D. Huge E. Large
23. The action was premeditated
A. Unplanned B. Unnecessary
C. Catastrophic D. Uncoordinated E. Good
24. The boy made flippant remark A. serious B. well-meant C. A correct D. An expected E. Yes
25. The weather is getting warmer, so the ice should thaw soon
A. Frost B. Freeze C. Melt
D. Escape E. Run

SOLUTIONS TO MATHS 2007/2008 CONTINUED

= B

1 – r 1 – ½

12. Sin 3000 = sin (3600 – 600) = sin 3600. cos 600 – sin 600 . cos 3600 = (0 x 1/2) – **= B**

13. For a regular polygon: internal angle + external angle = 1800

144 + x = 1800

X = 1800 – 1440 = 360

No of sides of regular polygon = 360/36 = 10sides = D

14. 272/3 x 322/3 = (33)2/3 x (25)2/5 = 32 x 22 = 36 **= A**

15. n2 – 16n + 64 = n2 – 8n – 8n + 64

n = 8(twice) – Equal roots **= A**

16. 2c2 – 11c + 12 = 0 Using the quadratic equation on

-(--11)2 – -96 2(2) 4

= A 4 4

= D

– – **= B**

– 17/24)

= 7/8 x 9/4 x 48/77 = 15/22**= B**

20. x + y = 2 ZZZZZZ.. (1)

2x – y = 7 ZZZZZZ.. (2) subtracting (1) from (2)

3x = 9 x = 9/3 = 3

Substituting the value of x into (1) we have 3 + y = 2

hence y = -1 **= A**

21. Range = highest value –lowest value 9 – 0 = 9 **= B**

22. (94, 21) **= D**

23. 94/21 = 4.47 **= A**

24. The Median is obtained by rearranging to order and then picking the middle term.

0,1,1,1,1,2,2,4,5,5,5,6,6,6,6,6,6,8,8,9

The median is 5 **= B**

320 = 2 x f x 160 thus f = 320 = 1Hz **= D** 2 x 160

8. = C 9. C 10.D 11. C 12 A

10 x 5 x cos 60 = 25W **= D**

14. EK =hv – W

W = Ek – hv = 5 – 2 = 3eV **= D**

15. B 16. C 17. B

But distance between adjacent nodes is 2.0/2 = 1.0cm **= B**

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24. The Median is obtained by rearranging to order and then picking the middle term.

0,1,1,1,1,2,2,4,5,5,5,6,6,6,6,6,6,8,8,9

The median is 5 **= B**

25. The mode is the most occurring value is 6 **= B**

CHEMISTRY

1. = C 7. D 13. D 19. A 25. D

2. = B 8. D 14. A 20. C

3. = A 9. E 15. A 21. A

4. = A 10. A 16. E 22. C

5. = D 11. C 17. C 23. A

6. = A 12. A 18. E 24. D

PHYSICS

1. Strain = elongation = L = 6mm

Original – length L0 (10 x 10)

28 = 0.06 = 6 x 10-2**= A**

2. = D 3. = C 4. = D 5. = A

6. Since pressure is constant: V1 =V2 T1 T2

300 = V2thus V2 = 327 x 300 = 327 **= C**

300 327 300

= A
20. = D
2g 2 x 10 = 80m **= B**
22. = A decreased 23. B 24. A 25. STV
ENGLISH
1. = D 2. = C 3. = A 4. = B
5. = B 6. = D 7. = D 8. = B
9. Gorgeous: very beautiful and attractive; giving pleasure and enjoyment (2) of colours clothes etc) with very deep colours: impressive ANS Richly coloured = A
10. Subtle: not very noticeable or obvious (2) (of a person or their behaving in a clever way and using indirect methods, in order to achieve something ANS Clever = C
11. Superficial: ANS shallow = B
12. Tyrannical: using power or authority over people in an unfair and cruel way ANS cruel = A
13. Versatile = C
14. Virile: strong and full of energy = A
15. Wade: to walk with an effort through something especially water or mud = D
16. Meteoric: achieving success very quickly = C
17. Plausible: reasonable and likely to be true = A
18. Tentative: not definite of certain because you may want to change it later ANS Definite = A
19. Hero: ANS viliain = B
20. Congregated round: to come together in a group ANS gathered round = C
21. Apt: suitable or appropriate in the circumstances ANS irrelevant = B
22. Chubby: slightly fat in a way that people usually find attractive ANS thin = C
23. Premeditated: planned in advance ANS unplanned = A
24. Flippant: showing that you do not take something as seriously as other people think you should ANS serious=A
25. Thaw: to turn back into water after being frozen ANS freeze = B