C 24954

9th Std. – ENGLISH

THE GREATER BOMBAY SCIENCE TEACHERS' ASSOCIATION
DR. HOMI BHABHA BALVAIDNYANIK COMPETITION

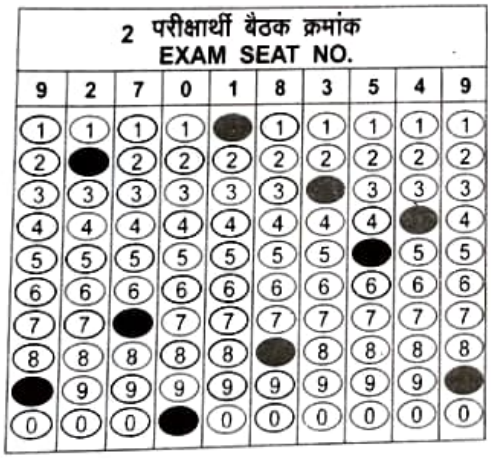
QUESTION BOOKLET

DATE OF EXAMINATION : 16th SEPTEMBER 2017

TIME : ONE HOUR THIRTY MINUTES **MARKS : 100**

EXAM SEAT NO. : | | | | | | | | | | |

EXAMPLE



IMPORTANT

Please write **your Exam Seat No.** in the row of boxes in column No. 2 of your **ANSWERSHEET** and darken the oval that corresponds to each of the numerals as shown in the example, using black ball point pen.

INSTRUCTIONS:

1. Write your Exam Seat No. on this test booklet in the space provided above.
2. This test booklet contains 100 Questions.
3. Each question carries 1 mark.
4. **Check to make sure that you have received the appropriate test booklet for your standard/medium.**

001. A man completes 10 turns / revolutions around the garden of 24 m diameter in 2 minutes. What will be its speed from the following?

(A) 2.4 m/s (B) 6.28 m/s (C) 24 m/s (D) 3.14 m/s

002. Which is the correct statement from the following about the resistances connected in series?

(A) This connection decreases resistance in the circuit.

(B) Same electric current passes through each resistor.

(C) Resultant resistance is less than every resistor connected in series.

(D) Electric current increases in this type of circuit.

003. From the following which will be the correct image of the word 'INFRASTRUCTURE' in the plane mirror in the shown position.

INFRASTRUCTURE

(A) 

(B) 

(C) 

(D) 

004. Complete the following analogs

Resistivity of conductor : Ωm.

Electricity in houshold use : .....

(A) kWhr, (B) kW/hr (C) Whr, (D) W/hr

005. If the mass of the moving object is decreased $\frac{1}{4}$ of its mass and its velocity is increased to twice its previous velocity, what will be the kinetic energy of the object from the following?

(A) ½ of the previous kinetic energy

(B) 4 times of previous kinetic energy

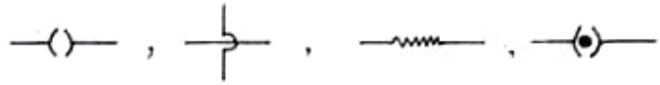
(C) kinetic energy will remain unchanged

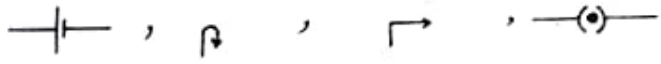
(D) 2 times of the previous kinetic energy

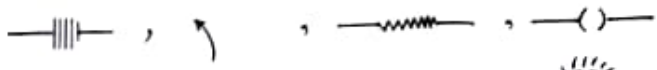
006. The velocity of the car becomes 5 m/s in 1st 10 seconds. In next two minutes its velocity becomes 18 km/hr. Then what will be the acceleration of the car from the following?

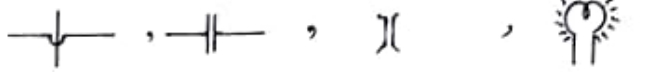
(A) 1 m/s^2 (B) 0 m/s^2 (C) 2 m/s^2 (D) 0.2 m/s^2

007. Identify from the following proper group of component symbols used in electric circuit.

(A) 

(B) 

(C) 

(D) 

008. Which laws of motion from the following are applied in the game of pole vault?

P : Law of Inertia, Q : Newton's second law of motion, R : Newton's third law of motion

(A) Only P (B) Q and R

(C) P and R (D) P, Q and R

009. Select the correct statement related to the reflection in the plane mirror and spherical mirror.

(A) Image is always virtual in both mirrors.

(B) Image is virtual in plane mirror and it is always real in the spherical mirror.

(C) For both the mirrors incident angle and angle of reflection are on either sides of the normal.

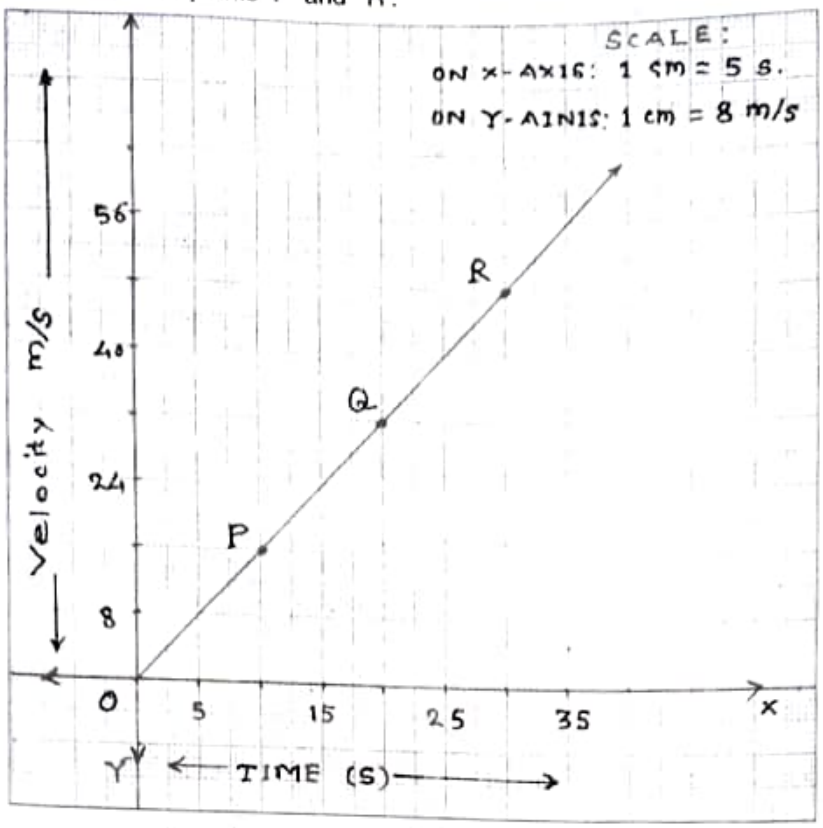
(D) Images are always behind in the both types of mirrors.

010. R_1 and R_2 are two resistors in the circuit connected in parallel. If $R_1 = 2R_2$ and the resultant resistance of this circuit is 2 Ω then determine the correct value of R_1.

(A) 6 Ω (B) 3 Ω

(C) $\frac{1}{6}$ Ω (D) $\frac{1}{3}$ Ω

011. Observe the adjoining graph of 'velocity - time' and choose the correct distance travelled by the object between the points P and 'R'.



(A) 32m (B) 320m (C) 64m (D) 640m

012. On which factor from the following, the speed of sound does not depend when it propagates through the gas at constant temperature?

(A) Molecular weight (B) Density

(C) Pressure of gas (D) Atomic weight

013. Select the proper temperature at which the resistance of conductor reaches near zero.

(A) 0 °K (B) 0 °C (C) 212 °F (D) 32 °F

014. Select improper step from the following which should be avoided while doing 'data entry'?

(A) To put "=" sign at the end while using formula.

(B) To do various ways of formating after entering data.

(C) Do not use special characters and unnecessary space.

(D) Keep data in tabular form.

015. If Gama rays, visible light rays, X-rays and ultra violet rays are arranged in ascending order of their wave length, then select the accurate arrangement from the following:

(A) Gama rays, visible light rays, X-rays, ultraviolet rays

(B) Gama rays, X-rays, ultraviolet rays, visible light rays

(C) X-rays, Gama rays, ultraviolet rays, visible light rays

(D) Ultraviolet rays, X-rays, Gama rays, visible light rays

016. Selected the proper option describing the motions of the bullet fired from the gun
(A) Vibrational motion, linear motion (B) Linear motion, rotational motion
(C) Non linear motion, vibrational motion (D) Non linear motion, rotational motion

017. Using Ohm's Law determine the value of 'x' in the following table.

Sr. No.	Voltage V	Current I
1.	1 V	50 mA
2.	x V	75 mA

(A) 1.5 V (B) 15 V (C) 75 V (D) 150 V

018. Which formula from the following is used to get the number of images of an object kept between two plane mirrors?
(A) $\theta = \frac{360}{n} - 1$ (B) $n - \theta = \frac{360}{\theta}$ (C) $n = \frac{360}{\theta} + 1$ (D) $n = \frac{360 - \theta}{\theta}$

019. Select the proper (true) statement about the forces acting on the body, when it is either stationary or in uniform motion.
(A) No any kind of force will act on the body.
(B) Only the gravitational force will act on the body.
(C) The various forces acting on the body will nullyfy each other.
(D) Various type of forces will act on the body in the same direction.

020. Complete the following analogs
Microphone : conversion of sound energy into electrical energy
Electronic stethoscope : .....
(A) Conversion of mechanical energy into sound energy
(B) Conversion of sound energy into electrical energy
(C) Conversion of electrical energy into sound energy
(D) Conversion of sound energy into mechanical energy

021. Choose the correct statement from the following, when the magnification due to the concave mirror is (– 2)
(A) The image is inverted and its height is twice the height of the object.
(B) The image is non inverted, virtual and its height is equal to twice the height of object.
(C) The image is inverted and the object is twice the height of its image.
(D) The height of an object is half the height of its image which is non inverted and virtual.

022. When a body is in the circular motion the work done by gravitational force is zero. Which of the following is the correct reason for this?
(A) The gravitational force acting on the body and the displacement of the body are in opposite direction.
(B) The radius of the circular path is constant.
(C) The displacement due to the gravitational force is very less.
(D) The gravitational force acting on the body and the displacement of the body are perpendicular to each other.

023. A tuning fork creates the sound waves of the wavelength 0.5m. Determine the frequency of tuning fork if the speed of sound in air is 330 m/s.

(A) 66 Hz (B) 1650 Hz (C) 16.5 Hz (D) 660 Hz

024. Select the proper set of optical components used in Cassegrain Telescope.

(A) Concave mirror and plane mirror

(B) Concave mirror, convex mirror and convex lense

(C) Two convex lenses of different radii

(D) Concave mirror, plane mirror and convex mirror.

025. Which is the incorrect statement from the following about the magnetic lines of force?

(A) The magnetic lines of force always start from south pole and end to north pole.

(B) 'The magnetic lines of force are always like the stretched spring.

(C) The magnetic lines of force reppell each other.

(D) The number of magnetic lines of force at any point determine the strength of magnetic field at that point.

026. Select proper group of properties of electric charge due to which sometimes we see the lightning in rainy season.

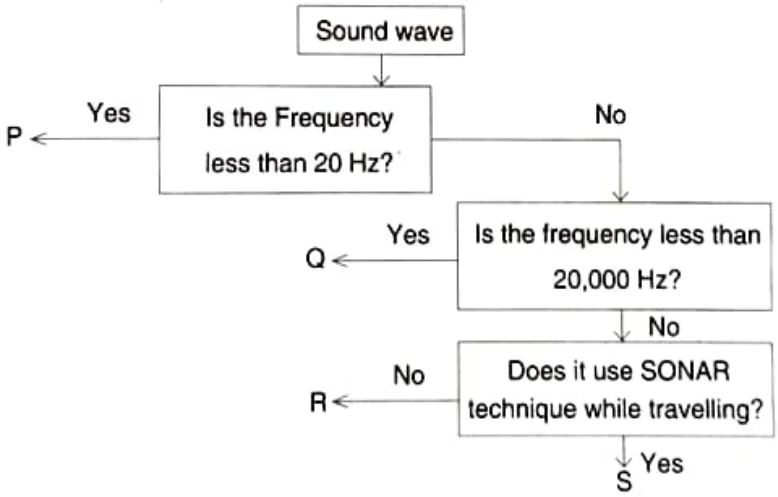
(A) Static electricity and electric induction

(B) Electric induction and repulsion in like charges

(C) Static electricity, electric induction and repulsion in like charges

(D) Static electricity, electric induction and attraction in unlike charges.

027. In the following flow chart of sound wave, choose proper animal from–human, rat, bat and elephant in place of P, Q, R and S.



(A) P ⟶ human, Q ⟶ elephant, R ⟶ rat, S ⟶ bat

(B) P ⟶ elephant, Q ⟶ rat, R ⟶ human, S ⟶ bat

(C) P ⟶ elephant, Q ⟶ human, R ⟶ rat, S ⟶ bat

(D) P ⟶ elephant, Q ⟶ human, R ⟶ bat, S ⟶ rat

028. The velocity of car becomes twice the previous velocity after every two seconds. If the average velocity of car after 6 seconds is 14 m/s, determine the distance travelled by car in first 4 seconds.

(A) 12 m (B) 36 m (C) 48 m (D) 56 m

029. What will be the correct alternative of the ascending speed of sound at 25°C in given media if P – Hydrogen, Q – Air, S – Sulphurdioxide, T – Helium.

(A) Q, P, T, R (B) P, R, Q, T (C) T, P, Q, R (D) R, Q, T, P

030. Select an incorrect statement from the following:
If a coolie lifted a bag of mass 100 kg through the height of 5m

(A) The work done by coolie is positive.
(B) The work done by gravitational force is positive.
(C) The work done by coolie is 4900 J.
(D) The potential energy of the bag is 4900 J.

031. What is the pH of 1 M NaOH?

(A) 12 (B) 14 (C) 11 (D) 13

032. Which of the following is / are weak bases?
Ammonia, Ammonium hydroxide, Methyl amine

(A) Ammonia
(B) Methyl amine
(C) Ammonia and Ammonium hydroxide
(D) Ammonia, Ammonium hydroxide, Methyl amine

033. When 10ml of an acid is slowly added in 10 ml of water then what will be volume of solution?

(A) Volume of solution is less than 20ml.
(B) Volume of solution is greater than 20ml.
(C) Volume of solution is equal to 20ml.
(D) At the start volume is more than 20ml and the slowly becomes less than 20ml.

034. Which of the following compound is affected by light?

(A) Calcium Suphate (B) Potassium Nitrate
(C) Silver Nitrate (D) Copper sulphate

035. Water pipes of iron are coated with layer of zinc to prevent corrosion. What is the name of this process?

(A) Vulcanisation (B) Galvanisation
(C) Anodizing (D) Tinning

036. What is the freezing point of Hg?

(A) – 357 °C (B) – 37 °C (C) – 39 °C (D) – 49 °C

037. Which of the following statement is wrong ?

(A) Washing soda is used for refining petroleum.

(B) Gypsum is used as an antiseptic.

(C) Blue vitriol is used as a fungicide.

(D) Nitre is used to make gunpowder.

038. Why tea becomes lighter in colour on adding lemon juice?

(A) Lemon juice absorbs the colour pigments in tea.

(B) Lemon juice dilutes the tea.

(C) Lemon juice lowers the pH of the tea.

(D) Lemon juice increases the pH of the tea.

039. Due to which process colour of pages of old books turns to yellow?

(A) Oxidation (B) Reduction (C) Neutralization (D) Decomposition

040. A student weighs 44 kg. Suppose his entire body is mode up of electrons. How many electrons are their in his body? [Mass of one electron = 88×10^{-29} gm]

(A) 2×10^{32} (B) 0.5×10^{32} (C) 2×10^{29} (D) $\frac{1}{2} \times 10^{29}$

041. Which of the following is most harmful chemical for human being in the deodrants?

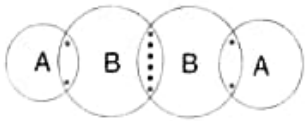
(A) Aluminium chlorohydrate compounds (B) Aluminium zirconium compounds

(C) Parabens (D) Triclosams

042. Find odd one out, according to occurance of carbon?

(A) Graphite (B) Natural gas (C) Proteins (D) Calcium carbonate

043. A compound B_2A_2 has the following arrangement of electrons then the elements A and B are respectively.



(A) C , Cl (B) C , H (C) H , C (D) Cl , C

044. Which of the following isotopes is used in a deflection of small tumers in the body?

(A) Boron-10 (B) Iodine-131 (C) Cobalt-60 (D) Arsenic-74

045. Find odd one out related to catalyst.
(A) Raney Nickel (B) Sodium (C) Iron (D) Manganese dioxide

046. Which of the following is not tribasic acid?
(A) Phosphoric acid (B) Citric acid
(C) Humic acid (D) Acetic acid

047. Which of the following reaction/s is / are correct?
(i) $CaSO_4 + 2NaCl \longrightarrow Na_2SO_4 + CaCl_2$
(ii) $Na_2SO_4 + CaCl_2 \longrightarrow CaSO_4 + NaCl$
(iii) $CaSO_4 + NaCl \longrightarrow Na_2SO_4 + CaCl_2$
(iv) $Na_2SO_4 + CaCl_2 \longrightarrow CaSO_4 + 2NaCl$
(A) iv (B) ii and iii (C) i and iv (D) i

048. A compound of carbon, hydrogen and nitrogen contains these elements in the ratio 9 : 1 : 35 by weight. If the molecular mass is 108, what is the molecular formula of that compound. [Atomic wt. : C = 12, H = 1, N = 14]
(A) C_2H_2N (B) C_3H_4N (C) C_2HN_2 (D) $C_6H_8N_2$

049. Which of the following do not contain water of crystalization?
(A) Alum (B) Barium Chloride
(C) Bleaching powder (D) Sodium sulphate

050. Which of the following ions form the calcium phosphate?
(A) Ca^{+}, PO_4^{-} (B) Ca^{3+}, PO_4^{2-} (C) Ca^{2+}, PO_4^{3-} (D) 3Ca, $2(PO_4)$

051. What do you mean by 'quark'?
(A) quartz (B) hadrons
(C) leptons (D) fundamental constituents of matter

052. Complete the following analogs.
Glass cutting : Diamond : : arc lamp : .....
(A) Fullerence (B) Neon (C) Argon (D) Graphite

053. Which of the following statement is wrong with respect to the statement "Carbon forms very large number of compounds?"
(A) The atomic number of carbon is 6.
(B) Valency of carbon is 6.
(C) Carbon has the property of catenation.
(D) Carbon shares electrons with other atoms to form covalent bond.

054. Find odd one out

(A) pm (B) A° (C) u (D) nm

055. What is the chemical formula of Polytetrafluoroethelene?

(A) $(C_3H_3)_n$ (B) $(C_2F_4)_n$ (C) $(C_2H_4)_n$ (D) $(C_3F_3)_n$

056. Which of the following harmful chemical are contained in food colours?

(A) Barium, Lead (B) Lead, Cobalt

(C) Strantium, Mercury (D) Lead, mercury

057. Which of the following work was done by the German scientist Friedrich Wohler?

(A) Verified the law of constant proportion

(B) Discovered carbon allotrope, fullerence C_{60}

(C) Synthesized urea from ammonium cyanate

(D) Discovered methane gas between 1776 and 1778

058. Which of the following acids are in solid state at room temperature?

(i) Carbonic acid (ii) Sulfamic acid (iii) boric acid

(iv) hydrochloric acid (v) Oxalic acid

(A) i, iii (B) ii, iii, v (C) i, ii, iv, v (D) i, ii, iv

059. Read the following statements about atmosphere and select the correct option.

Statement I : The atmosphere acts as protective blanket for the Earth

Statement II : It absorbs most of the harmful radiations coming from sun

(A) Both the statements I and II are true and statement II is correct explanation of I.

(B) Both the statements I and II are true and statement I is correct explanation of II.

(C) Statement I is true but statement II is false.

(D) Statement II is true but statement I is false.

060. Find out a pair which is not correct?

(A) Thorium : In atomic energy

(B) Sodium : In production of glass and fertilizers

(C) Magnesium : In flash bulb of camera

(D) Potassium : In cloth and paper industry

061. What is the pH of fresh yoghurt (curd)?

(A) 4.5 to 5.5 (B) 6.4 to 6.8 (C) 7.0 to 7.4 (D) 2.5 to 3.5

062. Complete the following analogs
Rosa galica : Rose : : Bos taurus : .....
(A) Dog (B) Cow (C) Tulsi (D) Hibiscus

063. Odd one out
(A) Venus flytrap (B) Dodder plant (C) Pitcher plant (D) Sundew

064. Identify the correct pair belongs to division Pteridophyta
(A) Ulva, Lycopodium (B) Selaginella, Lycopodium
(C) Anthoceros, Selaginella (D) Marchantia, chara

065. ..... is an example of layers chicken.
(A) Minorca (B) Aseel (C) Long (D) Brahma

066. Which of the following disease is caused by protozoa?
(A) Scabies (B) Pneumonia (C) Influenza (D) Malaria

067. Cartilage is a ..... type of tissue.
(A) Epithelial (B) Muscular (C) Connective (D) Nervous

068. Loss of water as droplet from hydathode is called .....
(A) Photosynthesis (B) Transpiration (C) Excretion (D) Guttation

069. Identify the Acrocentric chromosome from the following:
(A)  (B)  (C)  (D) 

070. Which of the following statement will explain the meaning of synapse.
(A) Junction of two nerve cells. (B) Junction of two muscle cells.
(C) Junction of two bone cells. (D) Junction of two sperm cells.

071. Identify the correct pair of "Pyrimidines" from the given alternatives.
(A) Adenine and Guanine (B) Cytosine and Thymine
(C) Guanine and Cytosine (D) Thymine and Adenine

072. Which of the following options shows the klinefelter syndrome condition of chromosomes
(A) 44 + XXY (B) 44 + XX (C) 44 + X (D) 44 + YYX

073. Odd on out on the basis of narrow spectrum antibiotics.
(A) Ampicillin (B) Amoxicillin (C) Penicillin (D) Tetracycline

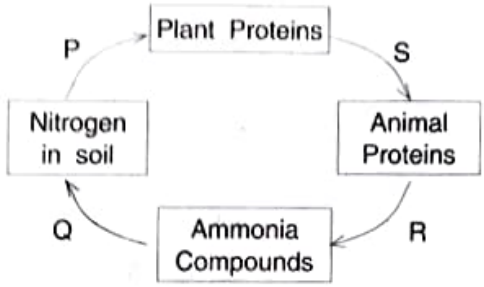
074. Who of the following was contracted the infection of "Typhus" during the research?
(A) Dr. Alexander Fleming (B) Ida Bangston
(C) Van Ermengem (D) Robert Hook

075. Identify the correct diagram of stigma of Hibiscus.
(A)  (B)  (C)  (D) 

076. Which of the following pair of muscles have involuntary movement?
(A) Skeletal muscles and cardiac muscles
(B) Cardiac muscles and smooth muscles
(C) Smooth muscles and skeletal muscles
(D) All above

077. At which of the following temperature the enzymes are most active?
(A) 37.6 °F (B) 39.6 °C (C) 98.6 °F (D) 29.6 °C

078. The diagram shows some stages in the nitrogen cycle. Which of the following stages involve the role of bacteria.



(A) P and Q (B) P and R (C) R and S (D) P, R and S

079. What is the main aim of "Harit Sena" at school level project?
(A) Water conservation (B) Soil conservation
(C) Swachhata Abhiyan (D) Social forestry

080. The excreta of ..... contain more amount of nitrogen, phosphorus, potash as compare to other animals.
(A) Sheep (B) Cow (C) Buffalo (D) Ox

081. Identify the pair of scavenger animals.
(A) Hyena, Crow (B) Dog, Cat
(C) Human, Kite (D) Monkey, Squirrel

082. In which of the following situation we have to use R.I.C.E. remedy?
(A) Fracture (B) Sunstroke (C) Contusion (D) Epilepsy

083. What is the function of thyroid gland?
(A) Sugar control in blood (B) Calcium control in blood
(C) Cholesterol control in blood (D) Proteins control in blood

084. Which of the following methods of waste management produce energy?
(A) Biomedical waste management (B) Safe landfil sites
(C) Industrial solid waste management (D) Pyrolysis

085. How many cranial nerves are their in our peripheral nervous system?
(A) 23 (B) 46 (C) 48 (D) 24

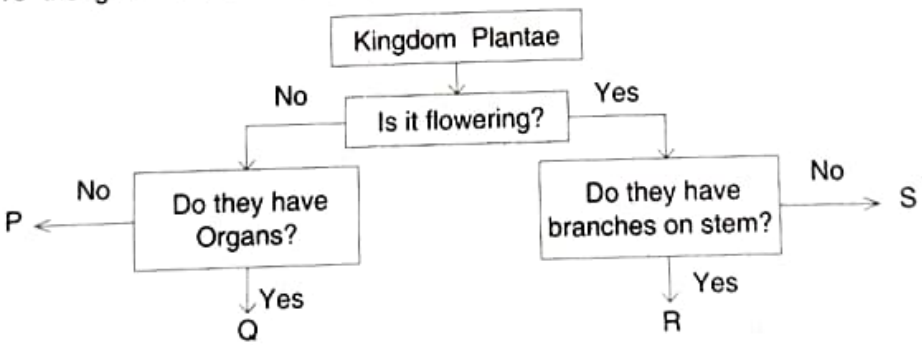
086. Which of the following statement is correct about dicotyledons plants?
(A) Their root system consists of fibrous roots.
(B) Their leaves have parallel venation.
(C) The vascular bundles in their stem are arranged in the rings.
(D) The flowers are trimerous.

087. In which process the Ammonia is converted in to nitrite
(A) Denitrification (B) Nitrification (C) Ammonification (D) Nitrogen fixation

088. Which of the following productions is related to Biotechnology?
(A) Production of cash crop (B) To make cartilage
(C) Vaccine production (D) All above

089. Select the plant from the following in which the reproduction occures by the spores
(A) Funaria (B) Fern (C) Chara (D) Cycas

090. Observe the given flow chart and identify the correct plants in place of P, Q, R and S



(A) P - Ulva, Q - Fern, R - Catharanthus, S - Betelnut
(B) P - Fern, Q - Ulva, R - Catharanthus, S - Betelnut
(C) P - Fern, Q - Ulva, R - Betelnut, S - Catharanthus
(D) P - Catharanthus, Q - Betelnut, R - Ulva, S - Fern

091. Which of the following chemical present in the wood gives flavour of clove to the food cooked on it.

(A) Acetaldehyde (B) Isoeugenol (C) Diacetyl (D) Lignin

092. Which of the following Indian / Indian origin scientist was the Nobel prize awardee in Chemistry?

(A) Hargobind Khurana
(B) Subramanyam Chandrashekhar
(C) Venkatraman Ramkrishnan
(D) C. V. Raman

093. Who of the following is called the father of 'Cell Phone'?

(A) Dr. Martin Cooper
(B) Dr. Joel S. Engel
(C) John F. Mitchell
(D) Douglas H. Ring

094. Which of the following country has launched Chandra-X-ray telescope in the space?

(A) India (B) Russia (C) America (D) China

095. Which of the following electronic component was used in the third generation computer (1964 - 71)?

(A) Integrated circuit
(B) Vaccume tubes
(C) Transistor
(D) Microprocessors

[Note] For Q. No. 96 to 100 paragraph is given. Read it and answer the questions:

MRI the Boon

Magnetic Resonance Imaging (MRI) also known as nuclear magnetic resonance imaging, is a scanning technique for creating detailed images of the human body.

During MRI, a person will be asked to lie on a movable table that will slide into doughnut shaped opening of the machine to scan a specific portion of your body. The machine itself will generate a strong magnetic field around the person and radio waves will be directed at the body. It generate images of parts of body that can't be seen with X-rays, CT scans or ultrasound. It can help doctors to see inside joints, cartilage, ligaments, muscles and tendons, which makes it helpful for detecting various sports injuries.

MRI is also used to examine internal body structures and diagnose a variety of disorders, such as strokes, tumors, spinal cord injuries and eye or inner ear problems. It is also widely used in research to measure brain structure and function. It doesn't emit any harmful radiations.

096. Which is the biggest benefit of MRI compared with other imaging techniques?

(A) It can help doctors to see inside joints.
(B) It used to examine internal body structure.
(C) No risk of being exposed to radiation.
(D) It diagnose varity of disorders.

097. What is the disadvantages of MRI?

(A) It is harmful for pregnant women and babies.

(B) It doesn't detect features of diseases such as osteoporosis.

(C) They cannot provide information about blood circirculation and blockages.

(D) It cannot diagnose disorders in eye and inner ear problems.

098. Which of the following cannot be used for bone imaging?

(A) X-ray (B) MRI (C) CT scan (D) Bone densitomentry

099. Which of the following technique is used in MRI?

(A) Ultrasonography techniques (B) CT scans imaging

(C) Ultrasonic technique (D) Nuclear magnetic resonance imaging

100. Who invented the MRI technique?

(A) Mathew Samuel Kalarickal (B) Forrest Morton Bird

(C) Dr. Raymond Damadian (D) Godfrey Hounsfield

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QUESTION BOOKLET

DATE OF EXAMINATION : 6th OCTOBER 2018

TIME : ONE HOUR THIRTY MINUTES **MARKS : 100**

EXAM SEAT NO. : | | | | | | | | | | |

EXAMPLE

IMPORTANT

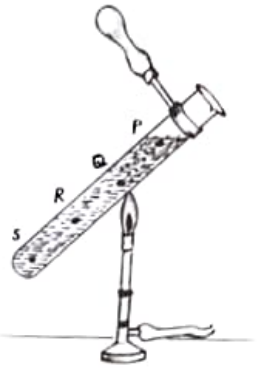
Please write **your Exam Seat No.** in the row of boxes in column No. 2 of your **ANSWERSHEET** and darken the oval that corresponds to each of the numerals as shown in the example, using black ball point pen.

INSTRUCTIONS:

1. Write your Exam Seat No. on this test booklet in the space provided above.
2. This test booklet contains 100 Questions.
3. Each question carries 1 mark.
4. **Check to make sure that you have received the appropriate test booklet for your standard/medium.**

001. Select the false statement from the following related to the static electricity.
(A) After rubbing the specific substances on each other, the charges are created on them.
(B) Unlike charges are created on these substances.
(C) There is no effect of atmosphere on these charges.
(D) The charges on these substances do not last for a long time.

002.



As shown in the given diagram the heat is given to the test tube till boil the water near the flame. Select the correct alternative about the temperature at points P, Q, R and S.

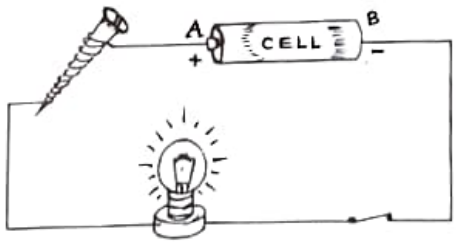
(A) $P > Q > R > S$
(B) $P \leq Q > R > S$
(C) $P < Q < R < S$
(D) $P \leq Q < R < S$

003. Which of the following group is improper to make the magnet?
(A) Iron, Cobalt, Nickel
(B) Titanium, Nickel, Iron, Aluminium
(C) Titanium, Bronze, Nickel
(D) Aluminium, Nickel, Cobalt

004. Select the proper sequence of types of force acting in the following activities.
(1) Iron nail attracts towards the magnet when the magnet holds near it.
(2) The ball floats on the water.
(3) The batsman hitting six on cricket ground.
(4) The stone released in the water.

(A) Non contact force, unbalaced force, contact force, balanced force
(B) Un balanced force, balanced force, Non contact force, contact force
(C) Non contact force, balanced force, contact force, un balanced force
(D) Non contact force, unbalanced force, balanced force, contact force

005. An electric circuit is completed by connecting insulated wires as shown in the diagram. Determine which of the following statements are true related to this circuit?



(P) In the circuit electric current is flowing from A to B
(Q) In the circuit electrons are moving from B to A.
(R) Here only electric energy is being converted into magnetic and light energy.
(S) Here chemical energy is being converted into electric energy and then electric energy is converted into magnetic and light energy.

(A) P, Q, R
(B) Q, R, S
(C) P, R, S
(D) P, Q, S

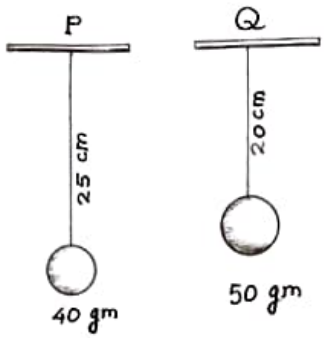
006. In the adjoining table temperatures in °F, °C and °K are given. Choose the correct alternative showing the approximate average room temperature at night of Pune city in the month of March.

Alternative	°F	°C	°K
(A)	59	15	288
(B)	68	20	293
(C)	122	50	323
(D)	104	40	313

007. Identify the correct co - relation.
High Density : Black hole : : Less density : .....
(A) White dwarf (B) Neutron star (C) Red giant star (D) Sun

008. What is the correct reason for the voice of male, female and children are different?
(A) Number of vocal chords are different.
(B) The length of vocal chords is different.
(C) The efficiency of muscles connected to the vocal chords is different.
(D) The efficiency of vocal chords depends upon the sex and age.

009.

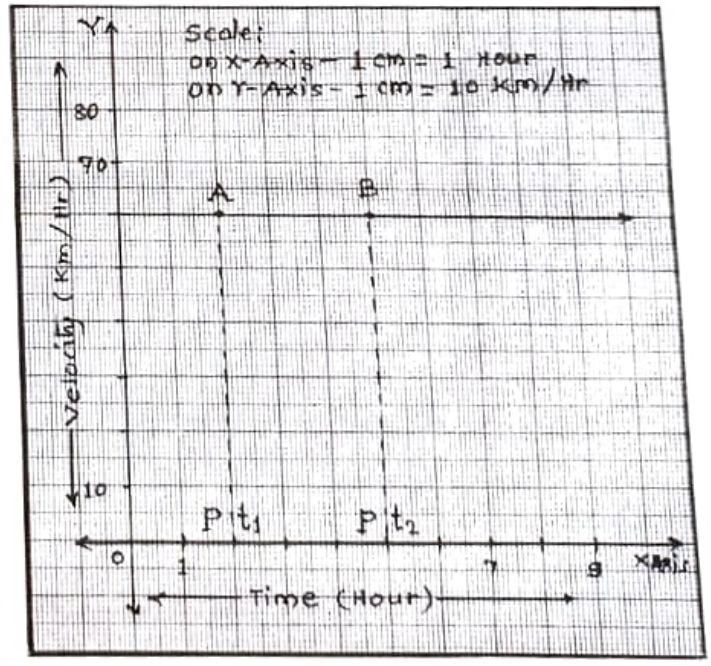


In the given figure, P and Q are the simple pendulums having different length and mass. Select the correct alternative from the following related to them.

(A) The periodic time of pendulum 'P' is greater than that of pendùlum 'Q'.
(B) The periodic time of pendulum 'P' is less than that of pendulum 'Q'.
(C) The periodic time of both pendulums is same.
(D) The periodic time of both pendulums is more than 2 seconds.

010. The graph of 'Velocity - Time' of the uniform motion of train is given to you. Observe it carefully and determine the distance travelled by the train between the places 'A' and 'B'.

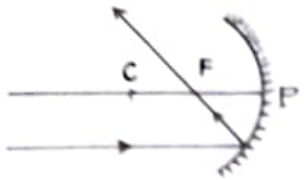
(A) 60 km
(B) 3 km
(C) 300 km
(D) 180 km

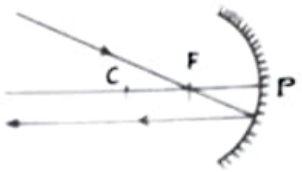


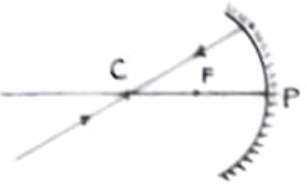
011. A lamp of 100 W was used 4 hours daily in February 2016. Then find out how many units of electricity was consumed in that month.

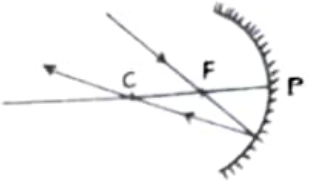
(A) 11.6 (B) 1.16 (C) 116 (D) 0.116

012. Identify the wrong ray diagram from the following.

(A) 

(B) 

(C) 

(D) 

013. Which of the following are correct statements about an optical telescope?

(e) Two or more convex lenses are used in this telescope.

(f) To enter minimum light objective lense is smaller

(g) After entering light rays first refraction and then reflection occures

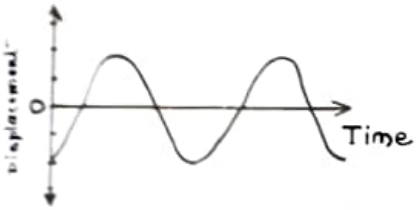
(h) Eye piece is smaller than objective lense.

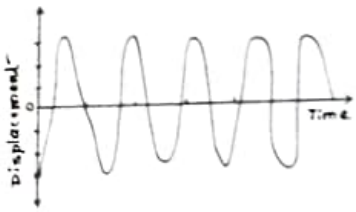
(A) e, h (B) e, f (C) f, h (D) f, g, h

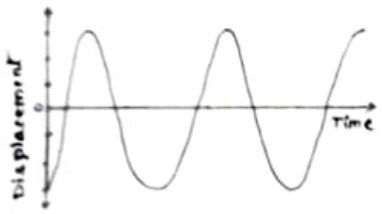
014. 0.5 kWh = ...J

(A) 0.8×10^6 (B) 1.8×10^6 (C) 1800×10^6 (D) 18×10^6

015. Select the correct soft sound wave from the following:

(A) 

(B) 

(C) 

(D) 

016. Read the following statements and select the correct alternative:

Statement 1 : If a light body and a heavy body possess the same momentum, the lighter body will possess more kinetic energy.

Statement 2 : The kinetic energy of a body varies as the square of its velocity.

(A) Both statements are true and statement 2 is the correct explanation of statement 1.

(B) Both statements are true, but the statement 2 is not the correct explanation of statement 1.

(C) Statement 1 is true and statement 2 is false

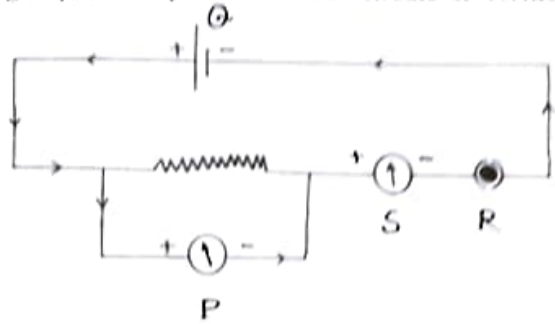
(D) Both statements are false.

[Contd...

017. Select the ascending order of the following media according to the velocity of sound at 25°C through them.
P → Nickel, Q → Aluminium, R → Glass, S → Brass
(A) R, S, Q, P, (B) P, Q, S, R (C) Q, P, S, R (D) P, R, Q, S

018. From which of the following formula the velocity of free falling object from the height of 1 m. is obtained?
(A) $v = 2g$ (B) $v = \sqrt{2g}$ (C) $v^2 = 2\sqrt{g}$ (D) $v^2 = g/2$

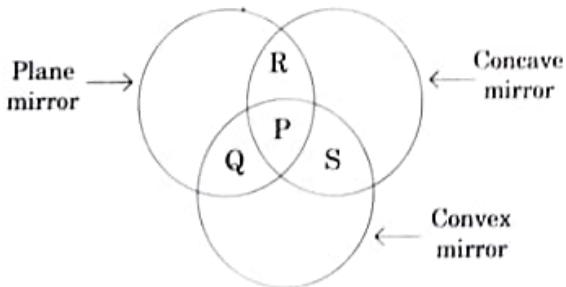
019. Select the correct group of components in the circuit of verification of Ohm's Law.



Alternative	P	Q	R	S
(A)	Voltmeter	Electric cell	Plug key	Ameter
(B)	Ameter	Electric cell	Plug key	Voltmeter
(C)	Ameter	Electric cell	Voltmeter	Plug key
(D)	Voltmeter	Ameter	Plug key	Electric cell

020. Determine the correct equation from the following if E_K → Kinetic energy, P → momentum, M → mass and V → Velocity of an object.
(A) $E_k = \frac{1}{2}PV^2$ (B) $E_k = \frac{1}{2}mPV$ (C) $E_k = \frac{1}{2}PV$ (D) $E_k = 2PV$

021.



Observe the Venn diagram and select the proper alternative related to the nature of images in the area P, Q, R and S.

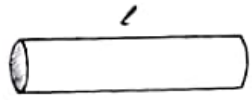
Alternative	P	Q	R	S
(A)	Virtual	Non inverted	Same as object	Smaller than object
(B)	Virtual	Inverted	Same as object	Smaller than object
(C)	Virtual	Inverted	Smaller than object	Same as an object
(D)	Real	Non inverted	Greater than object	Same as an object

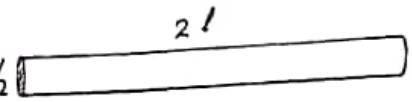
022. Choose the correct alternatives from the following about an information of physical quantities.

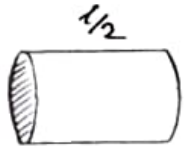
Group	Physical quantity	unit	type
X	Momentum	$kgms^{-1}$	Vector
Y	Work	Nm	Vector
Z	Pressure	Nm^2	Scalar
W	Power	Nms^{-1}	Scalar

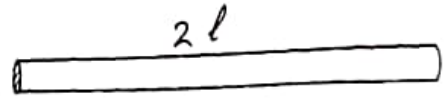
(A) X, Z (B) X, W (C) Y, W (D) X, Y

023. Pieces of copper wire having different dimensions are given in the following diagram. Determine that which piece has the greatest resistance.

(A) 

(B) 

(C) 

(D) 

024. Observe the following diagram and select the type of mirror P and Q respectively.

(A) Concave, Plane (B) Plane, Concave
(C) Convex, Concave (D) Concave, Convex

025. The weight of an object on earth is 29.4 N. If we release this object on moon from 20 m height, what will be its kinetic energy at the time of collision with moon surface?
(A) 98 J (B) 9.8 J (C) 294 J (D) 2.94 J

026. Sound waves are transmitted downwards into the sea at the depth of 3100 m with the help of SONAR technique. After what time an echo of sound will be heard?
(A) 2 s (B) 1 s (C) 4 s (D) 8 s

027. After running 250 m distance in 20 seconds on the circular path Vijay comes at initial place. Determine his average velocity from the following.
(A) 12.5 m/s (B) 0 m/s (C) 500 m/s (D) 125 m/s

028. Select the incorrect statement related to the parallel connection of resistors.
(A) This connection minimise the resistance in the circuit.
(B) Same electric current flows through each resistor.
(C) Potential difference is same across each resistor.
(D) Resultant resistance is always less than resistance of each resistor connected in the circuit.

029. The ratio of the masses of moving objects X and Y having equal momentum is 1:2. Determine the ratio of their velocities.
(A) 2 : 1 (B) 1 : 2 (C) 4 : 1 (D) 1 : 4

030. The moving objects with initial velocity 7 m/s travels 92 m distance in 4 seconds. Find its acceleration?
(A) 23 ms^{-2} (B) 2.5 ms^{-2} (C) 8 ms^{-2} (D) 15 ms^{-2}

031. Find the correct option related to the size of sodium (Na) and Aluminium (Al) atom.
(A) Na > Al (B) Na = Al (C) Na < Al (D) None of these

032. In which of the following substances, the carbon is found in free state?
(P) Diamond (Q) Marble (R) Wool (S) Graphite
(A) Q, S (B) P, R, S (C) P, S (D) P, Q, R

033. In which part of candle flame the complete combution takes place?
(A) Blue zone
(B) Middle (Luminous) zone
(C) Outermost zone
(D) Dark zone

034. Identify unbalanced chemical equation from the following.
(A) $PCl_3 + 3\ H_2O \longrightarrow H_3PO_3 + 3HCl$
(B) $CaC_2 + 2H_2O \longrightarrow Ca(OH)_2 + C_2H_2$
(C) $2C_2H_2 + 5O_2 \longrightarrow 4CO_2 + 2H_2O$
(D) $2KNO_3 \longrightarrow 2KNO_2 + 3O_2\uparrow$

035. Identify the chemical which is used to detect leakage of LPG.
(A) Methyl mercaptan
(B) Propyl mercaptan
(C) Ethyl mercaptan
(D) n - butyl mercaptan

036. Which of the following statement is / are correct.
(i) Salt of strong acid and strong base is neutral.
(ii) Salt of strong acid and weak base is basic.
(iii) Salt of weak acid and strong base is acidic.
(A) (i) and (iii) (B) only (i) (C) (ii) and (iii) (D) (i) and (iii)

037. Read the following statements and choose the correct alternative.
Statement I : Aluminium foil cannot be used in α - particle scattering experiment.
Statement II : Aluminium is highly malleable metal.
(A) Both statements are true and statement II is a correct reason of Statement I.
(B) Both statements are true but statement II is not a correct reason of Statement I.
(C) Statement I is true and statement II is false.
(D) Statement II is true and statement I is false.

038. An element X reacts with dilute H_2SO_4 as well as with NaOH to produce salt and hydrogen gas then which of the following statements are true ?

(i) X is an electropositive element.

(ii) Oxide of X is basic in nature.

(iii) Oxide of X is acidic in nature.

(iv) X is an electronegative element.

(A) (i), (ii), (iii) (B) (i), (ii), (iv) (C) (i), (iii), (iv) (D) (ii), (iii), (iv)

039. Using the given table select correct alternative about X and Y.

Atoms	X	Y
Number of protons	8	8
Number of neutrons	8	10

(A) X and Y are isobars.

(B) X and Y have different chemical properties.

(C) X and Y have different physical properties.

(D) X and Y are different elements.

040. Find odd one out according to pH value.

(A) Vinegar (B) Black coffee (C) Blood (D) Urine

041. In an electrolysis of water, volume of a gas evolved at the anode is ..... the volume of a gas evolved at the cathode.

(A) double (B) equal (C) half (D) one third

042. Identify the crystalline salt which contains two atoms of Sodium, 4 atoms of Boron, 7 atoms of Oxygen, 10 molecules of water.

(A) Epsom salt (B) Glauber's salt (C) Alum salt (D) Borax salt

043. XCl_2 is the chloride of metal X. State the formula of the sulphate and the hyroxide of the metal X -respectively.

(A) XSO_3, $X(OH)_3$ (B) XSO_3, XOH

(C) XSO_4, $X(OH)_2$ (D) XSO_4, XOH

044. The fluorescent tubes and neon sign bulbs glow because of ..... .

(A) High density of gases. (B) High temperature of gases.

(C) High applied voltage. (D) Presence of charged particles.

045. Find odd one out according to the presence of Methane.

(A) LPG (B) LNG (C) CNG (D) Biogas

046. Read the following statements and choose the correct alternative.

In a chemical reactions:

Statement I : Electrons are transfered from one atom to another.

Statement II : Electrons are shared between two atoms.

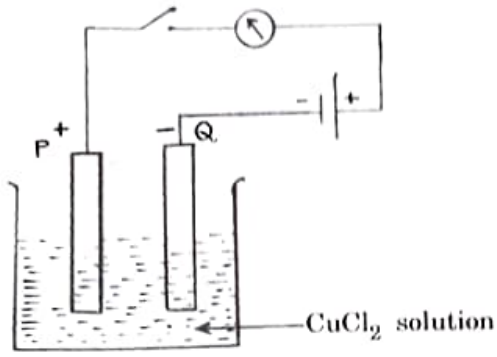
(A) Only statement I is true. (B) Only statement II is true.

(C) Both statements are true. (D) Both statements are false.

047. Select the proper group of components of portland cement?
(A) Silica, Carbamide, Calcium Oxide, Alumina
(B) Calcium Oxide, Silica, Alumina, Iron Oxide
(C) Calcium Oxide, Silica, Carbamide, Iron Oxide
(D) Silica, Alumina, Iron Oxide, Carbamide

048. Decomposition of vegetable matter into compost is an example of .....
(i) Exothermic reaction (ii) Endothermic reaction
(iii) Anerobic decomposition (iv) Aerobic decomposition
(A) (i), (ii) (B) (i), (iii), (iv) (C) (i), (iv) (D) (ii), (iii), (iv)

049. In the given figure, which substances are deposited on P and Q electrodes?



(A) Cu on P and Cl_2 on Q
(B) Cl_2 on P and Cu on Q
(C) Cu on P and no any substance on Q
(D) No any substance on P and Q both

050. Which of the following is not the property of covalent compounds?
(A) Low M.P. and B.P.
(B) Soluble in organic solvents.
(C) Low M.P. and High B.P.
(D) Conductor of heat and electricity in very small scale.

051. Acetic acid and Amonium hydroxide are ..... and ..... respectively.
(A) Weak acid, Weak base (B) Weak acid, Strong base
(C) Strong acid, Strong base (D) Strong acid, Weak base

052. $Mg + CuO \longrightarrow MgO + Cu$
Which of the following are true related to the above reaction?
(i) CuO gets reduced. (ii) Mg gets oxidised.
(iii) CuO gets oxidised. (iv) It is a redox reaction
(A) (i), (ii), (iv) (B) (i), (ii) (C) (iii), (iv) (D) (ii), (iii), (iv)

053. How many molecules are there in 77 gm of CO_2?
(A) 1.05385×10^{22} (B) 10.5385×10^{23}
(C) 105.385×10^{24} (D) 6.022×10^{23}

054. In Dalton's sign ⊙ was used for which element?
(A) Copper (B) Hydrogen (C) Benzene (D) Oxygen

055. Name the gas which turns moist lead acetate solution silvery black.
(A) SO_2 (B) H_2 (C) CO_2 (D) H_2S

056. Why Potassium and cold water are not used to prepare Hydrogen in the laboratory?
(i) The reaction is violent and exothermic.
(ii) Potassium do not react with cold water
(iii) Reaction is reversible
(iv) The liberated heat ignites the hydrogen
(A) Only (iv) (B) (i), (iv) (C) (i), (iii) (D) (i), (iii), (iv)

057. What is the proportion by weight of the constituent elements of Cu and O in the compound CuO?
(A) 3.968 : 1 (B) 4 : 2.968 (C) 4 : 3.968 (D) 2.968 : 2

058. Which radioactive isotopes were released in Chernobyl disaster?
(A) B - 10, As - 74, Sm - 153, Co - 60
(B) I - 131, Cs - 137, Sr - 90, Pu - 241
(C) I - 131, Co - 60, Sr - 90, Ra - 223
(D) I - 131, P - 32, Sm - 153, Sr - 90

059. Which of the following are basic radicals?
(A) Ag^+, Cu^{2+}, NH_4^+ (B) I^-, SO_4^{--}, MnO_4^-
(C) Ag^+, Na^+, I^- (D) Ag^+, Cu^{2+}, MnO_4^-

060. An acid mixed with water, results in the decrease of concentration of which ion?
(A) O^{--} (B) OH^- (C) H^+ (D) H_3O^+

061. Which of the following cells secreat Somatostatin hormone?
(A) Alpha cells (B) Beta cells (C) Delta cells (D) P. P. cells

062. Cobalt - 60 is used for .....
(A) In treatment of brain tumour
(B) For preservation of food
(C) To prevent the sprouting of onions and potatoss
(D) All above

063. Which of the following tissues carries the function to give support and flexibility?
(A) Parenchyma tissue (B) Collenchyma tissue
(C) Sclerenchyma tissue (D) Xylem and Phloem tissues

064. Where is eardrum situated?
(A) In between inner ear and brain (B) In between Pinna and middle ear
(C) In the cavity of middle ear (D) In the cavity of inner ear

065. Which of the following is responsible for dandruff?
(A) Algae (B) Fungi (C) Protozoa (D) Bacteria

066. In which pair of disorders the number of chromosomes are 47 ?
(A) Down syndrome and Turner syndrome
(B) Klinefelter syndrome and Down syndrome
(C) Turner syndrome and Klinegelter syndrome
(D) Galactosaemia and Sickle cell anaemia

067. In irradiation method of food - protection which of the following changes are seen in food:
(1) Microbes, fungus and insects are destroyed.
(2) Ripening period of fruit increases.
(3) Sprouting process becomes slow down.
(A) 1 and 2 (B) 2 and 3 (C) only 2 (D) 1, 2 and 3

068. How many chromosomes are there in lion, tiger and cat respectively?
(A) 39, 38, 36 (B) 36, 36, 36 (C) 38, 38, 38 (D) 39, 38, 37

069. Select the correct alternative about diseases and their pathogen:

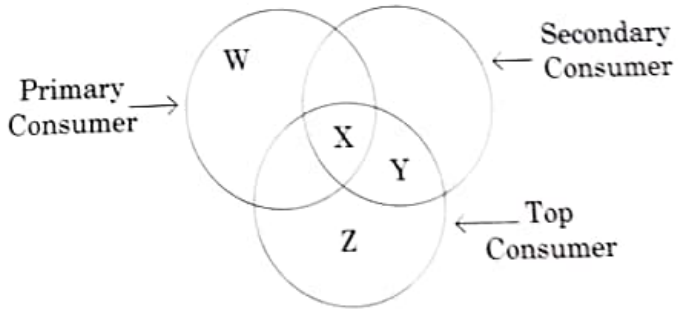
Diseases	Influenza	Leprosy	Malaria	Ringworm
Pathogen	P	Q	R	S

(A) P - Virus, Q - Bacteria, R - Protozoa, S - Fungi
(B) P - Fungi, Q - Bacteria, R - Virus, S - Protozoa
(C) P - Bacteria, Q - Protozoa, R - Fungi, S - Virus
(D) P - Protozoa, Q - Fungi, R - Virus, S - Bacteria

070. Gammexane powder is used as .....
(A) Pesticides (B) Germicides (C) Fungicides (D) None of these

071. Which of the following is rich source of Vitamin - A ?
(A) Apple (B) Honey (C) Carrot (D) Pea-nut

072. Observe the Venn diagram and identify the correct alternative about W, X, Y and Z.



(A) X - Wolf, Y - Elephant, Z - Bear, W - Eagle
(B) X - Bear, Y - Wolf, Z - Elephant, W - Eagle
(C) X - Eagle, Y - Wolf, Z - Elephant, W - Bear
(D) X - Bear, Y - Wolf, Z - Eagle, W - Elephant

073. If both parents are carrior of sickle cell anaemia then what is the ratio of progeny ?
(A) 1 normal : 2 sufferer : 1 carrior (B) 1 normal : 2 carrior : 1 sufferer
(C) 1 normal : 3 carrior : 0 sufferer (D) 2 normal : 0 carrior : 2 sufferer

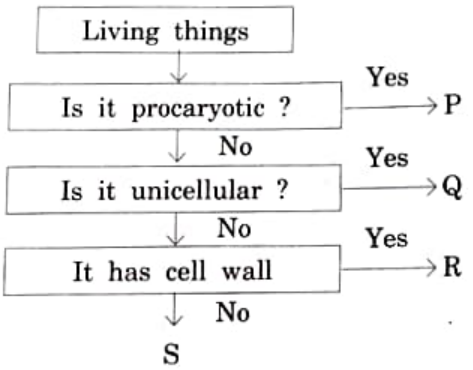
074. Identify the type and mode of infection of disease - Cholera.
(A) Epidemic and viral (B) Communicable and Bacterial
(C) Contagious and viral (D) Epidemic and Bacterial

075. Identify the pair of amphibians of the plant kingdom.
(A) Funaria and Anthoceros (B) Nephrolepis and Selaginella
(C) Ulva and Chara (D) Spirogyra and Lycopodium

076. Complete the analogy
Rhizobium : Bacteria : : Diatoms : .....
(A) Fungus (B) Protozoa (C) Bacteria (D) Algae

077. Who proposed the concept of Ecological pyramid first?
(A) Lindeman (B) Dalton
(C) Justus Von Liebig (D) Charles Elton

078. Observe the flow chart and identify correct order of living things P, Q, R, S



(A) P - Plasmodium, Q - Chlorella, R - Tapeworm, S - Spiral Bacteria
(B) P - Spiral Bacteria, Q - Plasmodium, R - Chlorella, S - Tapeworm
(C) P - Spiral Bacteria, Q - Chlorella, R - Tapeworm, S - Plasmodium
(D) P - Plasmodium, Q - Tapeworm, R - Spiral Bacteria, S - Chlorella

079. Choose the correct statement from the following.
(1) Salk's vaccine is used for prevention of Polio
(2) Triple vaccine is used for prevention of measles and Hepatitis
(3) B.C.G. vaccine is used for prevention of T.B.
(4) Double vaccine is used for prevention of Enteritis and cholera
(A) 1 and 2 (B) 3 and 4 (C) 1 and 3 (D) 2 and 4

080. Complete the analogy
Cotton : : B.T. cotton : : Potato : .....
(A) Amflora (B) Vaishali (C) Mon - 810 (D) Vistive Gold

081. Identify correct order of hormones X, Y and Z according to their function given in table

Hormones	Function
X	Help in cell division
Y	Help in enlargement of cell
Z	Help in stem elongation

(A) X - Auxim Y - Abscisic acid, Z - Cytokinins
(B) X - Cytokinins Y - Gibberellins, Z - Auxin
(C) X - Cytokinins Y - Auxin, Z - Gibberellins
(D) X - Gibberellins Y - Abscisic acid, Z - Cytokinins

082. 'Bombyx mori" is a species of ..... .
(A) Hybrid cow (B) Silkworm (C) Layers chicken (D) Marine water fish

083. Observe the diagram of human teeth. Identify the proper order on the basis teething


(I)


(II)


(III)


(IV)

(A) I, II, III, IV (B) III, I, IV, II (C) II, III, I, IV (D) IV, II, I, III

084. Complete the classification table.

Hierarchy	**Hibiscus**
Kingdom	Plantae
Division	Angiosperms
Class	Dicotyledonae
Order	.....
Family	Malvaceae
Genus	Hibiscus
Species	.....

(A) Malvales, Hibiscus rosa-sinensis
(B) Sapindales, indica
(C) Rosales, rosa
(D) Rosales, Hibiscus rosids

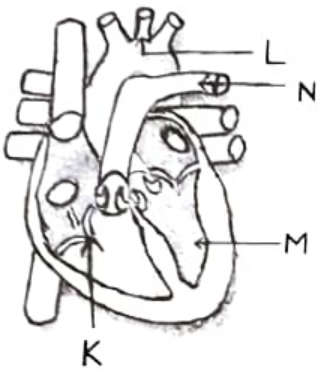
085. Which of the following chromoplast is responsible for tomato to become red in colour?
(A) Carotene (B) Betalains (C) Lycopene (D) Xanthophyll

086. Choose the correct characteristic of 'Pinus'.
(A) Seeds are covered
(B) Flowers develop into fruits
(C) It is perennial and woody
(D) Their stems have branches

087. Identify correct pairs from the following.
(P) Rhizobium ⟶ Nitrogen fixation
(Q) Clostridium ⟶ Bakery products
(R) Penicillium ⟶ Production of antibiotics
(S) Yeast ⟶ Food poisoning
(A) P and Q (B) R and P (C) S and R (D) Q and S

088. Identify the wrong statement / statements from the following.
(1) CO_2 is released into the atmosphere through volcanic activity
(2) CO_2 is released into the atmosphere through process of photosynthesis
(3) CO_2 is released into the atmosphere through process of respiration
(4) CO_2 is released into the atmosphere through forest fires
(A) 1 and 3 (B) Only 2 (C) Only 4 (D) 2 and 4

089. Observe the given diagram and identify the correct order of K, L, M, N



(A) K - Tricuspid valve, L - Superior vena cava,
M - Left Atrium, N - Left pulmonary artery
(B) K - Tricuspid valve, L - Systemic aorta,
M - Left ventricle, N - Left pulmonary artery
(C) K - Semilunar valve, L - Superior vena cava,
M - Left ventricle, N - Right pulmonary artery
(D) K - Semilunar valve, L - Right pulmonary vein ,
M - Left Atrium, N - Superior vena cava

090. Which of the following variety of chicken is reared for eggs as well as meat?
(A) Cochin (B) Black Rock (C) Ancona (D) Lehman

For Q. 91 to 95 : Read the following passage carefully and answer the questions given below:

Sattelite Science

The main components of a sattelite consist of the communication system, which includes the antennas and transponders that receive and retransmit signals, the power system, which includes the solar panels that provide power and the propulsion system, which includes the rockets that propel the sattelite. A sattelite in geostationary orbit can deviate up to a degree every year from north to south or east to west of its location because of the gravitational pull of the moon and sun. A sattelite has thrusters that are fired occasionally to make adjustment in position. A sattelite's life span is determined by the amount of fuel it has to power these thrusters. Once the fuel runs out, the sattelite eventually drifts into space and out of operation, becoming a space debris.

A sattelite in orbit has to operate continuously over its entire life span. It needs internal power to be able to operate it's electronic systems and communications payload. The main source of power is sunlight, which is harnessed by the sattelite's solar panels. A sattelite also has batteries on board to provide power when the sun is blocked by earth. The batteries are recharged by the excess current generated by solar panels when there is sunlight.

091. Select the correct group of components of a sattelite communication system from the following.

X → antenna, Y → power system, Z → Transponders, W → SONAR system

(A) X, Z, W (B) Y, Z, W (C) X, Y, Z, W (D) X, Y, Z

092. Identify the most correct reason of deviation of geostationary orbit of a sattelite.

(A) Shape of sattelite (B) Weight of sattelite

(C) Gravitational pull (D) Direction of motion

093. The factors affecting the life span of a sattelite are .....

P → fuel, Q → Power system, R → material, S → Radiation Damage

(A) P, S (B) Q, R, P (C) P, Q, R, S (D) R, S

094. Which source of power is not used in the geostationary sattelite?

(A) Ni-cad cell, (B) Solar pannels

(C) Chemical batteries (D) Liquid Oxygen

095. The batteries in the sattelite are recharged by ..... .

(A) Changing chemicals in the batteries.

(B) Changing electrodes in the batteries.

(C) Solar pannels when there is sunlight.

(D) Photo electric cell at any time when necessary.

096. Which of the following rocket launching center in Odisha (formerly Orissa) ?

(A) Vikram Sarabhai space center (B) Balasore

(C) Satish Dhawan space center (D) Thumba

097. Select the odd moon from the following.

(A) Europa (B) Lo (C) Titan (D) Calisto

098. What are the difficulties in Thailand cave resque mission to save football team trapped in the cave in June 2018?

(P) Dense dark.

(Q) Decreasing level of Oxygen.

(R) Increasing level of water due to continuous raining.

(S) Increase in CO_2 level.

(A) P, R (B) P, Q, R (C) P, Q, R, S (D) Q, S, R

099. Who got the Shantiswaroop Bhatnagar award in Chemistry in the year 2017?

(A) Dr. G. Naresh Patwari (B) Dr. Deepak Nayak

(C) Dr. Nissim Kanekar (D) Dr. Amit Datta

100. Select the correct pair of Indian sattelite and its function from the following :

(A) CARTOSAT → Earth Science (B) G-SAT → Planetary Science

(C) INSAT → Navigation (D) PISAT → Space