



**INFINITY VISION**  
**RE-IMAGINING EDUCATION**

**IIT-JEE | Medical | CBSE | NTSE | Olympiads | KVPY**

**Class 6 | Class 7 | Class 8 | Class 9 | Class 10 | Class 11 | Class 12**

**BIOLOGY CLASS X**  
**SAMPLE PAPER ICSE SOLUTION**

**Two Years Program for IIT JEE/NEET**

**For Class - XI**

**BATCHES STARTING**  
*from*  
**5 APRIL 2020**

**Call us for Admission and Teachers' Interaction**

**FEATURES OF OUR CLASSROOM PROGRAM**

- ❖ Study in a conducive environment with other competition-oriented and dedicated students.
- ❖ Our courses include intensive practice and assessment for better ranks in competition.
- ❖ **Total FEES refund** within 7 days of enrolment if you feel we could not meet your expectations.
- ❖ **Meet your teachers** before joining the course.



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### JEE MAIN 2020 PERCENTILE SCORE



**Harsh Rusia**  
**99.78**



**Vikas Singh**  
**99.46**



**Anshul Kashyap**  
**99.11**



**Gaurav Singh**  
**99.00**



**Mehul Bhardwaj**  
**98.2**



**Aditya Saxena**  
**95.9**



**Hemant Shankar**  
**95.9**



**Rishabh Mishra**  
**95.55**



**Yash Kaushik**  
**91.31**



**Ashutosh Tiwari**  
**90.51**



**Riya Singh**  
**90.1**



**Janmejay Singh**  
**89.19**



**Bhargavi Gupta**  
**89.16**



**Rohit Gupta**  
**88.85**



**Tanmay Tripathi**  
**88.56**



**Akash Sharma**  
**86.00**



**Sumit Kumar**  
**85.43**



**Hardik Daunderiya**  
**85.24**

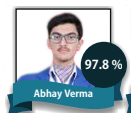


**Aman Gupta**  
**85.00**

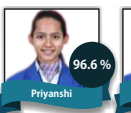


**Shreyansh Gupta**  
**84.50**

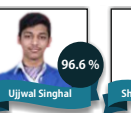
### CBSE CLASS XII 2018-19



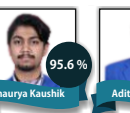
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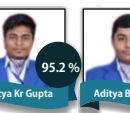
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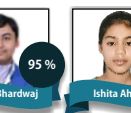
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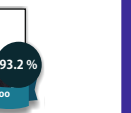
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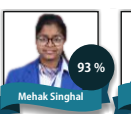
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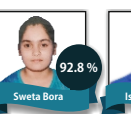
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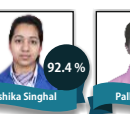
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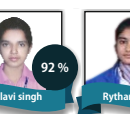
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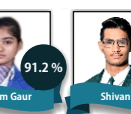
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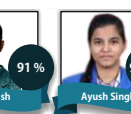
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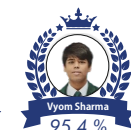
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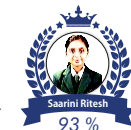
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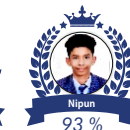
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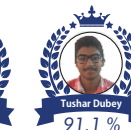
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### INTERNATIONAL OLYMPIADS & NTSE SCHOLAR



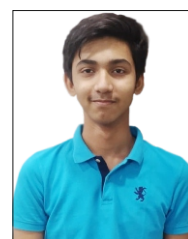
**AKASH DIMRI**  
**2019-20**  
**KVPY Stage 1 & NSEB**



**Sankalp Dixit**  
CLASS 10  
**PRMO 2019**



**Pranav Saxena**  
CLASS 10  
**PRMO 2019**



**Aniket Shrotriya**  
CLASS 10  
**PRMO 2019**



**Vaishnavi Dwivedi**  
CLASS 11  
**NTSE SCHOLAR**

# SAMPLE PAPER ICSE SOLUTION

Time allowed: 2hrs

Max Marks: 100

## Section-I

1. **Answer:**

**(a)** (i) Nuclear Membrane

(ii) Vitreous humour

(iii) Stroma.

(iv) Genes

(v) Acetylcholine

**(b)** Water enters the root hair from the soil by the process of Endosmosis. This is because the solution in the soil is hypotonic whereas the cell sap in the root hair cell is hypertonic. The water then passes through the cortical cells by cell to cell osmosis and reaches the xylem of the root.

**(c)** (i) Destarched plant → washed in water → a leaf boiled in alcohol → placed in sunlight → Iodine added.

(ii) Interphase → Prophase → Metaphase → Anaphase → Telophase.

(iii) Seminiferous tubule → Epididymis → Vas deferens → Urethra → Penis.

(iv) Pinna → auditory canal tympanum → ear ossicles → cochlea.

(v) Soil water Root hair → Cortex → Endodermis Xylem.

**(d)** (i) The alpha cells of the pancreas secrete glucagon.

(ii) Duplicated chromosomes remain attached at a point termed centromere.

(iii) True.

(iv) Penicillin obtained from a fungus is an example of an antibiotic.

(v) Plants that manufacture their own food are termed autotrophs.

**(e)** (i) Corpus luteum and secretion of progesterone.

(ii) Iris of the eye and regulates the amount of light entering the eye.

(iii) Seminal vesicle and semen.

(iv) Phloem and photosynthesis.

(v) Eustachian tube and balancing the air pressure on either side of the eardrum.

**(f)** (i) Transpiration.

(ii) 'Loss of water as water vapour from the aerial parts of the plant is called as transpiration'.

(iii) Covering the pot with a plastic sheet would prevent the escape of water vapour from the pot.

(iv) Transpiration helps in the ascent of sap by producing a suction force acting from the top of a plant.

(v) A similar empty plastic sheet with its mouth tied, with no potted plant kept in sunlight will show no drops of water.



- (g) (i) Birth rate is the number of 'live' per thousand of the population per year.  
 (ii) Photolysis is the splitting of water molecules into hydrogen ions and hydroxyl ions in the presence of chlorophyll and light.  
 (iii) Vaccine is a preparation consisting of 'killed or weakened' microbes which help to build immunity in the human body.  
 (iv) Osmosis is the movement of water molecules from its region of higher concentration to its region of low concentration through a 'semipermeable membrane'.  
 (v) Antiseptics are chemical substances applied to the 'body' to destroy or prevent the growth and multiplication of harmful microbes.
- (h) (i) **Destarched Plant:** A plant from the leaves of which starch has been removed. This can be done by placing the plant in the dark for 24 to 48 hours.  
 (ii) **Phenotype:** The expressed character which is genetically controlled.  
 Example : Tall pea plants (genotype TT or Tt), dwarf pea plant (genotype tt). So this expressed tallness or dwarfness is called as phenotype.  
 (iii) **Death Rate:** This is also called as mortality. It is the number of death per 1000 of population per year.  
 (iv) **Power of Accommodation of the eye:** The process of focussing the eye at different distances is called as power of accommodation of the eye.  
 (v) **Natural Immunity:** This is also called as native or innate immunity. This immunity is by virtue of genetic constitutional make up. It is there in the body without any external stimulation of a previous infection.

2.

**Answer:**

### Section-II

- (a) (i) Anaphase.  
 (ii) Part A = Spindle Fiber  
 Part B = Cell wall  
 Part C = Chromatid  
 Part D = Centromere  
 (iii) Unique feature of this stage : Chromosomes are divided into two parts and chromatids are separated which move towards opposite poles.  
 (iv) Somatic cells.  
 (v) Two daughter cells are formed from this kind of cell division.  
 (vi) Dividing cell shown here is a plant cell because cell wall is clearly visible here which is a unique feature of the plant cells.
- (b) (i) Part A = Guard Cells. Part B = Stoma.  
 (ii) Biological term for the above structure is stomata.  
 (iii) Part labelled A, i.e., guard cells control the opening and closing of stomata.  
 (iv) 1. Guard cells are structurally bean shaped.  
 2. Wall of guard cells are differently thick. It has inner wall facing towards the stomatal pore is thick and outer wall is thin. By changing the turgidity and flaccidity, guard cells control the opening and closing of stomata.  
 (v) This structure is more likely to be found on the lower epidermis of the leaves.  
 (vi) Plants absorb a large amount of water from the soil but only a fraction of it is used by plants and most of this absorbed water is lost from the aerial parts of the plant in the form of water vapour. It is called transpiration.  
 (vii) There are five (5) other cells surrounding this structure.

3. **Answer:**

- (a)** (i) (1) Glucagon—Produced in alpha cells of pancreas.  
 (2) Insulin—Produced in beta cells of pancreas.  
 (ii) (1) Glucagon—It helps to convert glycogen to glucose when blood glucose level falls.  
 (2) Insulin—It helps to convert excess glucose to glycogen when there is higher level of glucose in blood.  
 (iii) It is both exocrine as well as endocrine gland. As exocrine, it secretes pancreatic juice containing digestive enzymes and pour them into duodenum part of intestine through pancreatic duct. As endocrine, it secretes hormones like insulin, glucagon and somatostatin and pour them directly into blood.  
 (iv) Insulin is a protein by composition so if it is given orally it will get digested in the stomach and will not be able to perform its function.  
 (v) Islets of Langerhans.  
 (vi) In the abdomen in the loop of small intestine close to duodenum part of small intestine.
- (b)** (i) The alteration in thickness of lens that enables us to see objects at varying distances is called accommodation.
1. During near vision the shape of the lens is more convex or rounded.
  2. During distant vision the shape of the lens is less convex or flat.
- (iii) Ciliary muscles and suspensory ligament.
- (iv) 1. In the dark — The cells are rods in pigment is rhodopsin.  
 2. In the light — The cells are cones the pigment is iodopsin.

4. **Answer:**

- (a)** (i) 1—Posterior Vena Cava  
 2—Aorta  
 3—Renal Artery  
 4—Renal Vein
- (ii) Part 5 : Ureter – Carry urine from kidneys to urinary bladder.  
 Part 6 : Urinary bladder – Contain the urine till it is released out.  
 Part 7: Sphincter muscles – Guards the urethra  
 Part 8: Urethra – Passage through which urine is given out of the body.
- (iii) Adrenal gland. It is located above each kidney in the form of a cap.
- (b)** (i) Osmosis : The process of movement of solvent molecules from a region of low concentration to a region of higher concentration through a semipermeable membrane.
- (ii) Allele – It is one of the alternative form of the same gene responsible for determining contrasting characteristics.
- (iii) Pulse – It is a wave of pressure of blood passing through the arteries as it is pumped out of the heart.
- (iv) Reflex Action : It is a spontaneous, automatic, involuntary response to a stimulus.
- (v) Synapse : It is the point of contact between the axon endings of one neuron with the dendrites of the other neuron through where the impulse is transmitted from one neuron to the other.

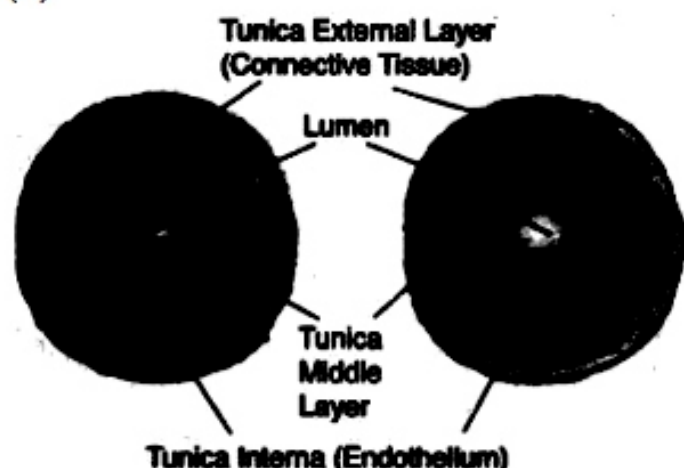


5. **Answer: (a)** (i) Atrial systole is the phase.

(ii) 1. Aorta, 2. Pulmonary Artery, 3. Superior Vena Cava

(iii) Upper chambers i.e., both the atria are contracting in this phase because blood is flowing downwards (towards the ventricles).

(iv)



(b) (i) The wall of the ventricles are thicker than the walls of atria due to different muscular development related to their different functions. Ventricles, particularly left ventricle has to pump the blood into aorta under a high pressure, against force of gravity. As such they are adapted to withstand greater pressure.

(ii) Renal cortex has a dotted appearance as it is dark in colour and nephrons are highly coiled in this region.

(iii) Wooden frames of doors and windows get jammed due to process of imbibition. In this process, water is adsorbed or absorbed by surface attraction. Wood have a strong affinity for water (hydrophilic). Thus, they absorb or imbibe water or moisture from their surroundings and swell up.

(iv) The anterior wall of middle ear contains an opening that leads directly into Eustachian tube. This tube connects the middle ear to throat. Hence the passage for infection is common and it may lead to ear infection.

(v) It occurs due to conditioned reflexes. These reflexes are learned responses to stimuli acquired individually during the life of an organism.

6. **Answer:**

**(a)** (i) 1. Collecting duct.

2. Distal convoluted tubule.

3. Loop of Henle.

4. Bowman's capsule.

(ii) The afferent arteriole splits into many fine branches due to which the volume of capillaries reduce thus raising the hydrostatic pressure in the glomerulus.

(iii) Blood vessel 6-Efferent arteriole that connects to renal vein.

(iv) 1. Ultrafiltration.

2. Selective Reabsorption.

(v) Loop of Henle.

**(b)** (i) Monohybrid Cross : A cross between two parents taking the alternative traits of one single character. For example, a cross between tall and dwarf pea plants.

(ii) Wastes containing dressings, amputated body parts, used surgical instruments etc. from hospitals, that spread diseases.

(iii) Innate immunity is the immunity that a person inherits from his parents i.e., the person is born with it.

(iv) The process by which white blood cells squeeze out through the walls of capillaries to reach the site of infection.

(v) Hormones: According to Selye (1948), "Hormones are the physiological organic compounds produced by certain cells for the sole purpose of directing the activities to distant parts of the same origins."

7. **Answer:**

**(a)** (i) Ventricular Systole.

(ii) Ventricle is contracting because both tricuspid and bicuspid valves are closed whereas both pulmonary semi-lunar and Aortic semilunar valves are open to pump the blood out of the two ventricles.

(iii) 1. Pulmonary artery

2. Aorta

3. Bicuspid/Mitral valve.

4. Aortic semi-lunar valve

5. Tricuspid valves.

(iv) Oxygenated blood flows through part 2.

(v) Allow deoxygenated blood to flow from right ventricle to lungs and prevents its back flow.

(vi) Pericardium.

**(b)** (i) **Green house effect:** Due to increasing concentration of carbondioxide in the atmosphere the heat of the sun remains trapped in the atmosphere and does not radiate back. This effect is called Green house effect.

(ii) **Turgor Pressure:** The pressure exerted by the cell contents of a turgid cell onto the wall of cell.

(iii) **Selective Absorption:** The process of reabsorbing selected useful substances like water, glucose, mineral ions etc. from the glomerular filtrate by the blood capillaries as they are flowing through the proximal convoluted tubule, loop of Henle and distal convoluted tubule.

(iv) **Natality:** The number of live birth per thousand per year.

(v) **Pulse:** It is the rhythmic coiling of arteries as the blood flows through it with every pumping of heart.

