

# BOARD QUESTION PAPER : MARCH 2020

## BIOLOGY

Time: 3 Hours

Max. Marks: 70

### General instruction:

The question paper is divided into **four** sections.

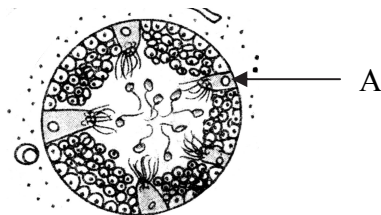
- Section A:** Q. No 1 contains **Ten multiple choice** type of question carrying **one** mark each.
  - For each **MCQ**, correct answer must be written along with its alphabet, e.g.,  
**(a) ..... / (b) ..... / (c) ..... / (d) ..... etc.**
  - In case of **MCQ**, evaluation will be done for the **first attempt** only.  
Q.No 2 contains **Eight very short answer** type of questions carrying **one** mark each.
- Section B:** Q. No 3 to 14 are **short answer** type of questions carrying **two** marks each.
- Section C:** Q. No 15 to 26 are **short answer** type of questions carrying **three** marks each.
- Section D:** Q. No 27 to 31 are **long answer** type of questions carrying **four** marks each.
- Being the answer of each section on a new page.

### Section-A

#### Q.1. Select the correct alternative and write the answers:

[10]  
(1)

- Which of the following is most appropriate for thalassemia?
  - decrease of either beta ( $\beta$ ) or alpha ( $\alpha$ ) globin chain of HbA
  - decrease of alpha ( $\alpha$ ) cells of pancreas
  - decrease of WBC count
  - decrease of blood platelets
- Injury to \_\_\_\_\_ causes sudden death.
  - cerebrum
  - pons varolii
  - medulla oblongata
  - diencephalon
- Name the smooth muscle of urinary bladder.
  - cardiac muscle
  - detrusor muscle
  - dartos muscle
  - gubernaculum
- Identify the cell labelled 'A' in the T.S. of testis :



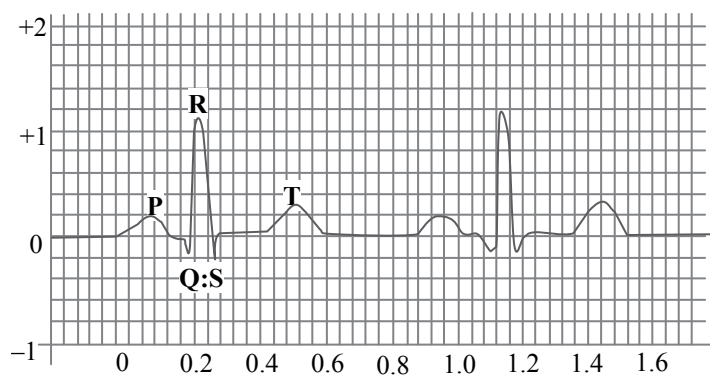
- Leydig cell
  - Basement membrane
  - Sperm
  - Sertoli cell
- \_\_\_\_\_ represents connecting link between amphibians and reptiles.
    - Seymouria*
    - Archaeopteryx*
    - Ichthyostegia*
    - Archaeornis*
  - How many meiotic and mitotic divisions are required for the formation of male gametophyte from pollen mother cell?
    - 2 meiotic and 1 mitotic
    - 1 meiotic and 1 mitotic
    - 1 meiotic and 2 mitotic
    - 2 meiotic and 2 mitotic



- vii. \_\_\_\_\_ is the common pathway for aerobic and anaerobic respiration.  
 (A) Krebs' cycle (B) ETS  
 (C) Calvin cycle (D) Glycolysis
- viii. Find the odd man out with respect to chemoautotrophs:  
 (A) *Nitrosomonas* (B) *Chromatium*  
 (C) *Thiobacillus* (D) *Ferrobacillus*
- ix. Genotype of blood group 'AB' in human is \_\_\_\_\_.  
 (A)  $I^A I^B$  (B)  $I^B i$   
 (C)  $I^A I^A$  (D)  $ii$
- x. Linker-DNA, connecting two successive nucleosomes, consists of \_\_\_\_\_.  
 (A) 146 base pairs (B) 200 base pairs  
 (C) 160 base pairs (D) 54 base pairs

**Q.2. Answer the following questions :****[8]**

- i. Where were the bones of jaws and teeth of *Ramapithecus* found?
- ii. In electrocardiogram, QRS complex stands for:



- iii. Laxman has low secretion of ADH resulting in \_\_\_\_\_ type of diabetes.
- iv. Name the region of retina where rods and cones are absent.
- v. Among biotic components, the micro consumers are called \_\_\_\_\_.
- vi. Identify 'A' in the chart given below:

	Product	Plant
(1)	Nicotine	<i>Nicotiana tabacum</i>
(2)	Vincristin, Vinblastin	'A'

- vii. The genotypic ratio 1:2:2:4:1:2:1:2:1 is obtained in  $F_2$  generation. What will be the phenotypic ratio?
- viii. Define the term 'recessive'

**Section-B****Attempt any eight of the following questions:****[16]**

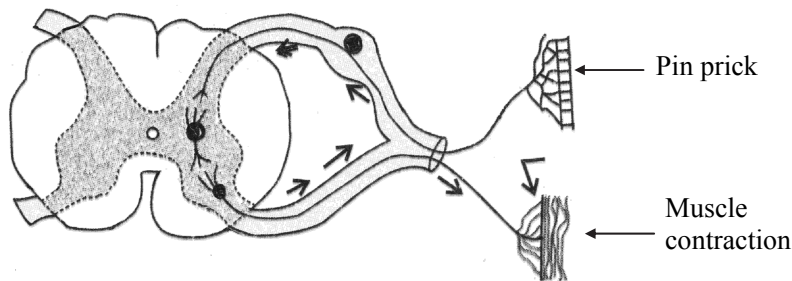
- Q.3.** Sketch and label angiospermic embryo sac.
- Q.4.** To avoid photorespiration, which anatomical peculiarities are shown by  $C_4$  plants?
- Q.5.** Enlist the steps involved in rDNA technology.
- Q.6.** Define the terms :  
 i. Bio- patent      ii. Bio-piracy
- Q.7.** Give the flow chart of central dogma.



- Q.8.** How will you identify that,  $F_1$  hybrid is homozygous or heterozygous? Explain it with a suitable example.
- Q.9.** Give any two contrasting traits studied by Mendel.
- Q.10.** Match the pairs and rewrite :

Column I	Column II
(1) Mechanical means	(a) Saheli
(2) Physiological device	(b) Jellies
(3) Chemical device	(c) Vasectomy
(4) Permanent Method	(d) Diaphragm

- Q.11.** Redraw, complete and label the diagram given below, which relates to reflex arc:

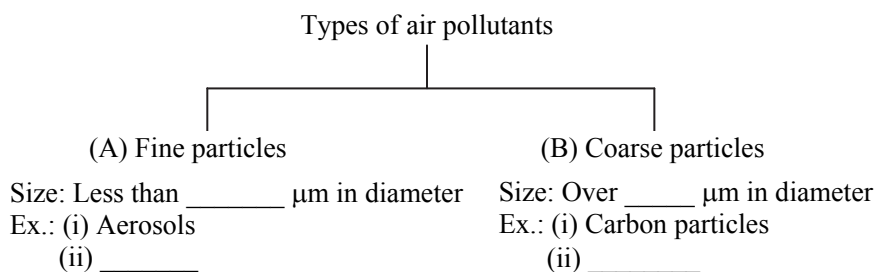


- Q.12** Explain Hardy-Weinberg's principle, with the help of Punnet square.

- Q.13.** Complete the following chart and rewrite:

S.NO	Type	Example
1.	Vulnerable species	Clouded leopard, Musk deer
2.	_____	Great Indian Bustard, Hawaiian monk seal
3.	_____	Three banded armadillo (Brazil) Short eared rabbit (Sumatra)

- Q.14.** Complete the tree diagram and write examples of (A) and (B) :



### Section-C

**Attempt any EIGHT of the following questions :**

[24]

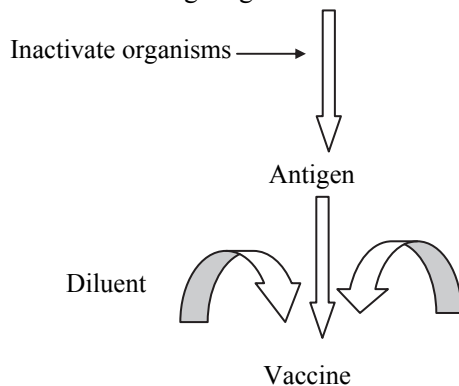
- Q.15.** Give the location and one function of the following receptors :
- (i) Mechanoreceptors      (ii) Statoacoustic receptors      (iii) Baroreceptors
- Q.16.** Classify the following composition of blood plasma given below as per column 'A' and complete column 'B'. Select from the given options:
- (i) Serum albumin      (ii) Bicarbonates      (iii) Urea  
(iv) Sulphates of sodium      (v) Fibrinogen      (vi) Uric acid

	Column A	Column B
(1)	Plasma Proteins	_____, _____
(2)	Nitrogenous waste	_____, _____
(3)	Inorganic Salts	_____, _____



**Q.17.** Name the causative agent of malaria. State any two symptoms and two preventive measures of malaria.

**Q.18.** Identify '1' and '2' in the following diagram:



Write in brief about production of vaccine.

**Q.19.** Satish is a colorblind boy. His mother has normal vision but his maternal grandfather is colourblind. His father and maternal grandmother have normal vision. Explain the pattern of inheritance with a suitable chart.

**Q.20.** What are the requirements of dairy management? Give one example of each Indian and exotic breed of cow.

**Q.21.** Distinguish between DNA and RNA.

**Q.22.** What is 'green revolution'? Give any two examples each of the improved varieties of wheat and rice.

**Q.23.** Give microbial source of the following products in industrial production:

(i) Vitamin B<sub>12</sub>

(ii) Chloromycetin

(iii) Pectinase

**Q.24.** State the significance of respiration.

**Q.25.** Explain the mechanism of anaerobic respiration.

**Q.26.** Describe the role of citizens in solid waste management.

### Section-D

**Attempt any THREE of the following questions:**

[12]

**Q.27.** Sketch the internal structure of human heart. Label all the valves present in it. Mention the function of any one valve in the heart.

**Q.28.** With the help of a suitable diagrammatic representation explain HSK pathway.

**Q.29.** Describe the process of fertilization in human with the help of four sequential diagrams.

**Q.30.** What is artificial method of vegetative propagation?

(i) Cutting,

(ii) Budding.

**Q.31.** Describe the system associated with elimination of urine with the help of a neat, labelled diagram.