

# SACHDEVA<sup>NEW P.T.</sup> COLLEGE

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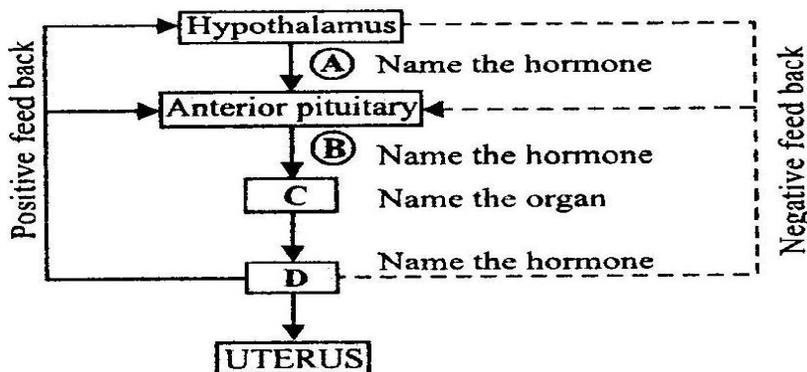
CLASS - XII SUBJECT - BIOLOGY MODEL TEST PAPER - 1

## INSTRUCTIONS

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question number 1 to 5, multiple choice questions of one mark each. Section B contains question numbers 6 to 12, short answer type I questions of two marks each. Section C contains question numbers 13 to 21, short answer type II question of three marks each, Section D contains question number 22 to 24, case- based short answer type questions of three marks each. Section E contains question number 25 to 27, long answer type question of five marks each.
3. There is no overall choice in the question paper, However, internal choices are provided in two questions of one marks, one question of two marks, two questions of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.

### Section - A

Q.1 Given below is an incomplete flowchart showing influence of hormones on gametogenesis in human females. Study it carefully and identify A,B,C and D



	A	B	C	D
(A)	FSH	LH	Ovary	Progesterone
(B)	GnRH	FSH and LH	Ovary	Estrogen and progesterone
(C)	GnRH	FSH	Testis	Testosterone
(D)	LH	FSH	Testis	Testosterone

OR

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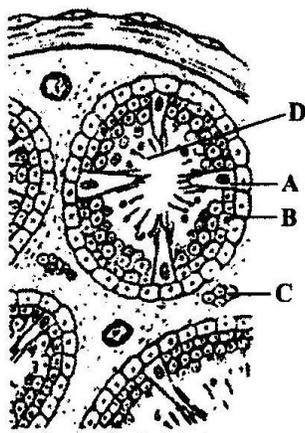
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The given diagram refers to T.S. of testis showing sectional view of a few seminiferous tubules. Identify the parts labeled A-D and select the correct option.



- (A) A- Sertoli cells, B- Spermatozoa, C-Interstitial cells, D- Sperms  
 (B) A- Sertoli cells, B- Secondary spermatocyte, C- Interstitial cells, D- Sperms  
 (C) A- Interstitial cells, B- Spermatogonia, C-Sertoli cells, D-Sperms  
 (D) A- Sertoli cells, B- Spermatogonia, C-Interstitial cell, D- Sperms

Q.2 The primary lymphoid organs are

- (A) spleen and thymus (B) bone marrow and thymus  
 (C) bone marrow and lymph node (D) thymus and MALT

Q.3 The term 'recombinant DNA' refers to

- (A) DNA of the host cell (B) DNA with a piece of foreign DNA  
 (C) DNA with selectable marker (D) DNA with more than one recognition sites.

**OR**

In the process of insertional inactivation

- (A) A recombinant DNA is inserted within the coding sequence of enzyme  $\beta$ -galactosidase, resulting in inactivation of the enzyme  
 (B) A recombinant DNA is inserted within the coding sequence of proteins involved in the replication of the plasmid  
 (C) A recombinant DNA is inserted within the recognition site for Eco R I  
 (D) None of the above

Q.4 Genetic engineering is possible because

- (A) We can cut DNA at specific sites by restriction endonucleases  
 (B) restriction endonucleases purified from virus can be used in bacteria  
 (C) the phenomenon of transduction in bacteria is well understood  
 (D) We can see DNA by electron microscope

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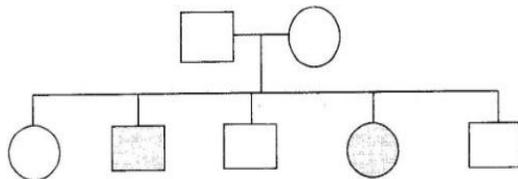
- Q.5 Primary succession occurs on  
 (A) area destroyed due to forest fire (B) Newly formed river delta  
 (C) harvested crop field (D) all of these

### Section - B

- Q.6 Why is the offspring formed by asexual reproduction referred to as clone?  
**OR**  
 Meiosis is an essential event in the sexual life cycle of any organism. Give two reasons.
- Q.7 Name an IUD that you would recommend to promote the cervix hostility to sperms.
- Q.8 When a cross is made between tall plant with yellow seeds (TtYy) and tall plant with green seeds (TTyy), what proportions of phenotype in the offspring could be expected to be  
 (a) tall and green, (b) dwarf and green?
- Q.9 In an experiment, DNA is treated with a compound which tends to place itself amongst the stacks of nitrogenous base pairs. As a result of this, the distance between two consecutive base increases from 0.34 nm to 0.44 nm. Calculate the length of DNA double helix which has  $2 \times 10^9$  bp in saturating the presence of this compound.
- Q.10 What is inbreeding depression and how is it caused in organisms? Write any two advantages of inbreeding.
- Q.11 (a) State the role of DNA ligase in biotechnology.  
 (b) What happens when *Meloidegryne incognita* consumes cells with RNAi gene?
- Q.12 Climax stage is achieved quickly in secondary succession as compared to primary succession. Why?

### Section - C

- Q.13 Draw a diagram of male gametophyte of an angiosperm. Label any four parts. Why is sporopollenin considered the most resistant organic material?
- Q.14 The pedigree chart given below shows a particular trait which is absent in parents but present in the next generation irrespective of sexes.



**OR**

Differentiate between 'ZZ' and 'XY' type of sex- determination mechanisms.

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- Q.15 What is triple fusion? Where and how does it take place? Name the nuclei involved in triple fusion.
- Q.16 Write the characteristics of Ramapithecus, Dryopithecus and Neanderthal man.
- Q.17 (a) Differentiate between a template strand and coding strand of DNA.  
(b) Name the source of energy for the replication of DNA.
- Q.18 Draw a well-labelled diagram of an antibody molecule.
- Q.19 State the functions of the following in the cloning vector pBR322:  
(i) Ori                      (ii) rop                      (iii) Hind III sites
- Q.20 What is the significance of the slope of regression in a species-area relationship?  
**OR**  
(a) Describe primary succession that occurs on bare rock.  
(b) Differentiate between xerarch and hydrarch successions.
- Q.21 (a) Why are transgenic animals so called?  
(b) Explain the role of transgenic animals in (i) Vaccine safety and (ii) Biological products with the help of an example each.

### **Section - D**

- Q.22 Draw a labeled diagram of female reproductive system.
- Q.23 Mention the product produced and its use by each of the microbes listed below:  
(a) Streptococcus    (b) Lactobacillus    (c) Saccharomyces cerevisiae
- Q.24 (a) Why are the colourful polystyrene and plastic packagings used for protecting the food, considered an environmental menace?  
(b) Write about the remedy found for the efficient use of plastic waste by Ahmed Khan of Bangaluru.

### **Section - E**

- Q.25 (a) Write the specific features of the genetic code AUG  
(b) Genetic codes can be universal and degenerate. Write about them, giving one example of each.  
(c) Explain aminoacylation of the tRNA.

**OR**

Study the schematic representation of the genes involved in the lac operon given below and answer the questions that follow:

p	i	p	o	z	y	a
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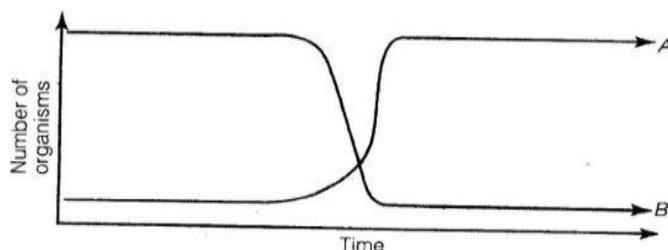
- Identify and name the regulatory gene in this operon. Explain its role in 'switching off' the operon.
- Why is lac operon's regulation referred to as negative regulation?
- Name the inducer molecule and the products of the genes 'Z' and 'Y' of the operon. Write the functions of these gene products

Q.26 Name any five hybrid varieties of crop plants which have been developed in India.

**OR**

Briefly describe various steps involved in plant breeding.

Q.27 Two types of aquatic organisms in a lake show specific growth patterns as shown below, in a brief period of time. The lake is adjacent to an agricultural land extensively supplied with fertilizers.



Answer the questions based on the facts given above:

- Name the organisms depicting the patterns A and B.
- State the reason for the growth pattern seen in A.
- Write the effects of the growth patterns as shown in figure.

**OR**

Why Ozone hole forms over Antarctica? How will enhanced ultraviolet radiation affect us?

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