NEPAL MEGA COLLEGE
mega centre for excellence

Babarmahal, Kathmandu

Entrance Model Questions – 2080

Stream: **Science** Full Marks: 100
Time: 2:00 Hrs Pass Marks: 40

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1. Which of the following has derived unit?
   a)mass b) velocity c) length d) time
2. Newton's first law of motion gives the concept of
   a) energy b) work c) momentum d) inertia
3. When force is exerted on a body, it can change its
   a) speed b) direction of motion c) momentum d) All of above
4. The value of acceleration due to gravity (g) is maximum
   a) at poles of the earth c) at equator of the earth
   b) at center of the earth d) equal at all places
5. The weight of a body at the center of the earth is
   a) Zero c) infinite
   b) finite and positive d) finite and negative
6. Pressure at any point in a liquid depends upon
   a) the density of liquid c) the value of g
   b) the depth of point below the surface d) all of the above
7. Mercury is used in liquid thermometer because it has
   a) high sp. heat and high conductivity
   b) high sp. heat and low conductivity
   c) low sp. heat and low conductivity
   d) low sp. heat and high conductivity
8. The boiling water is changing into steam. Under this condition, the specific heat of water is
   a) zero b) one c) infinite d) less than one
9. Heat travels through vacuum by
   a) conduction b) convection c) radiation d) none of above
10. Sound waves on air are
    a) longitudinal c) electromagnetic
    b) transverse d) radio wave
11. Which parameter of the wave remains same when it passes from one medium to another medium
    a) frequency b) wavelength c) velocity d) amplitude

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12. Three resistances R_1, R_2 and R_3 are connected in series. The resultant resistance R is
    a) equal to the sum of three resistances
    b) greater than the sum of three resistances
    c) less than any of three resistances
    d) inter mediate between the smallest and largest resistance
13. Electromagnetic waves are
    a) transverse c) may be longitudinal or transverse
    b) longitudinal d) neither transverse nor longitudinal
14. The refractive index of water is 1.33. What will be the speed of light in water?
    a) 2.25×10^8 m/sec c) 3×10^8 m/sec
    b) 4×10^8 m/sec d) 1.33×10^8 m/sec
15. In irreversible reaction, equilibrium is
    a) established quickly c) established slowly
    b) never established d) established when reaction stops
16. Which of the following is a Lewis base?
    a) BF_3 b) HCl c) $AlCl_3$ d) F^-
17. What is the color of phenolphthalein in acidic medium?
    a) red b) orange c) colorless d) pink
18. Formic acid contains functional group:
    a) -OH b) -COOH c) -CHO d) -CO
19. Which of the following is a heterocyclic compound?
    a) benzene b) cyclohexane c) cyclopentene d) thiophene
20. Which of following reacts with concentrated alkaline $KMnO_4$ to produce oxalic acid?
    a) ethane b) ethene c) ethyne d) ethanol
21. Which of the following is used as domestic fuel?
    a) methane b) ethyne c) chloroform d) ethanol
22. Plants convert glucose into:
    a) lipids b) starch c) proteins d) aminoacids
23. Which of the following layers contains ozone gas?
    a) thermosphere b) troposphere c) mesosphere d) stratosphere
24. Most of air pollution is caused by:
    a) The burning of fossils fuels b) Ozone c) Acid rain d) CO
25. Which of the following is not a waterborne disease?
    a) hepatitis b) anemia c) dysentery d) typhoid
26. Which of the following is used as raw material in preparation of urea?
    a) CO_2 and $Ca(OH)_2$ c) H_2O and NH_3
    b) CO_2 and NH_3 d) NH_3 and NaCl
27. Nitrogen is less reactive than that of oxygen due to
    a) lower atomic number
    b) partially filled electronic configuration

Don't write anything on the question sheets

c) half-filled electronic configuration
d) full-filled electronic configuration

28. HCF of 8, 9, 25 is
a) 8 b) 9 c) 25 d) 1

29. The addition of a rational and irrational number is
a) rational c) irrational
b) real d) none of above

30. The number π is
a) natural c) integer
b) rational d) irrational

31. A quadratic equation whose roots are -3 and 4 is
a) $x^2 - x - 12 = 0$ c) $x^2 + x + 12 = 0$
b) $\frac{x^2}{2} - \frac{x}{2} - 6 = 0$ d) $2x^2 + 2x - 24 = 0$

32. The polynomial equation x(x+1)+8=(x+2) (x-2)is
a) linear equation c) quadratic equation
b) cubic equation d) bi-quadratic equation

33. The sum of the squares of two consecutive natural numbers is 313. The numbers are
a) 12, 13 b) 13, 14 c) 11, 12 d) 14, 15

34. The sum of the first n natural number is
a) $2n^2$ b) 2n+1 c)2n-1 d) $\frac{n(n+1)}{2}$

35. Which one relation from the given is correct?
a) 2 Mode = 3 Mean - 2 Median c) Mode = 3 Median - 2 Mean
b) Mode = 2 Median - 3 Mean d) Mode = 3 Mean -1 Median

36. Δ ABC is an equilateral Δ of side 'a'. Its area will be
a) $\frac{\sqrt{3}}{4}a^2$ b) $\frac{\sqrt{3}}{4}a$ c) $\frac{\sqrt{3}}{2}a^2$ d) $\frac{\sqrt{3}}{2}a$

37. The distance of the point P (2, 3) from the $x - axis$ is
a) 2 b) 3 c) 1 d) 5

38. Sin 2A = 2 Sin A is true when A is equal to
a) 90° b) 60° c) 30° d) 0°

39. If Sinθ - Cosθ = 0, then the value of $\text{Sin}^4\,\theta + \text{Cos}^4\,\theta$ is
a) 1 b) $\frac{3}{4}$ c) $\frac{1}{2}$ d) $\frac{1}{4}$

40. The area of a circle is 2464 cm^2, then its diameter is given by
a) 7 cm b) 14 cm c) 28 cm d) 56 cm

41. One card is drawn from a well shuffled deck of 52 cards. The probability of getting a king of red color is
a) $\frac{1}{26}$ b) $\frac{1}{13}$ c) $\frac{1}{4}$ d) $\frac{1}{2}$

42. If A = {1, 3, 5, 7} and B = {2, 3, 5} then A - B =?
a) { 1, 3} c) {1, 3 ,7}
b) {1, 5, 7} d) {1, 7}

43. The value of $|-3| + |-7| - |4|$ is
a) 5 b) 6 c) 0 d) 7

44. If the ordered pairs (x + 3, 5) and (2, 5) are equal, then the value of x is
a) 0 b) -1 c) 2 d) 3

45. Let f and g are two functions from R to R defined by f(x) = 3x +1 and g(x)=x +2, then the value of gof(x) is
a) 3x + 1 b) 3x + 2 c) 3x + 3 d) 3x

46. The degree of the polynomial $x^4 - x^2 + 2$ is .
a) 0 b) 1 c) 2 d) 4

47. The pairs of equations x+2y-5=0 and -4x - 8y + 20 = 0 have
a) unique solution c) infinitely many solutions
b) exactly two solutions d) No solutions

48. Equation of $(x+1)^2 - x^2 = 0$ has …….. number of real roots.
a) 1 b) 2 c) 3 d) 4

49. 30^{th} term of the A.P : 10, 7, 4,… is
a) 97 b) 77 c) -87 d) -77

50. If Sin A = $\frac{1}{2}$ then the value of Cot A is
a) $\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) $\frac{\sqrt{3}}{2}$ d) 1

51. A circle has a number of tangents equal to
a) 0 b) 1 c) 2 d) infinite

52. If the area of circle is 154 cm^2, then its perimeter is
a) 11 cm b) 22 cm c) 44 cm d) 55 cm

53. The Mode and Mean are given by 7 and 8 respectively. Then the Median is
a) $\frac{1}{3}$ b) $\frac{13}{3}$ c) $\frac{17}{3}$ d) $\frac{23}{3}$

54. If $P(E) = 0.07$, then what is the probability of 'not E'?
a) 0.93 b) 0.95 c) 0.89 d) 0.90

55. If an event cannot occur, then its probability is

a) 1 b) $\frac{1}{2}$ c) $\frac{3}{4}$ d) 0

56. A card is drawn from the set of 52 cards. The probability of getting a queen card is

a) $\frac{1}{26}$ b) $\frac{1}{13}$ c) $\frac{4}{53}$ d) $\frac{4}{13}$

57. The sum of first ten natural numbers is

a) 55 b) 155 c) 65 d) 555

58. If $x-\frac{1}{x}=3$ then $x^2+\frac{1}{x^2}=$

a) 7 b) 9 c) 14 d) 11

59. If Ram can do a piece of work in 20 days and Shyam can do same work in 30 days. Then the total days to finish the work when they work together is

a) 12 b) 15 c) 20 d) 30

60. The value of $\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6+.....}}}}\infty$ is

a) 4 b) 3 c) 2 d) ∞

61. If 2x, x+1 ,x -1 are in A.P then x =

a) 3 b) 2 c) 0 d) -1

62. The types of frequency distribution are

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

63. Chromosomes lie at the equatorial plane of a cell at which stage of cell division?

a) mitosis b) meiosis I c) meiosis II d) metaphase

64. Which of the following is called power house of the cell ?

a) mitochondria c) lysosome
b) golgibody d) cell membrane

65. Bacteria consists of

a) RNA only c) DNA and RNA both
b) Circular DNA d) proteins only

66. Haemoglobin is combined with carbon monooxide, the complex thus formed is called

a)carboxyhaemoglobin c) carbaminocompound
b) haemoglobin oxide d) oxyhaemoglobin

67. The valve situated between left auricle and left ventricle is called

a) bicuspid valve c) aortic valve
b) tricuspid valve d) semilunar valve

68. What is another name of WBC?

a) Thrombocytes c) Histocytes
b) Erythrocytes d) Leucocytes

69. Which of the following is an example of ceolenterata?

a) *Hydra* b) *Sycon* c) *Octopus* d) Star fish

70. Certain bacteria help to convert atmospheric nitrogen into biologically available form of nitrogen essential for plants. The process of converting nitrogen into nitrate is called-

a) nitrification c) denitrification
b) ammonification d) Carbonification

71. Who discovered the cell?

a) Linnaeus c) Darwin
b) Hugo de Vries d) Robert Hook

72. Long neck of giraffe as inheritance of acquired characters was elaborated by-

a) Lamarck b) Purkinje c) Wallace d) Darwin

73. Which of the following is the secondary consumer in the grassland ecosystem?

a) Grass b) Grass hoppers c) Frog d) Snakes

74. Which hormone is essential to balance the glucose level?

a) Growth hormone c) Thymosin
b) Gastrin d) Insulin

75. Which plant in the following list is the most advanced?

a) Algae b) Moss c) Pine d) Fern

Comprehension

Read the following Passages and choose the best answer for each question: (8 Marks)

Passage 1

Books are by far, the most lasting product of human effort. Temples crumple into ruin, pictures and statues decay, but books survive. Time does not destroy the great thoughts which are as fresh today as when they first passed through their author's mind. These thoughts speak to us through the printed page. The only effect of time has been to throw out of currency the bad products. Nothing in literature which is not good can live for long. Good books have always helped man in various spheres of life. No wonder that the world keeps its books with great care.

76. Of the products of human effort, books are the most

a) enjoyable c) useful
b) permanent d) important

77. Time does not destroy books because they contain
    a) high ideals
    b) useful material
    c) great ideas
    d) subject-matter for education
78. "To throw out of currency" means
    a) extinguish
    b) destroy
    c) forget
    d) put out of use
79. The world keeps its books with care because
    a) they make us successful
    b) they help us in various spheres of life
    c) they bring great ideas to us
    d) they educate us

Passage 2

In the past, man's worst enemy was nature. He lived under the continual threat of famine and pestilence. A wet summer could bring death to whole nations, and every winter was a menace. Mountains stood like a barrier between people, the sea was less a highway than an impassable division. Today nature, though still an enemy, is an enemy almost completely conquered. Modern transportation has made the resources of the entire planet accessible to all its inhabitants. Modern medicine and sanitation allow dense population to cover the ground without risk of pestilence. True, we are still at the mercy of the more violent natural convulsions against earthquakes, floods and hurricanes. Man has, as yet, devised no adequate protection. But these major cataclysms are rare. At most times, nature is no longer formidable, she has been subdued.

80. Modern medicine has helped man:
    a) to live longer everywhere in the world
    b) to live a healthy life in hygienic conditions
    c) to live in thickly populated areas without fear of epidemics
    d) to balance population with available resources
81. Man has not yet succeeded in controlling the furies of
    a) earthquake
    b) hurricanes
    c) floods
    d) all of the above
82. Which one of the following statements best reflects the underlying conviction of the passage?
    a) Man does wonders
    b) Man's knowledge has no end
    c) Man has been able to control nature to a great extent
    d) Man has been able to control nature completely
83. In ancient times, man has an apprehension of
    a) epidemics
    b) severe droughts
    c) floods
    d) all of the above

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84. He went away because he could not put up with his colleagues. It means he could not.....
    a) tolerate b) equal c) understand d) say not to
85. Restaurant: Menu, similarly
    a) library: catalogue
    b) book: encyclopedia
    c) journal: newspaper
    d) college: account

Grammar

86. Nowadays every boy and girl ..... own mobile.
    a) have/ their b) have/ his c) have/ her d) has/ their
87. More passengers than one … killed.
    a) has b) was c) were d) have
88. " I 'm not well today," said Suresh (into indirect speech)
    a) Suresh told that he was not well today.
    b) Suresh said that he wasn't well today.
    c) Suresh said that he wasn't well that day.
    d) Suresh told me that he wasn't well today
89. He says, "Where shall I be this time next year?"
    a) He asks that where will he be this time next year.
    b) He wonders where he will be this time next year.
    c) He thinks where shall he be this time the following year.
    d) He wonders where he will be this time the following year.
90. She made me sing.
    a) She was made sing.
    b) I was made to sing.
    c) By whom was she made sing?
    d) Both a and c.
91. They enjoyed ….. Christmas.
    a) in b) on c) by d) at
92. Her eyes are red. …….?
    a) Is she crying
    b) Did she cry
    c) Has she cried
    d) Has she been crying
93. I must not shout, ……?
    a) mustn't I b) needn't I c) shouldn't I d) need I
94. My hair is as blond as ….. .
    a) she b) hers c) her's d) she's
95. Please, convey my best ..... to your parents.
    a) complements
    b) complementary
    c) complimentary
    d) compliments

WRITING

Healthy people are great assets to the country. Explain. [5 Marks]

Best of Luck

Don't write anything on the question sheets