



COMMON PRE-BOARD EXAMINATION 2022-23

Subject: BIOLOGY-044



Date:

CLASS-XII

Maximum Marks: 70

Time: 3 hours

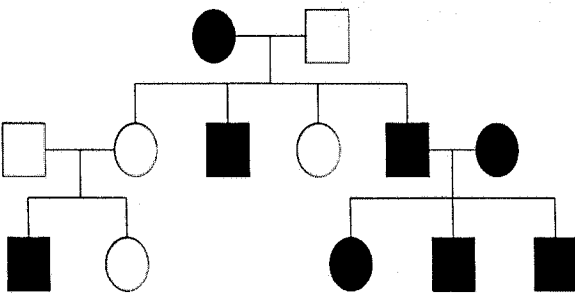
General Instructions:

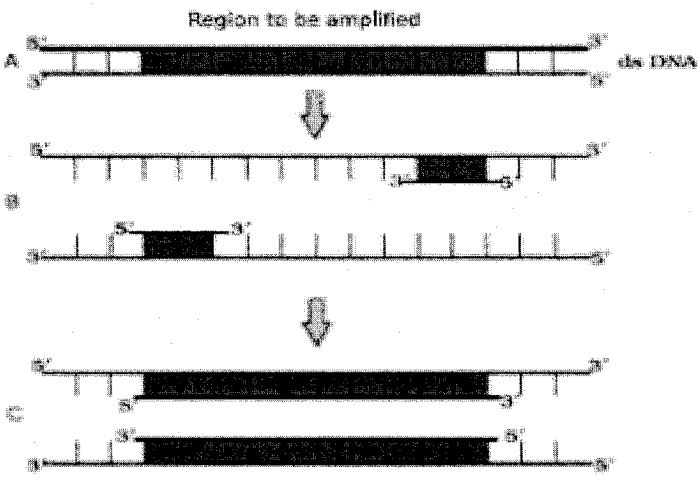
- (i) All questions are compulsory.
- (ii) The question paper has five sections and 33 questions.
- (iii) Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section– C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section–E has 3 questions of 5 marks each.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (v) Wherever necessary, neat and properly labeled diagrams should be drawn.

SECTION A

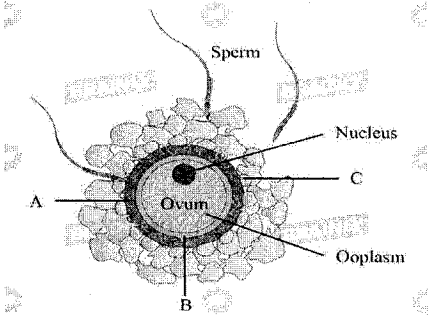
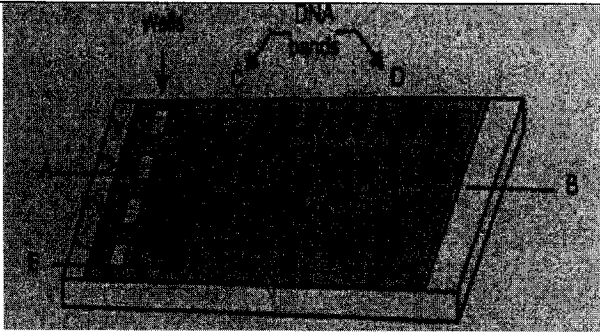
1	GIFT is recommended for females who a) Cannot produce eggs b) Cannot retain foetus in uterus. c) Cannot provide suitable environment for fertilization d) Cannot allow sperms to enter cervix.	1								
2	Match the IUD of column 1 with suitable example of column 2: <table><tr><td>Column 1</td><td>Column 2</td></tr><tr><td>A) Non medicated</td><td>1. LNG-20</td></tr><tr><td>B) Copper releasing</td><td>2. Multiload-375</td></tr><tr><td>C) Hormone releasing</td><td>3. Lippes loop</td></tr></table> Choose the correct option. a) A-3,B-2,C-1 b) A-1, B-2, C-3 c) A-1, B-3, C-2. d)A-2 , B-3 , C -1	Column 1	Column 2	A) Non medicated	1. LNG-20	B) Copper releasing	2. Multiload-375	C) Hormone releasing	3. Lippes loop	1
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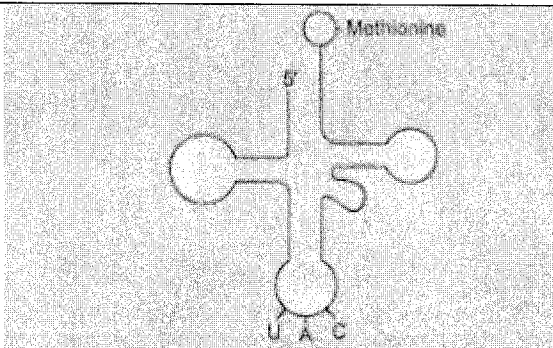
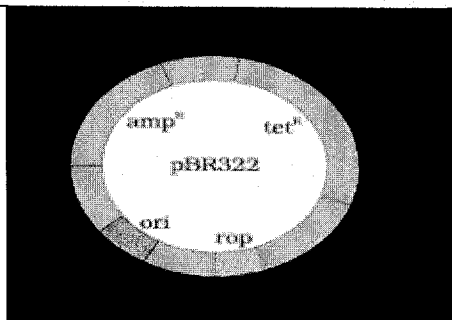
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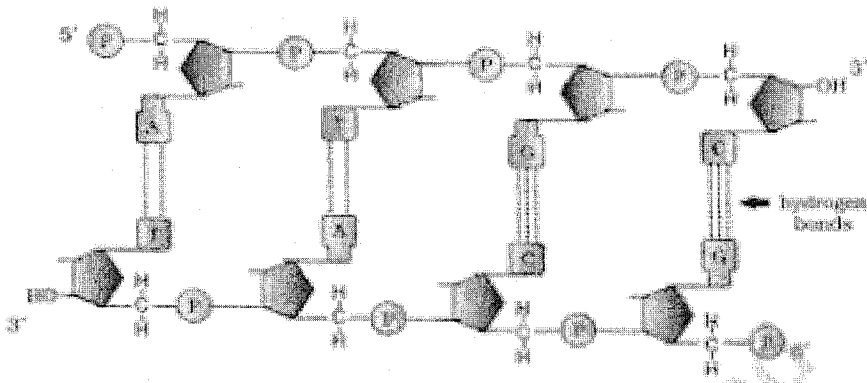
3.	 <p>What is the pattern of inheritance in the above pedigree chart?</p> <p>a) Autosomal dominant b) Autosomal recessive c) Sex linked dominant d) Sex linked recessive</p>	1
4.	<p>Select the homologous structures from the combinations given below.</p> <p>i) Forelimbs of whales and bats ii) tuber of potato and sweet potato iii) eyes of octopus and mammals iv) thorns of bougainvillea and tendrils of cucurbita</p> <p>a) i) and ii) b) ii) and iv) c) ii) and iii) d) i) and iv)</p>	1
5	<p>Which of the following are the reasons for rheumatoid arthritis?</p> <p>i) The ability to differentiate pathogens ii) Body attacks self cells. iii) More antibodies are produced in the body iv) The ability to differentiate foreign molecules from self cells is lost</p> <p>a) i) and ii) b) ii) and iv) c) iii) and iv) d) i) and iii)</p>	1
6	<p>To which type of barriers under innate immunity do the saliva in the mouth and tears from the eyes belong.</p> <p>a) Physiological barrier b) Physical barrier c) Cytokine barrier d) Cellular barrier</p>	1
7.	<p>BOD of waste water is estimated by measuring the amount of</p> <p>a) Total organic matter b) Biodegradable organic matter</p>	1

	<p>c) Oxygen evolution</p> <p>d) Oxygen consumption.</p>	
8	<p>The figure below shows three steps of polymerase chain reaction (PCR). Select the option giving correct identification together with what it represents.</p>  <p>a) B-Denaturation at a temperature of about 98 degree Celsius separating the 2 DNA strands.</p> <p>b) A- Denaturation at 50 degrees Celsius.</p> <p>c) C-Extension in the presence of DNA polymerase.</p> <p>d) A –Annealing with two sets of primers.</p>	1
9	<p>When birth rate equals death rate ,</p> <p>a) A population grows rapidly</p> <p>b) The size of the population remains constant.</p> <p>c) Density dependent limiting factors do not affect the population.</p> <p>d) A population is in danger of extinction.</p>	1
10.	<p>The mould <i>Penicillium</i> secretes Penicillin which kills bacteria but the mould is un affected.</p> <p>a) Parasitism</p> <p>b) Commensalism</p> <p>c) Ammensalism</p> <p>d) Predation</p>	1
11.	<p>The mass of living material at a trophic level at a particular time is called</p> <p>a) Standing rate</p> <p>b) Gross primary productivity</p>	1

	c) Standing crop d) Net primary productivity	
12.	<p>Which of these is a suitable example of ex-situ conservation?</p> <p>a. National park</p> <p>b. Wildlife sanctuary</p> <p>c. Sacred groves</p> <p>d. Seed bank</p>	1
<p>Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>A. Both A and R are true and R is the correct explanation of A.</p> <p>B. Both A and R are true and R is not the correct explanation of A.</p> <p>C. A is true but R is false.</p> <p>D. A is False but R is true.</p>		
13.	<p>Assertion: Exine of a pollen grain is made up of sporopollenins which are resistant to high temperatures, strong acids or alkali as well as enzymatic degradation.</p> <p>Reason: Sporopollenins are absent in the region of germ pores.</p>	1
14	<p>Assertion : In humans, the gamete contributed by the male determines whether the child produced will be male or female.</p> <p>Reason : Sex in humans is a polygenic trait depending upon a cumulative effect of some genes on X-chromosome and some on Y-chromosome.</p>	1
15	<p>Assertion: Organisations like GEAC are necessary to monitor GM researches and test the safety of introducing GM organisms for public services.</p> <p>Reason: When genetically modified organisms are introduced into the ecosystem.GM researches can have unpredictable results which even can be disastrous.</p>	1
16	<p>Assertion: Net primary productivity is Gross primary productivity minus respiration.</p> <p>Reason: Secondary productivity is produced by the heterotrophs.</p>	1

	SECTION B	
17.	 <p>a) Identify the part labeled as A and C.</p>	2
	b) State the importance of A in the process of fertilization.	
18.	<p>A true breeding pea plant, homozygous dominant for Yellow seeds (YY) is crossed with another pea plant with Green seeds (yy).</p> <p>With the help of Punnett square show the above cross and mention the results obtained phenotypically and genotypically in the F₂ generation.</p>	2
19	<p>A person shows the condition of chronic inflammation of the lower limbs.</p> <p>a) What is the above disease called as?</p> <p>b) Name the organism and the vector responsible for it.</p>	2
20	 <p>a) Why have the DNA fragments in band D moved farther away when compared to those in band C.</p> <p>b) Identify the anode end in the diagram.</p>	2
21	<p>Pyramid of number can be both erect and inverted. Justify with examples.</p> <p style="text-align: center;">OR</p> <p>Pyramid of energy is always erect. Give reason.</p>	2
	SECTION C	
22	<p>Give reason for the following.</p> <p>a) Formation of polar bodies occur in oogenesis.</p>	3

	<p>b) In human oogenesis though starts in the ovary gets completed in the fallopian tube.</p> <p>c) Placenta acts as an endocrine tissue.</p>	
23	<p>State the agent(s) which helps in pollinating in the following plants. Explain the adaptations in these plants to ensure pollination:</p> <p>a) Water lily</p> <p>b) Vallisneria</p> <p>c) Sea grasses</p>	3
24	 <p>a) Identify the given figure and what is UAC shown called as?</p> <p>b) What will be the triplet codon on the mRNA to which the above will bind?</p> <p>c) State the importance of this process.</p>	3
25	<p>a) What is adaptive radiation?</p> <p>b) Give a brief note on adaptive radiation in Australian marsupials.</p>	3
26	<p>What is called as H_2L_2? Explain the type of immunity brought about by it .</p> <p>OR</p> <p>a) Name the cells invaded by a retrovirus during the time of infection and the special enzyme which makes it possible.</p> <p>b) Illustrate the various events which follow inside the above cell.</p>	3
27	 <p>a) What are amp^R and tet^R in the given structure and state their importance.</p> <p>b) What is ori in the above and how does it facilitate cloning?</p>	3

28	<p>a) How is the Sixth extinction presently in progress different from previous episodes? What will be its consequence?</p> <p>b) Explain briefly that mode of conservation used for those animals which are on the verge of extinction.</p>	3
	SECTION D	
	Q.no 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.	
29	<p>Read the passage given below and answer the questions that follow. Observe the diagram and answer the questions.</p> <p>The double helix model of DNA (deoxyribonucleic acid) consists of two intertwined strands. These strands are made up of nucleotides, which themselves consist of three component parts: a sugar group, a phosphate group, and a base. The sugar and phosphate groups combined form the repeating 'backbone' of the DNA strands. There are four different bases that can potentially be attached to the sugar group: adenine, thymine, guanine and cytosine, given the designations A, T, G and C. The bases are what allows the two strands of DNA to hold together. Strong intermolecular forces called hydrogen bonds between the bases on adjacent strands are responsible for this; because of the structures of the different bases, adenine (A) always forms hydrogen bonds with thymine (T), whilst guanine (G) always forms hydrogen bonds with cytosine (C). In human DNA, on average there are 150 million base pairs in a single molecule – so many more than shown here!</p> 	4

- a) What is central dogma in molecular biology? How can it be different in virus?
- b) There is uniform distance between the 2 helix strands. Give reason.
- c) How are the two chains of DNA anti parallel?

OR

- c) Write the role of histone protein in packaging of the DNA helix in eukaryotes.

30. Addiction means habitual, psychological, physiological dependence on a substance (drugs/alcohol) or practice that is beyond the voluntary control of humans. Drug and alcohol abuse among youth and adolescents is starting to become another serious cause of concern all around the globe. The most commonly abused drugs are opioids, cannabinoids, and coca alkaloids.

The addictive nature of alcohol and drugs and their perceived benefits, such as temporary relief from stress or pain, causes a person to try taking these in order to face peer pressure, examination-related and competition-related stresses. In doing so, they might get addicted.

- a) What is dependence? What are its symptoms?
- b) What is commonly called as smack? How is it different from crack in its mode of action?
- c) What are the side effects of use of anabolic steroids in females and males?

OR

- c) Mention how education and counselling can serve as a measure useful in the prevention of addiction in children?

SECTION E

31 Explain the various events which occur from fertilization till implantation of the embryo in a human female .

OR

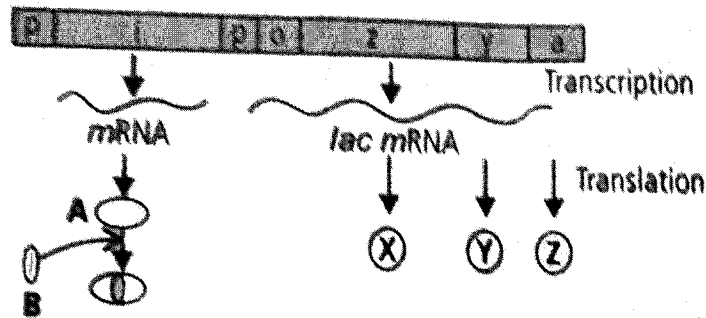
Trace the various steps involved in the process of microsporogenesis in flowering

plants.

32

- Why is it that only one out of the 2 strands of DNA get transcribed?
- What are the additional complexities seen in eukaryotic transcription when compared to prokaryotic transcription?

OR



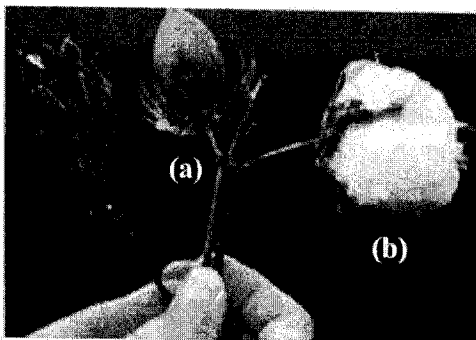
- Identify the given arrangement in bacteria .
- Label A and B and state the role of B in the above.
- What is the X, Y and Z translated into and its action?

5

33

- What do you understand by the term Bio pesticide?
- Name and explain the mode of action of a popular bio pesticide.
- Name a genus of baculo virus. Why are they considered as good bio control agents?

OR



- Identify the 2 types of cotton bolls a and b.
- List the type of cry genes that provide resistance to corn and cotton plants.
- What is Bt cotton?
- Why does the Bt toxin not kill the bacterium that produces it but kills the insect that ingests it?

5

