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BOARD QUESTION PAPER March 2020 - Biology

Time : 3 hrs

Total : 70 marks

General Instructions:

The question paper is divided into four sections.

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

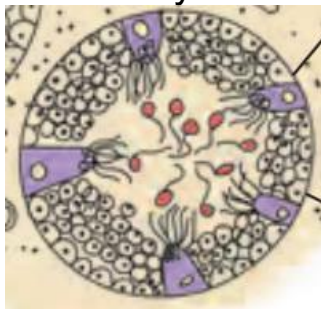
Section A

Q.1. Select the correct alternative and write the answers: [10]

- i. Which of the following is most appropriate for thalassemia?
 - (A) decrease of either beta (β) or alpha (α) globin chain of HbA
 - (B) decrease of alpha (α) cells of pancreas
 - (C) decrease of WBC count
 - (D) decrease of blood platelets
- ii. Injury to - - - - causes sudden death.
 - (A) cerebrum
 - (B) pons varolii
 - (C) medulla oblongata
 - (D) diencephalon
- iii. Name the smooth muscle of urinary bladder.
 - (A) cardiac muscle
 - (B) detrusor muscle
 - (C) dartos muscle
 - (D) gubernaculum



iv. Identify the cell labelled 'A' in the T.S. of testis :



- (A) Leydig cell
- (B) Basement membrane
- (C) Sperm
- (D) Sertoli cell

v. _____ represents connecting link between amphibians and reptiles.

- (A) Seymouria
- (B) Archaeopteryx
- (C) Ichthyostegia
- (D) Archaeornis

vi. How many meiotic and mitotic divisions are required for the formation of male gametophyte from pollen mother cell?

- (A) 2 meiotic and 1 mitotic
- (B) 1 meiotic and 1 mitotic
- (C) 1 meiotic and 2 mitotic
- (D) 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

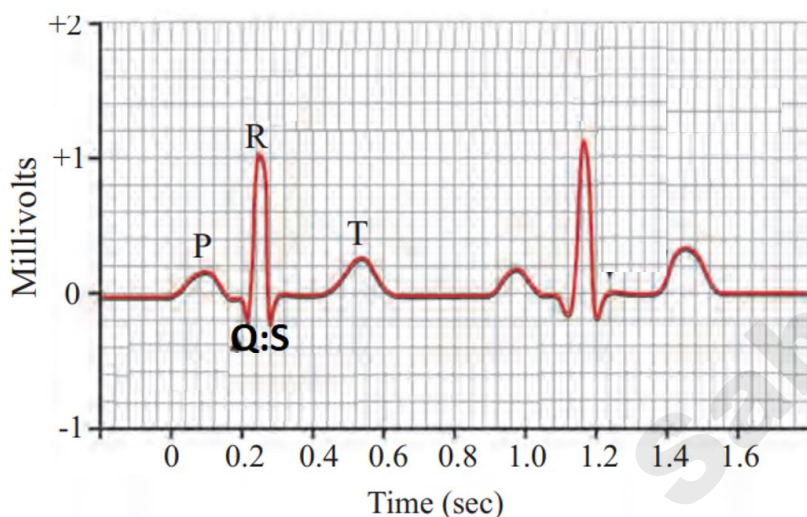
x. Linker-DNA, connecting two successive nucleosomes, consists of _____.

- (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 F₂ 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 C₄ plants?

Q.5. Enlist the steps involved in rDNA technology.

Q.6. Define the terms :

- Bio- patent
- Bio-piracy

Q.7. Give the flow chart of central dogma.

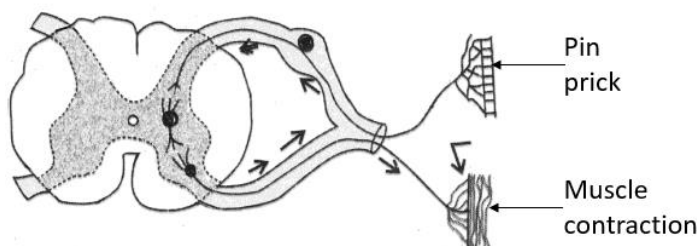
Q.8. How will you identify that, F₁ hybrid is homozygous or heterozygous? Explain it with a suitable example.

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:



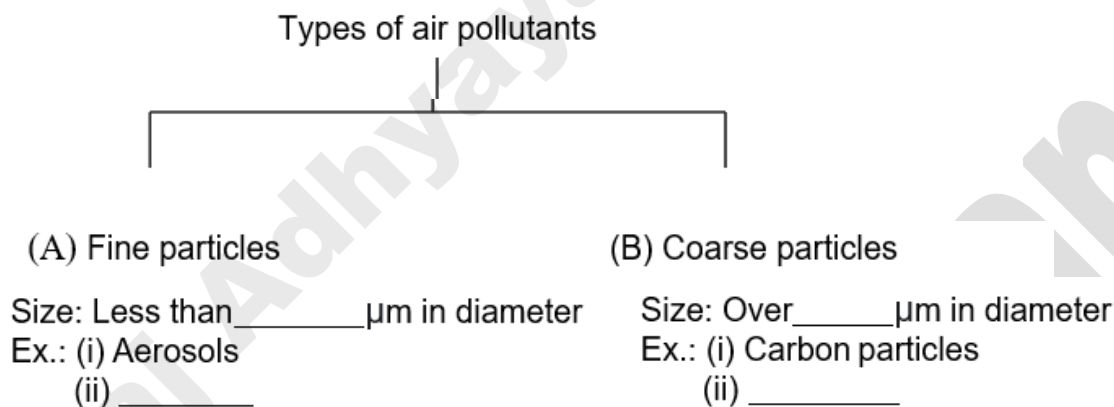
Q.12 Explain Hardy-Weinberg's principle, with the help of Punnet square.

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:

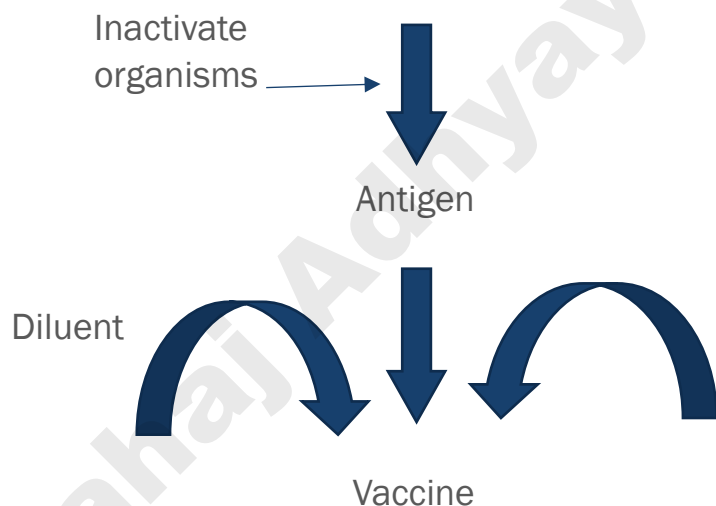
- (i) Serum albumin
- (ii) Bicarbonates
- (iii) Urea
- (iv) Sulphates of sodium
- (v) Fibrinogen
- (vi) Uric acid

	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 B12
- (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.

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