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DAY — 10 SEAT NUMBER | | | | | | |

2020	III	02	1100	J - 382	(E)

BIOLOGY (56)

Time : 3 Hrs. (8 Pages) Max. Marks : 70

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General Instructions :

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

(1) ***Section A :*** *Q. No. 1 contains **Ten multiple choice** type of questions 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) Begin the answer of each section on a new page.

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SECTION – A

Q. 1. Select the correct alternatives 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

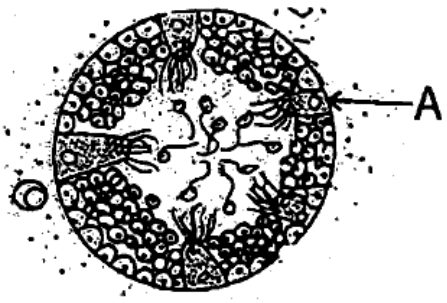
(c) medulla oblongata (d) diencephalon

(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*

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(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^AI^B (b) I^Bi

(c) I^AI^A (d) ii

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

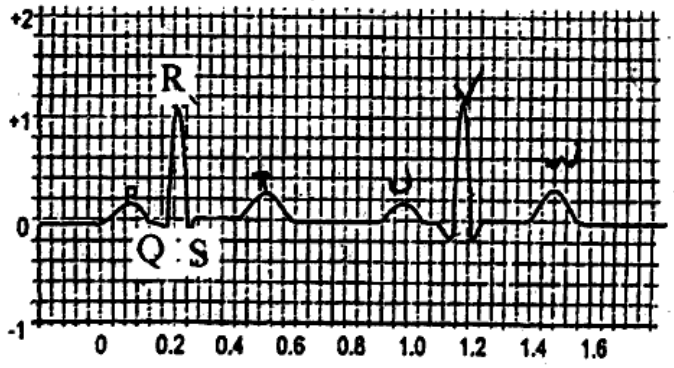
(a) 146 base pairs (b) 200 base pairs

(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 :



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(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
(a) Nicotine	*Nicotiana tabacum*
(b) 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 pecularities are shown by C_4 plants? http://www.maharashtrastudy.com

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.

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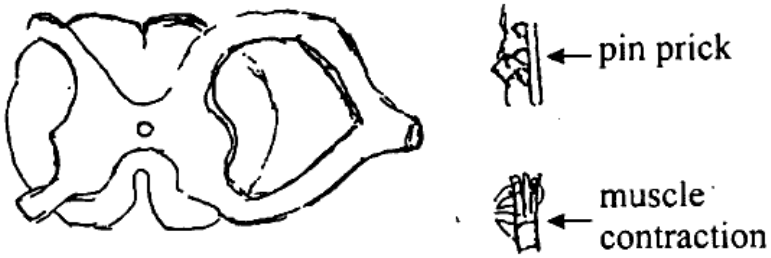
Q. 10. Match the pairs and rewrite :

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

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

Types of air pollutants

(A) Fine particles	(B) Coarse particles
Size : Less than ___ µm in diameter	Size : Over ___ µm in diameter
Ex. : (i) Aerosols	Ex. : (i) Carbon particles
(ii) _____	(ii) _____

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	_____ , _____

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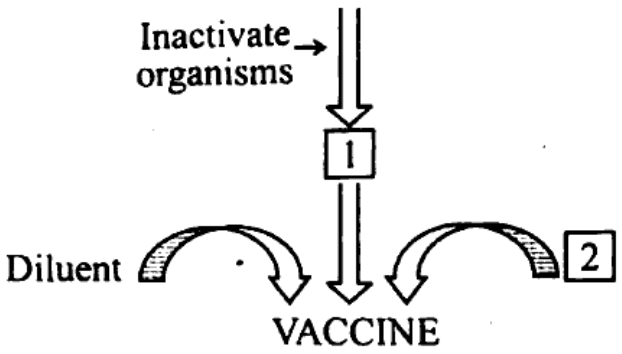
Q. 17. Name the causative agent of malaria. State any two symptoms and two preventive measures of malaria.

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



Write in brief about production of vaccine.

Q. 19. Satish is a colourblind 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_{12} (ii) Chloromycetin

(iii) Pectinase

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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? Describe :

(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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