BHAGAT RAM VIDYAPITH (H.S)
Entrance Test for Admission in Science Stream - XI

Rules & Regulation of the Examination are as follow:

1. Use only ballpoint pens with black ink.

2. The student must have stationery with him to write the responses. In the classroom, borrowing from one another is completely forbidden.

3. Any electronic device other than a simple calculator is prohibited in the Exam Hall.

4. The candidate will be disqualified from the test for any unruly behaviour, actions, or misconduct in the exam room.

Pattern of the Examination

1. The following five subjects will be examined :-

Language - English

Core Subjects Physics , Chemistry , Biology and Mathematics.

2. Each subject will have 25 questions worth one mark. The candidate must respond to any of the 20 questions of the particular subject .

3. No points will be docked for providing a false answer.

4. 100 marks of the examination have been divided into 5 subjects carrying 20 marks each.

STUDENTS INFORMATION

NAME ....

FATHERS NAME ....

ADDRESS ....

....

MOBILE NUMBER ....

ATTEMPT ANY TWENTY QUESTION .

(Choose the correct answer from the following alternatives)

Choose the correct answer from the following alternatives.

1. All of us ____ arrived yesterday.

  a] has   b] have   c] had   d] has/have

2] He is sitting _____an armchair and I am sitting _____the chair.

  a] in, on   b] on, at   c] in, in   d] with, by

3] I went _____ a walk early ___ the morning with pimple ___my face.

a] on, in, on

b] on, in, at

c] on, at, on

d] for, in, on

4] The passive of the sentence, "He will not speak a word." is:

  a] A word will not be spoken by him.

  b] No word will be spoken by him.

  c] A word will never be spoken by him.

  d] All of the above.

5] The principal and secretary _____highly impressed with overall progress of the students.

a] were

b] was

c] are

d] is

6] Which of the following sentence Is correct:

  a] When I went to kitchen mom bought: bread, butter and Milk.

  b] When I went to kitchen. mom bought bread, butter and Milk

c] When I went to kitchen mom bought; bread, butter and Milk.

d] When I went to kitchen, mom bought; bread, butter and Milk

7] It's high time that Nepali government _____ more in health sectors.

a] invest

b] should invest

c] will invest

d] invested

8] "To beat the air" means

a] To act foolishly

b] To make efforts that are useless or vain

c] To move vigorously

d] To move sluggishly

9] The word similar to given sentence Is "stick made up of wood or plastic acts like lighter when friction Is applied."

a] wave

b] wood

c] match

d] none

10] _____ The owner and buyer finally agreed on a price for the house.

a] They had been bargain for several weeks

b] As if bargaining for several weeks

c] After bargaining for several weeks

d] None of the above

Fill up the blanks using the given alternatives.

11] The lion was killed…………………… the hunter……………………… a sword. (in, on, by, with)

12] Father divided his property……………………… four sons. (between, among, of, in)

13] He has been living in this house……………………1985. (for, since, in, on)

14] I shall return………………… a month. (in, of, on, for)

15] The Ramayana is lying…………………. the table. (in, of, on, for)

16] We shall finish this work………………5 p.m. today, (in, by, on, at)

17] Send me letters……………… this address. (by, in, to, on)

18] You should listen……………………. what your parents say. (among, in, to, between)

19] Sita writes………………… (with, on, in, at)

20] He did not listen………………….. my advice, (at, to, in, on)

21]The police………………….. four thieves last night, (catch)

22] I was……………………… food when he came in. (cook)

23] It………………… at 9 o'clock, (rain)

24] I certainly…………………… my colleague if I had been there, (help)

25] Stars………………….. in the sky at night, (twinkle)

ATTEMPT ANY TWENTY QUESTION .

(Choose the correct answer from the following alternatives)

1] Two years ago, the population of a village was 16000. The rate of population growth of that village is 5%. Find the population of present.

a] 17640

b] 17460

c] 17064

d] 17046

2] If sec θ + tan θ = x, then tan θ is:

a] $\dfrac{(x^2-1)}{2x}$

b] $\dfrac{(x^2+1)}{2x}$

c] $\dfrac{(x^2-1)}{x}$

d] $\dfrac{(x^2+1)}{x}$

3] Which of the following are Pythagorean triplets?

a] 4 cm , 6 cm , 8 cm

b] 24 cm , 10 cm , 26 cm

c] 13 cm , 27 cm , 30 cm

d] 2 cm , 17 cm , 9 cm

4] If 5 tan θ=4, then value of (5 sin θ - 4 cos θ) / (5 sin θ + 4 cos θ) is:

a] 1/6   b] 5/6   c] 0   d] 5/3

5] If one root of equation $4x^2 - 2x + k- 4=0$ is reciprocal of the other. The value of k is:

a] -8   b] 8   c] -4   d] 4

6] The sum of the reciprocals of Rahman's ages 3 years ago and 5 years from now is 1/3. The present age of Rahman is:

   a] 7   b] 10   c] 5   d] 6

7] If the mean of frequency distribution is 7.5 and $\sum f_i x_i = 120 + 3k$, $\sum f_i = 30$, then k is equal to:

   a] 40   b] 35   c] 50   d] 45

8] The mode and mean is given by 7 and 8, respectively. Then the median is:

   a] 1/13   b] 13/3   c] 23/3   d] 33

9] Fifteen solid spheres are made by melting a solid metallic cone of base diameter 2 cm and height 15 cm. The radius of each sphere is:

   a] ½   b] ¼   c] $1/^3\sqrt{2}$ d] $1/^3\sqrt{4}$

10] Given that $(a^3 + 3ab^2) / (b^3 + 3a^2b) = 63/62$. Using the properties of proportion find the value of a:b

   a] 2:3   b] 63:62   c] 3:2   d] 62:63

11] If $x^3 + 1$ is divided by $x^2 + 5$, then the possible degree of quotient is

   a] 0   b] 1   c] 2   d] 3

12] The midpoint of a line segment joining two points A(2, 4) and B(-2, -4) is

   a] (-2, 4)   b] (2, -4)   c] (0, 0)   d] (-2, -4)

13] **The probability of event equal to zero is called;**

a] Unsure event

b] Sure Event

c] Impossible event

d] Independent event

14] **If we throw two coins in the air, then the probability of getting both tails will be:**

   a] ½   b] ¼   c] 2   d] 4

15] A card is drawn from the set of 52 cards. Find the probability of getting a queen card.

   a] 1/26   b] 1/13   c] 4/53   d] 4/13

16] A circle has a number of tangents equal to

   a] 0   b] 1   c] 2   d] Infinite

17] A line intersecting a circle in two points is called a _____.

   a] Secant   b] Chord   c] Diameter   d] Tangent

18] The shape of an ice-cream cone is a combination of:

a] Sphere + cylinder

b] Sphere + cone

c] Hemisphere + cylinder

d] Hemisphere + cone

19] If r is the radius of the sphere, then the surface area of the sphere is given by;

   a] $4 \pi r^2$ b] $2 \pi r^2$ c] πr^2 d] $4/3 \pi r^2$

20] Two identical solid cubes of side a are joined end to end. Then the total surface area of the resulting cuboid is

   a] $12a^2$ b] $10a^2$ c] $8a^2$ d] $11a^2$

21] If a tower 6m high casts a shadow of 2√3 m long on the ground, then the sun's elevation is:

   a] 60°   b] 45°   c] 30°   d] 90°

22] The angle formed by the line of sight with the horizontal when the point is below the horizontal level is called:

a] Angle of elevation

b] Angle of depression

c] No such angle is formed

d] None of the above

23] The empirical relationship between the three measures of central tendency is

a] 3 Median = Mode + 2 Mean

b] 2 Median = Mode + 2 Mean

c] 3 Median = Mode + Mean

d] 3 Median = Mode – 2 Mean

24] If x tan 45° sin 30° = cos 30° tan 30°, then x is equal to

  a] $\sqrt{3}$ b] 2   c] $1/\sqrt{2}$ d] 1
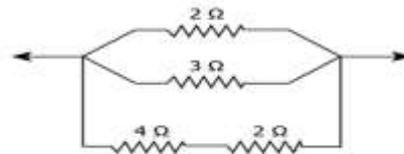
25] $5 \tan^2 A - 5 \sec^2 A + 1$ is equal to

  a] 6   b] -5   c] 1   d] -4

1. The image shows a combination of 4 resistors. What is the net resistance between the two points in the circuit?

a] 0.5 Ω

b] 1.0 Ω

c] 1.5 Ω

d] 2.0 Ω

2] In this question, the Assertion and Reason have been put forward. Read the statements carefully and choose the correct alternative from the following:

Assertion: In an open circuit, the current passes from one terminal of the electric cell to another.

Reason: Generally, the metal disc of a cell acts as a positive terminal.

   a] Both the Assertion and the Reason are correct, and the Reason is the correct explanation of the Assertion.

   b] The Assertion and the Reason are correct, but the Reason is not the correct explanation of the Assertion.

   c] Assertion is true, but the Reason is false.

   d] The statement of the Assertion is false, but the Reason is true.

3] If the power of a lens is – 2 D, what is its focal length?

a] +50 cm

b] -100 cm

c] -50 cm

d] +100 cm

4] A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure:

I   II   III   IV
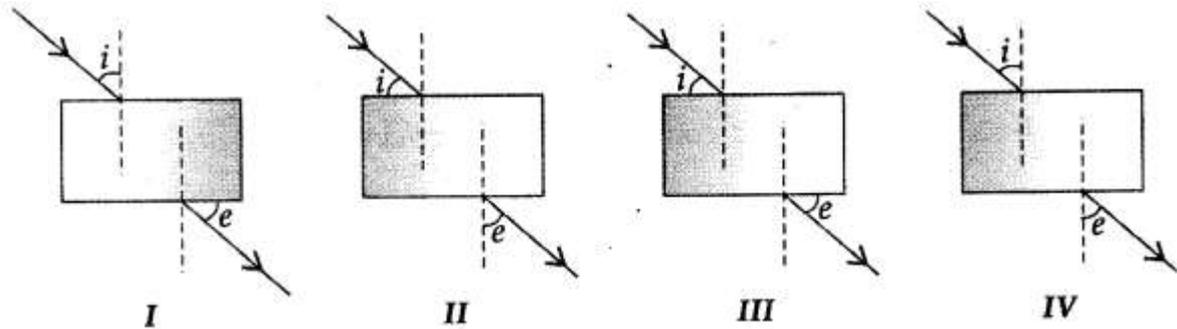
a] I

b] II

c] III

d] IV

5] An object is placed 20 cm from a convex mirror and its image is formed 20 cm from the mirror find the focal length of the mirror.

a] 30 cm

b] 60 cm

c] -30 cm

d] -60 cm

6] Two lenses of power +3 and -1 dioptres are placed in contact. The focal length of the combined lens is:

a] 100 cm

b] 25 cm

c] 50 cm

d] 30 cm

7] Chose the correct relation –

a] Joule = Coulomb x Volt

b] Joule = Ampere x Volt

c] Watt = Joule x Sec

d] Watt = Volt x Coulomb

8] If a current of 2A is following in a conductor for 30 second. The amount of charge is

a] 6 coulomb

b] 60 coulomb

c] 5 coulomb

d] 15 coulomb

9] A cooler of 1500 W, 200 volts and a fan of 500 W, 200 volts are to be used from a household supply. The rating of fuse to be used is

a] 2.5 A

b] 5.0 A

c] 7.5 A

d] 10 A

10] A person standing between two vertical cliff produces the sound. Two successive echoes are heard at 4s and 6s. Calculate the distance between the cliff. (Speed of sound in air = 320 m/s)

a] 1000 m

b] 1200 m

c] 1400 m

d] 1600 m

11] **The electronic configuration of an element is found to be 2, 4. How many bonds can one carbon atom form in a compound?**

a] 1

b] 2

c] 4

d] 6

12] **Methane, ethane and propane are said to form a homologous series because all are:**

a] Hydrocarbons

b] Saturated compounds

c] Aliphatic compounds

d] Differ from each other by a CH_2 group

13] **A hydrocarbon should have a minimum of _____ carbon atoms to show isomerism.**

a] Three

b] Four

c] Fived

d] Six

14] **Work of 14 J is done to move 2 C charge between two points on a conducting wire. What is the potential difference between the two points?**

a] 28 V

b] 14 V

c] 7 V

d] 3.5 V

15] **Unit of electric power may also be expressed as**

a] Volt-ampere

b] Kilowatt-hour

c] Watt second

d] Joule second

16] **The most suitable material for making the core of an electromagnet is:**

a] Steel

b] Iron

c] Soft iron

d] Aluminium

17] **Appliances that have a metal body are generally connected to the earthing wire. What is the reason to earth these wires?**

a] To prevent the excess current

b] To prevent the leakage of current

c] To provide extra current to the appliance

d] To provide high resistance to the appliance

18] **A student wants to extract energy from fossil fuels. Which process would help him to extract the energy from fossil fuel?**

a] burning

b] crystallisation

c] condensation

d] distillation

19] **Why is biogas considered a 'good' source of energy?**

a] as it produces ashes

b] as it produces methane

c] as it burns without releasing smoke

d] as it decomposes in the absence of oxygen

20] **An electric toaster has a power rating of 200 W. It operates for 1 hour in the morning and 1 hour in the evening. How much does it cost to operate the toaster for 10 days at Rs. 5 per kW h?**

a] Rs. 20

b] Rs. 400

c] Rs. 5000

d] Rs. 10000

21] **Which of the following forms the basis of the modern periodic table?**

a] Atomic mass

b] Atomic number

c] Number of nucleons

d] All of the above

22] The frequency of subsonic sound is

a] more than 20 Hz

b] 100 Hz

c] less than 20 Hz

d] more than 20,000 Hz

23] 1 hertz is equal to

a] 1 vibration per minute

b] 10 vibrations per minute

c] 60 vibrations per minute

d] 600 vibrations per minute

24] A pendulum oscillates 20 times in 4 seconds. Find its time period.

a] 0.05 sec.

b] 0.001 sec.

c] 0.2 sec.

d] 0.1 sec.

25] The velocity of sound at 20° C is approximately

a] 3400 m/sec.

b] 340 m/sec.

c] 430 m/sec.

d] 304 m/se

ATTEMPT ANY TWENTY QUESTION .

(Choose the correct answer from the following alternatives)

1] $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$. Identify the substance oxidized in the above equation.

a] $MnCl_2$

b] HCl

c] MnO_2

d] H_2O

2] In terms of acidic strength, which one of the following is in the correct increasing order?

a] Water < Acetic acid < Hydrochloric acid

b] Water < Hydrochloric acid < Acetic acid

c] Acetic acid < Water < Hydrochloric acid

d] Hydrochloric acid < Water < Acetic acid

3] Na_2CO_3 , $10H_2O$ is

a] Washing soda

b] Baking soda

c] Bleaching powder

d] Tartaric acid

4] What is the pH range of our body?

a] 7.0 – 7.8

b] 7.2 – 8.0

c] 7.0 – 8.4

d] 7.2 – 8.4

5] A student performs an experiment to form aluminium chloride from aluminium and chlorine. Which of the following option gives the chemical equation of the reaction?

a] $Al + Cl_2 \rightarrow AlCl_2$

b] $2Al + Cl_2 \rightarrow 2AlCl$

c] $2Al + 3Cl_2 \rightarrow 2AlCl_3$

d] $3Al + 3Cl_2 \rightarrow 3AlCl_3$

6] The image shows a reaction between zinc and hydrogen.

$$Zn + 2H^+ \rightarrow Zn^{2+} + H_2$$

Which option shows oxidation?

a] $Zn \rightarrow Zn^{+2}$

b] $2H^+ \rightarrow H_2$

c] $Zn^{+2} \rightarrow Zn$

d] $H_2 \rightarrow 2H^+$

7] When carbon dioxide is passed through lime water, then

a] Calcium hydroxide is formed

b] White precipitate of CaO is formed

c] Lime water turns milky

d] Colour of lime water disappears

8]

The IUPAC name of $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - CH_3$ is
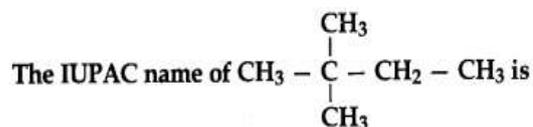
a] 2-ethyl-2-methyl propane

b] 2, 2-dimethyl butane

c] 1,1,1-trimethyl propane

d] 2, 2-methyl butane

9] Name the functional group present in CH_3COCH_3.

a] Alcohol

b] Carboxylic acid

c] Ketone

d] Aldehyde

10] Identify 'A' in the following reaction:

$CH_3COOH + Na_2CO_3 \rightarrow A + CO_2 + H_2O$

a] CH_3COONa b] $CH_2(Na)COOH$

c] NaOH   d] NaHCO$_3$

11] Oxidation is a process which involves

a] addition of oxygen

b] addition of hydrogen

c] removal of oxygen

 d] removal of hydrogen

12] Give the ratio in which hydrogen and oxygen are present in water by volume.

a] 1:2

b] 1:1

c] 2:1

d] 1:8

13] When Ag is exposed to air it gets a black coating of

a] AgNO$_3$

b] Ag$_2$S

c] Ag$_2$O

d] Ag$_2$CO$_3$

14] What type of chemical reactions take place when electricity is passed through water?

a] Displacement

b] Combination

c] Decomposition

d] Double displacement

15] **Which of the following reactions is used in black-and-white photography?**

a] Combination Reaction

b] Decomposition Reaction

c] Displacement reaction

d] Oxidation reaction

16] The most abundant metal in the earth's crust is

a] Iron   b] Aluminium

c] Calcium   d] Sodium

17] $Al_2O_3 + 2NaOH \rightarrow \ldots\ldots + H_2O$

a] $(OH)_3$

b] Na_2O

c] $NaAlO_2$

d] $AlNaO_2$

18] Example of an amphoteric oxide is:

a] Na_2O

b] K_2O

c] Al_2O_3

d] MgO

19] Galvanisation is a method of protecting iron from ruffing by coating with a thin layer of

a] Gallium

b] Aluminium

c] Zinc

d] Silver

20] Amalgam is an alloy of

a] Copper and Tin

b] Mercury

c] Lead and Tin

d] Copper and Zin

21] Copper objects lose their shine and form green coating of

a] Copper oxide

b] Copper hydroxide and Copper oxide

c] Basic Copper carbonate

d] Copper carbonate

22] C_3H_8 belongs to the homologous series of

a] Alkynes

b] Alkenes

c] Alkanes

d] Cyclo alkanes

23] Which of the following belongs to homologous series of alkynes?

C_6H_6, C_2H_6, C_2H_4, C_3H_4.

a] C_6H_6

b] C_2H_4

c] C_2H_6

d] C_3H_4

24] Give the IUPAC name of $CH_3COOC_2H_5$.

a] Ethyl ethanoic acid

b] Butanoate

c] Ethyl ethanoate

d] Ethyl methyl carboxylic acid

25] The first member of the alkyne homologous series is

a] propyne

b] ethyne

c] methane

d] ethene

1] With whom you can associate theory of evolution?

a] Charles Darwin

b] Mendel

c] Stanley miller

d] Harold Urey

2] Which one is a possible progeny in F2 generation of pure-bred tall plant with round seed and short plant with wrinkled seeds?

a] Tall plant with round seeds

b] Tall plant with wrinkled seeds

c] Short plant with round seed

d] All of the above

3] Which section of DNA provides information for one protein

a] Nucleus

b] Chromosomes

c] Trait

d] Gene

4] What is the puberty age in human males?

a] 8-10

b] 10-12

c] 12-14

d] 14-16

5] When an animal is cut into pieces and each piece grows into a complex organism. What is the process?

a] Budding

b] Fragmentation

c] Spore formation

d] Regeneration

6] What is coliform?

a] Group of bacteria

b] Group of viruses

c] Group of microorganisms

d] Group of diseases

7] Proteins after digestion are converted into

a] Carbohydrates

b] Small globules

c] Amino acids

d] Starch

8] Temporary finger like extensions on amoeba are called

a] Cell membrane

b] Cell wall

c] Pseudopodia

d] Cilia

9] One cell-thick vessels are called

a] Arteries

b] Veins

c] Capillaries

d] Pulmonary artery

10] Which of the following is terrestrial ecosystem?

a] A natural forest

b] A lake

c] A pond

d] An aquarium

11] The process where characteristics are transmitted from parent to off springs is called:

a] Variation

b] Heredity

c] Gene

d] Allele

12] The phenomenon where individuals of a species exhibit differences in characteristics are called:

a] Adaptation

b] Evolution

c] Variation

d] All of the above

13] Which of the following statements is Incorrect?

a] Gene is a sequence of nucleotides

b] During the process of gene expression, DNA is first copied into RNA

c] Genes can acquire mutations in their sequence

d] Genes cannot acquire mutations in their sequence

14] _____ is the observable set of characteristics of an organism

a] Phenotype

b] Genes

c] DNA

d] All of the above

15] When a new plant is formed as a result of cross-pollination from different varieties of a plant, the newly formed plant is called:

a] Dominant plant

b] Mutant plant

c] Hybrid plant

d] All of the above

16] Who proposed the theory of evolution?

a] Charles Darwin

b] Stanely Miller

c] Harold Urey

d] Aristotle

17] Homologous organs are organs that have:

   a] Different function with a different structure

   b] Same function with the same structure

   c] Same function but with a different structure

   d] Different function but the same structure

18] Which of the following are energy foods?

a] Carbohydrates and fats

b] Proteins and mineral salts

c] Vitamins and minerals

d] Water and roughage

19] In which mode of nutrition an organism de-rives its food from the body of another living organism without killing it?

a] Saprotrophic nutrition

b] Parasitic nutrition

c] Holozoic nutrition

d] Autotrophic nutrition

20] The mode of nutrition found in fungi is:

a] Parasitic nutrition

b] Holozoic nutrition

c] Autotrophic nutrition

d] Saprotrophic nutrition

21] Roots of the plants absorb water from the soil through the process of:

a] diffusion

b] transpiration

c] osmosis

d] None of these

22] The site of photosynthesis in the cells of a leaf is

a] chloroplast

b] mitochondria

c] cytoplasm

d] protoplasm

23] The breakdown of pyruvate to give carbon di-oxide, water and energy takes place in

a] cytoplasm

b] mitochondria

c] chloroplast

d] nucleus

24] Glycolysis process occurs in which part of the cell?

a] Cytoplasm

b] Nucleus

c] Mitochondria

d] Chloroplast

25] Name the substances whose build up in the muscles during vigorous physical exercise may cause cramps?

a] Ethanol + Carbon dioxide + Energy

b] Lactic acid + Energy

c] Carbon dioxide + Water + Energy

d] Pyruvate

Roughing Area Page 1

Roughing Area Page 2

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