Science and Technology Part 2

SSC Board Exam March 2027 – Practice Paper No. 2

Practice Question Paper

Time: 2 hours **Max. Marks: 40**

(1) All questions are compulsory.
(2) The numbers to the right of the questions indicate full marks.
(3) In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
(4) Scientifically correct, labelled diagrams should be drawn wherever necessary.

Q.1 (A) Choose the correct alternative and write its alphabet against the sub-question number. **[5]**

(i) In Paramecium, asexual reproduction takes place by _____.
(A) simple binary fission (B) transverse binary fission
(C) longitudinal binary fission (D) budding

(ii) In which of the following animals is the notochord present throughout the length of the body?
(A) Herdmania (B) Balanoglossus
(C) Amphioxus (D) Rohu

(iii) In a nuclear power plant, heat energy is obtained by the fission of nuclei of _____.
(A) Hydrogen (B) Uranium-235
(C) Carbon-12 (D) Helium

(iv) We get _____ of energy from one gram of lipids.
(A) 4 Kcal (B) 9 Kcal
(C) 17 Kcal (D) 38 Kcal

(v) Golden rice is a genetically modified variety of rice that contains a higher amount of _____.
(A) vitamin C (B) iron
(C) beta carotene (vitamin A) (D) proteins

Q.1 (B) Answer the following questions. **[5]**

(i) Name the fungus used for the commercial production of citric acid from sugar molasses.

(ii) Name the ape, found in North India and East Africa, which is the first record of a human-like animal.

(iii) Find the odd one out: Rohu, Shark, Sea horse, Dolphin

(iv) Complete the correlation: Potato : 'eyes' on the tuber :: Bryophyllum : _____

(v) Who is the chairman of the District Disaster Management Authority?

Q.2 (A) Give scientific reasons. (Any two) **[4]**

(i) A power plant based on natural gas causes less pollution than a power plant based on coal.

(ii) Monozygotic twins are always of the same sex (both boys or both girls).

(iii) Vaccines produced with the help of biotechnology are safer than traditional vaccines.

Q.2 (B) Answer the following questions. (Any three) **[6]**

(i) A cell of the onion plant has 16 chromosomes (2n = 16).
(a) A cell at the root tip divides by mitosis. How many daughter cells are formed and how many chromosomes does each contain?
(b) A cell in the anther divides by meiosis to form pollen grains. How many daughter cells are formed and how many chromosomes does each contain?

(ii) A dairy in Kolhapur district makes cheese and labels one of its products 'vegetarian cheese'.
(a) Name any two microbes mixed with milk during cheese production and state why they are added.
(b) Why can cheese made with protease obtained from fungi be called vegetarian cheese?

(iii) Archaeologists excavating an ancient settlement at Inamgaon in Pune district found charred grains and pieces of bones.
(a) Name the method used to find the age of such remains. On what is it based?
(b) Why does the ratio of C-14 to C-12 in these remains keep changing after the death of the organism?

(iv) Newspapers sometimes report that several people in a village died after drinking illegally made liquor.
(a) Why does such liquor cause deaths?
(b) Write two harmful effects of alcohol on the body or on adolescents.

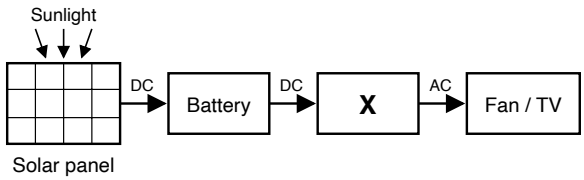
(v) Your school is preparing a first aid kit for the Std 10 trek to Rajgad fort.
(a) Write two objectives of first aid.
(b) Name any two items that must be kept in the kit and write the use of each.

Q.3 Answer the following questions. (Any five) **[15]**

(i) Raju, a farm labourer, has very strong arm muscles because he lifts heavy sacks every day. His friend says, "Raju's children will also be born with strong arm muscles."
(a) Which theory of evolution supports the friend's statement? Name the scientist who proposed it.
(b) Explain this theory with one example from the textbook (other than development of muscles).
(c) Is the friend's statement correct? Why was this theory not accepted?

(ii) A dietician advises a growing teenager to include milk, eggs, pulses and soyabean in her daily diet as sources of proteins.
(a) What are proteins? Why are proteins from milk and eggs called 'first class' proteins?
(b) Name any two proteins produced in our body and the part of the body where each is found.
(c) What happens to the excess amino acids obtained from proteins?

(iii) A farmhouse near Ahmednagar uses the arrangement shown in the figure to run its fan and TV.
(a) Name the effect by which the solar panel produces electricity. Of which type of material are solar cells made?
(b) Why is the battery needed in this arrangement?
(c) Identify the device X and state why it is necessary.



Figure

(iv) On a visit to the Alibag beach, students collected empty shells of snails and bivalves, and a fisherman showed them an octopus.
(a) To which phylum do these animals belong? Why is the phylum so named?
(b) Write any four characteristics of this phylum.

(v) Every day a city like Nagpur collects hundreds of tonnes of degradable waste, which is disposed of at a modern landfill site.
(a) Why are the pits at a landfill site lined with plastic sheets?
(b) How is the waste decomposed in the pit and what useful product is finally obtained?
(c) Garbage vans now compress (compact) the waste before dumping it. Write one advantage of this.

(vi) After a burglary in a house in Nashik, the police found a few hair roots and a drop of blood at the scene and sent them to a forensic laboratory.
(a) Which technique can establish the identity of the culprit from these samples? On what fact is it based?
(b) Write one more use of this technique.
(c) Name the institute in India where research on this technique is carried out.

(vii) In July 2014, a huge landslide buried most of the houses of Malin village in Ambegaon taluka of Pune district. Rescue teams worked day and night; later, a new village and a new school building were built.
Considering the nature and scope of a disaster, name the three phases that are important for common citizens, and write one work done in each phase after such a landslide.

(viii) In some families boys are excused from household work while girls must do it 'to get used to it', and adolescent girls in society sometimes face teasing.
(a) What is social health?
(b) Write two factors that are important for good social health.
(c) How does such gender inequality affect girls? Give one more example of such discrimination at home.

Q.4 Answer the following questions. (Any one) **[5]**

(i) Read the following paragraph and answer the questions.
On a nature trail in the Bhimashankar Wildlife Sanctuary of Pune district, the forest guard told the students: "This sanctuary was set up mainly to protect the Shekru, the giant squirrel. It is a shy animal and is rarely seen. In this forest you can find hundreds of species of trees, birds, insects and fungi. Even among the mango trees of the nearby villages, which all belong to one species, no two trees give exactly the same fruit. Hunting and cutting of trees are not allowed here."
(a) What is biodiversity?
(b) Which level of biodiversity is shown by (1) hundreds of species of trees, birds, insects and fungi, (2) differences among mango trees of the same species?
(c) In which category of threatened species is the Shekru placed? Why?
(d) Give one example each of an endangered species and a rare species.
(e) Write two measures for conservation of biodiversity, other than those mentioned in the paragraph.

(ii) The flower is the functional unit of sexual reproduction in plants.

(a) Draw a neat labelled diagram showing the structure (longitudinal section) of a flower.

(b) Why are androecium and gynoecium called essential whorls?

(c) What is pollination? Name one abiotic agent and one biotic agent of pollination.

(d) The papaya flower is called unisexual, whereas the Hibiscus flower is called bisexual. Why?

All the best for your exam!