Academic Excellence Through Quality Education

KATHMANDU MODEL SECONDARY SCHOOL

MODEL QUESTIONS

SCIENCE

Time: 1hr.45 min. **F.M.: 100**

Shade the appropriate circle (●) using black ink in the answer sheet.

SUBJECT: ENGLISH F.M.:20

1. What is the passive form of: I can win the contest.
   a) The contest can be won. b) The contest must be won.
   c) The contest should be won. d) The contest can have been won.
2. I object …….. your proposal.
   a) at b) about c) in d) to
3. Children ……. the hearts of parents.
   a) is b) am c) are d) were
4. He ……. done this task yet.
   a. did not b. does not c. has not d. had not
5. He is the man ……. has created a record.
   a) who b) whose c) when d) that ans) a
6. The indirect form of: He said, " Will you listen to such a man?" is……
   a) He asked them will you listen to such a man.
   b) He asked them are you listening to such a man.
   c) He asked them whether they would listen to such a man.
   d) He asked them if they would have listened to such a man. ans) c
7. He can't reach the shelf. He is short. Which sentence has the same meaning?
   a) He is enough short to reach the shelf.
   b) He is short enough to reach the shelf.
   c) He is tall enough short to reach the shelf.
   d) He isn't tall enough to reach the shelf.
8. I didn't eat anything. ……..
   a) Nor did I b) So did I c) I have eaten too d) I did eat
9. I have my shoes …….
   a) polish b) polished c) to polish d) polishes
10. The police …… him if they catch him.
    a) will arrest b) arrest c) arrested d) will have arrested
11. He was talking to you. The interrogative form of the given statement is …….
    a) Was he talking to you? b) Were he talking to you?
    c) Did he talked to you? d) Is he talking to you?
12. If the plural of datum is data, the plural of syllabus is ……
    a) syllabus b) syallabuses c) syllabi d) syllabues
13. Let us have fun, …….?
    a) should we b) will you c) shouldn't we d) will we
14. The feminine gender of the word "WIZARD" is……
    a) wizardess b) wizardness c) witch d) witches
15. "There are many diseases which have been eradicated by scientific inventions." The synonym of the 'eradicated' is.
    a) eliminated b) modest c) indicated d) complicated
16. Choose the one which best expresses the meaning of the idiom in the sentence "Don't just beat about the bush. Tell me the fact clearly."
    a) to destroy the bush b) to beat someone
    c) to approach a matter in a roundabout way d) to hide the secret
17. Choose the wrong sentence.
    a) You will fail the exam unless you study hard.
    b) You will pass the exam unless you study hard.
    c) You will fail the exam if you do not study hard.
    d) You will pass the exam if you study hard.
18. Choose the right collective noun from the given options.
    a) a battalion of people b) a battalion of sailors
    c) a battalion of ants d) a battalion of soldiers
19. Choose the wrong spelling from the given alternatives.
    a) barbarous b) progressive c) prosparity d) amateur
20. Choose the correct option that shows the correct order of the phrases to make a sensible sentence. " The social worker devoted……."
    P- to the upliftment Q- of the people R- his entire life S- of his village
    a) QRSP b) PQRS c) SRQP d) RPQS

SUBJECT: SCIENCE F.M.:40

21. In which of following process, CO_2 gas is used?
    a. Respiration b. metabolism c. photosynthesis d. nitration
22. Silver metal can be extracted from
    a. haematite b. argentite c. chalcopyrite d. bauxite
23. Which of the following is trihydric alcohol?
    a. methanol b. ethanol c. propanol d. glycerol
24. The nature of soap is:
    a. bio-degradable b. non-biodegradable
    c. easily soluble in hard water d. none of the above
25. C_nH_{2n-2} is the general formula of
    a. alkane b. alkene c. alkyne d. alcohol
26. Fe_3O_4 is an example of
    a. acidic oxide b. basic oxide c. neutral oxide d. mixed oxide
27. Which colour is imparted to the glass by using manganese oxide?
    a. Purple b. Black c. Blue d. Green
28. $NaAlO_2$ is the molecular formula of :
    a. Sodium alumina oxide b. Sodium meta-aluminate
    c. Sodium alumina d. none of the above

29. Which of the following statement is correct?
a. Na is more reactive than li due to more electron b. Both a and b
c. F is more reactive because it is metal d. None of the above
30. "KCl and O_2 are formed by heating $KClO_3$", what type of chemical reaction is this?
a. Neutralization b. Single displacement c. Decomposition d. Combination
31. Pick out weak acid from the following
a. HNO_3 b. CH_3COOH c. H_2SO_4 d. HCl
32. The reaction from NaOH and CH_3COOH gives
a. Basic Salt b. Acidic Salt c. Normal Salt d. Neutral Salt
33. The molecular formula of sodium thiosulphate is,
a. $Na_2S_2O_2$ b. $Na_2S_4O_6$ c. Na_2SO_4 d. $Na_2S_2O_3$
34. Pneumatic bones are found in
a. reptiles b. aves c. mammals d. insects
35. Which one of the following is not a mammal?
a. Platypus b. Whale c. Sea-horse d. Dolphin
36. Which gland is heterocrine in nature?
a. Thyroid b. Pancreas c. Adrenal d. Pituitary
37. Hyposecretion of pituitary gland causes
a. dwarfism b. gigantism c. goiter d. cretinism
38. Zygotene sub stage of prophase-I is characterized by ……
a. crossing over b. chiasma formation
c. terminalization of chiasmata d. synapsis
39. If diploid nucleus fuses with a haploid nucleus, the resultant nucleus will be
a. haploid b. diploid c. triploid d. tetraploid
40. Which one is complex permanent tissue?
a. Parenchyma b.Collenchyma c. Schrenchyma d. Xylen
41. Which statement of the following is not true about fern?
a. Fern belongs to division Tracheophyta
b. Underground stem of the fern is called rhizoid.
c. Leaf of fern is feather-shaped and pinnately compound.
d. Leaves, bearing sori, are called sporophylls.
42. Venacavae are joined with
a. Right auricle b. Right ventride c. Left auricle d. Left ventride
43. Which part of the heart contains oxygenated blood?
a. Left part b. Right part c. Auricles d. ventricles
44. Who is known as "Father of Genetics"?
a. Aristotle b. Sir Issac Newton
c. Gregor John Mendel d. Charles Robert Darwin
45. In carbon cycle, carbon enters into the living world through
a. photosynthesis b. respiration c. sedimentation d. absorption by roots
46. From living organisms, carbon is released to atmosphere through
a. photosynthesis b. respiration c. transpiration d. fossilization
47. Ozone layer is present in ……
a. troposphere b. stratosphere c. mesosphere d. thermosphere
48. 1 kg water is equal to
a. 1 litre b. 1000cc c. $1000cm^3$ d. all
49. The dimensional formula of Newton is
a. $[M^0L^1T^{-2}]$ b. $[M^1L^0T^{-2}]$ c. $[M^1L^1T^{-2}]$ d. $[M^1L^1T^0]$
50. 1cc is equal to
a. 1ml b. $10^{-3}m^3$ c. 10^3 d. all of the above
51. The distance between earth and sun is
a. 1AU b. 1Ly c. 1Pc d. $1A^0$
52. Which of the following is not the unit of energy?
a. kwhr b. Nm c. $kgms^{-1}$ d. Joule
53. Which of the following quantity is scalar quantity?
a. work b. time c. current d. all of the above
54. An iron ball is heated. The percentage increase will be largest in
a. diameter b. surface area c. volume d. density
55. The quantity of heat required to change the unit mass of a solid substance to its liquid state, while the temperature remains constant, is known as
a. heat b. latent heat c. specific heat d. latent heat of fusion
56. The focal length of a plane mirror is
a. zero b. infinite c. finite but negative d. finite but positive
57. A person suffered from defect of eyes uses the spectacles with the lens of power -2D. What type of lens is used?
a. convex lens b. concave lens c. plano convex lens d. plano concave lens
58. The heating element in an electric iron is made of …….. wire.
a. nichrome b. iron c. tungsten d. constantan
59. When a current flows through a conductor, it's temperature
a. increases b. decreases c. remains same d. may increase and decrease
60. Einstein's mass-energy equivalence relation is
a. $E = \Delta\, mc^2$ b. $E = \frac{\Delta m}{c^2}$ c. $E = \frac{\Delta p}{c^2}$ d. $E = \frac{\Delta Q}{c^2}$

SUBJECT: MATHEMATICS F.M.: 40

61. Which of the following statement is correct?
a) $\phi = 0$ b) $\phi = \{0\}$ c) $\phi = \{\phi\}$ d) $\phi = \{\}$ ans) d

62. $\left(\frac{\sqrt{12}}{5}\right)\left(\frac{\sqrt{60}}{2^4}\right)\left(\frac{\sqrt{45}}{3^2}\right) = ?$
a) $\frac{1}{12}$ b) $\frac{1}{6}$ c) $\frac{1}{4}$ d) $\frac{1}{3}$

63. $\frac{-1}{2x} - \frac{1}{4y} + \frac{1}{xy} + \frac{1}{8} = ?$

a) $\frac{(x-y)(2-y)}{8xy}$ b) $\frac{(x-2)(x-4)}{8xy}$ c) $\frac{(x+2)(4-y)}{8xy}$ d) $\frac{(x-2)(4-y)}{8xy}$

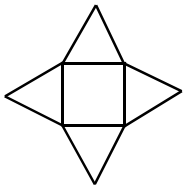
64. If 8 men can reap 80 hectares in 12 days. How many hectares 36 men reap in the same field in 36 days?
a. 540 hec. b. 1080 hec. c. 270 hec. d. None of above

65. A man bought 2 oranges for Rs. 5 and sold 3 oranges for Rs. 7. His loss percent is
a. $6\frac{2}{3}\%$ b. $7\frac{1}{7}\%$ c. $7\frac{2}{7}\%$ d. None of above

66. The compound interest compounded yearly is calculated by
a. $P\left[\left(1+\frac{R}{100}\right)^{T}-1\right]$ b. $P\left[\left(1+\frac{R}{200}\right)^{2T}-1\right]$
c. $P\left[\left(1+\frac{R}{100}\right)^{2T}-1\right]$ d. $P\left[\left(1+\frac{R}{200}\right)^{T}-1\right]$

67. Let S.I be simple interest and $C.I_1$, $C.I_2$ and $C.I_3$ be the compound interest compounded yearly, half yearly and quarterly respectively for the same principal, same time and same rate. Which of the following is true?
a. $S.I<C.I_1<C.I_2<C.I_3$ b. $S.I>C.I_1>C.I_2>C.I_3$
c. $S.I<C.I_3<C.I_2<C.I_1$ d. $C.I_1<C.I_2<S.I<C.I_3$

68. If 75 reduced by x% is 54, the value of x is:
a) 28 b) 27 c) 21 d) 129



69. Which of the following solid is represented by the given net?
a) cone b) cuboid c) cylinder d) pyramid

70. A road is 2 km in length. We have to supply the lamp post. One post at each end. The distance between two consecutive lamp posts is 20m. Find the number of lamp posts required.
a)51 b)100 c)101 d)102

71. A monkey climbs a pole 34 m long. In first minute, he climbs 6m and in second minute he slips down 2m. In third minute he again climbs 6m and in fourth minute he slips down 2m. If he continue to do like this then find the time taken by him to reach the top.
a)15 min b)17 min c)8 min d) None of above

72. n is divided by 14 and 3. Which of the following statement must be true?
a) 21 is a factor of n b) 12 is a factor of n
c) n is a multiple of 42 d)both (a) and (c)

73. If $y^2 = 4$ and $x^2y = 18$, x + y could equal to which of the following values?
a) -5 b)-1 c)1 d) 6

74. The average of a set of 18 consecutive integers is 22.5. What is the smallest integer in the set?
a) 14 b) 16 c) 12 d)28

75. If $x \neq -y$, then $\frac{x^{36} - y^{36}}{(x^{18} + y^{18})(x^9 + y^9)} = ?$
a)1 b) $x^2 - y^2$ c)$x^9 - y^9$ d)$x^{18}-y^{18}$

76. If $3^{11} = 9^x$, what is the value of x ?
a) 11 b) $\frac{11}{2}$ c)$\frac{2}{11}$ d) -11

77. The factors of $6x^2+x-12$ are
a) $(3x+4)(2x-3)$ b) $(3x-4)(2x+3)$ c) $(3x-4)(2x-4)$ d) $(3x+4)(2x+4)$

78. If x+y = -3 and $(x^2+y^2) = 12$, what is the value of 2xy ?
a)-3 b)3 c) 4 d)-4

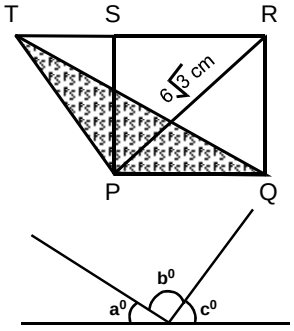
79. With Rs. y, 5 oranges can be bought. If all oranges cost the same, how many Rs. do 25 oranges cost in terms of y?
a) $\frac{y}{5}$ b) y c) y+5 d) 5y

80. 10 men painted 3 identical houses in 5 hours, working at a constant rate. How many houses would it take 20 men to paint 12 such houses, working at the same constant rate?
a) 2.5 b) 5 c) 10 d) 15

81. If $\frac{a}{b} > \frac{c}{d}$, which of the following statement must be true?
a) $\frac{a}{b} - \frac{c}{d} > 0$ b) ad < bc c) ad > bc d) All of above

82. If $f^2g<0$, which of the following must be true?
a) f < 0 b) g < 0 c) fg < 0 d) fg > 0

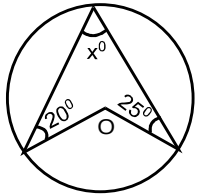
83. In the figure, PQRS is a square having length of diagonal $6\sqrt{3}$ cm. If RS is produced to T, what is the area of ΔPQT ?
a)30cm² b) 27cm² c) 54cm² d) 18cm²



84. In the figure below, $a:b = 3:5$ and $b:c = 5:1$. What is the measure of the largest angle?
a) 30^0 b) 45^0 c) 50^0 d) 100^0

85. $3\left(\frac{N+1}{4}\right)^{th}$ item represents the position of
a) Q_1 b) Q_2 c) Q_3 d) None of above

86. In the adjoining figure, O is the centre of a circle. What is the value of x?



a) 20^0 b) 25^0 c) 15^0 d) 45^0

87. In a continuous series, $\sum f = 100$, cumulative frequency of the class 15-20 is 46 and the cumulative frequency of the class 20-25 is 52.Find the median class of the data.

a)15-20 b) 10-15 c) 20-25 d)25-30

88. The average of 8 numbers is 42. One of the number is removed from the set and the resulting average of the remaining number is 40. What number was removed from the set?

a) 26 b) 28 c) 50 d) 56

89. Find the probability of occurring squared number or cubed number while drawing a flash card from the set of cards numbered from 3 to 32.

a) $\frac{1}{4}$ b) $\frac{1}{5}$ c) d) $\frac{1}{3}$

90. One card is drawn at random from the number cards, numbered from 10 to 21. Find the probability that the card may be prime or even numbered card.

a) $\frac{1}{6}$ b) $\frac{5}{6}$ c) $\frac{3}{4}$ d) $\frac{2}{3}$

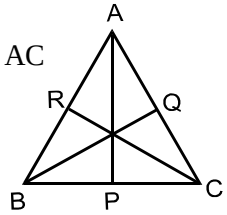
91. What is the probability of getting 3 on the dice and head on the coin when a die is rolled and a coin is tossed together?

a) 1 b) $\frac{1}{2}$ c) $\frac{1}{12}$ d) $\frac{2}{3}$

92. A shirt that costs Rs. K is increases by 30% then by an additional 50%. What is the new price of the shirt in Rs. interms of K?

a. 0.2 K b. 0.35K c. 1.8K d. 1.95K

93. In the figure alongside, P, Q and R are the mid points of BC, AC and AB respectively. Then $\overrightarrow{AP} + \overrightarrow{BQ} + \overrightarrow{CR}$ is equal to



a) 0 b)1 c) $\overrightarrow{AC}$ d) $\overrightarrow{AB}$

94. If $f(x) = \begin{cases} 4x+1 & for \quad x<2 \\ 1-x & for \quad x \geq 2 \end{cases}$, the value of f(1) is

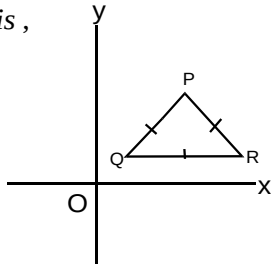
a) o b) 5 c) 2 d) 3

95. $x^n + y^n$ is divisible by $x - y$

a) For all value of n b) For even value of n

c) For odd value of n d) For no value of n

96. The side QR of an equilateral ΔPQR is parallel to $x-axis$, what is the slope of PR?



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

97. If the matrices $\begin{pmatrix} m & 4 \\ -1 & 3 \end{pmatrix}$ and $\begin{pmatrix} 3 & -4 \\ 1 & m \end{pmatrix}$ are inverse to each other, what is the value of m?

a.0 b.1 c.-1 d. All of above

98. The sum of the first 'n' natural numbers is:

a) n b) $\frac{n+1}{2}$ c) $\frac{n(n+1)}{2}$ d) n^n

99. The image of the point (-6,2) under the rotation through -270^0 about the origin is

a. (6,-2) b. (-2,-6) c. (6,2) d. (2,6)

100. The value of $\frac{1+\tan 15^0}{1-\tan 15^0}$ is

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

Best of Luck