

SAMPLE QUESTION PAPER
Biology (314)


Time: 3 hrs

M.M: 80

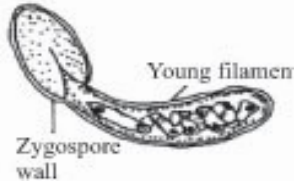
Note:

- i. This question paper consists of 43 questions in Total.
- ii. *All questions are compulsory.*
- iii. Marks are given against each question.
 - **Section A consists of Question .No. 1 to 16 – Multiple Choice type questions (MCQs)** carrying 1 mark each. Select and write the most appropriate option out of the four options given in each of these questions. An internal choice has been provided in some of these questions. You have to attempt only **one** of the given choices in such questions
 - **Question .No. 17 to 28 – Objective type questions carry 02 marks each** (with 2 sub-parts of 1 mark each). Attempt these questions as per the instructions given for each of the questions.
 - **Section B consists of Question .No. 29 to 37 – Very Short questions** carrying 02 marks each to be answered in the range of 30 to 50 words. **Question .No. 38 to 41 – Short Answer type** questions carrying 03 marks each to be answered in the range of 50 to 80 words.
 - **Question .No. 42 to 43 – Long Answer type questions** carrying 05 marks each to be answered in the range of 80 to 120 words.

PART A: Objective Questions		
S.NO.	Questions	Marks
	Q.No. 1 to 16 are the objective questions of 1 mark each: <i>An internal choice has been provided in some of these questions. You have to attempt only one of the given choices in such questions.</i>	
1.	The leaf of a plant is an example of A. a particular type of tissue B. an organ C. can organ system D. cell level of organization	1

2.	<p>(I) Which out of the following belong to Prokaryotic kingdom</p> <ul style="list-style-type: none"> A. Amoeba B. Blue green algae C. Algae D. Diatoms <p style="text-align: center;">OR</p> <p>(II) Why is parenchyma not a complex tissue? Because it has</p> <ul style="list-style-type: none"> A. thin walls B. one type of cells only C. single nuclei D. no thickenings 	1
3.	<p>(I) The faulty functioning of an endocrine gland can make a person very short or very tall. This gland is:</p> <ul style="list-style-type: none"> A. pituitary B. adrenal C. pineal D. thyroid <p style="text-align: center;">OR</p> <p>(II) Which one of the following helps in maintaining posture and balance of the human body?</p> <ul style="list-style-type: none"> A. medulla B. cerebellum C. cerebrum D. Pons 	1
4	<p>(I) A pollen grain in its external view is drawn here. The substance which is the chief component of its external layer is</p> <ul style="list-style-type: none"> A. cellulose B. pectin C. protein D. sporo-pollonin <div style="text-align: right; margin-right: 50px;">  </div> <p style="text-align: center;">OR</p> <p>(II) Developing pollen grains in an anther are nourished by</p> <ul style="list-style-type: none"> A. Epidermal cells/ outermost layer B. Middle layer C. Inner most layer, tapetum D. Micro spore mother cells 	1

5.	<p>Electrical impulse travels in a neuron from:</p> <p>A. Axon end → axon → cell body → dendrite</p> <p>B. dendrite → cell body → axon → axon end</p> <p>C. dendrite → axon → axon end → cell body</p> <p>D. cell body → dendrite → axon → axon end</p>	
6	<p>In Glycolysis, the glucose is broken down in the cytoplasm into pyruvate and _____ ATP molecules.</p> <p>A. 2</p> <p>B. 4</p> <p>C. 6</p> <p>D. 8</p>	1
7	<p>The structure from which a new filament of <i>Spirogyra</i> is emerging is</p> <p>A. aplanospore</p> <p>B. zoospore</p> <p>C. zygospore</p> <p>D. only spore</p>	1
8	<p>(I) Given below are the pairs of modes of vegetative reproduction and their examples. Choose the unmatched pair</p> <p>A. Corm : zamikand</p> <p>B. Sucker : Chrysanthemum</p> <p>C. Bulbils : <i>Agave</i></p> <p>D. Tuberos root : potato</p> <p style="text-align: center;">OR</p> <p>(II) The mode of reproduction in <i>Chlamydomonas</i> where the gametes are morphologically identical but differ physiologically or chemically:</p> <p>A. Oogamy;</p> <p>B. Ani sogamy</p> <p>C. Syngamy</p> <p>D. Isogamy</p>	1



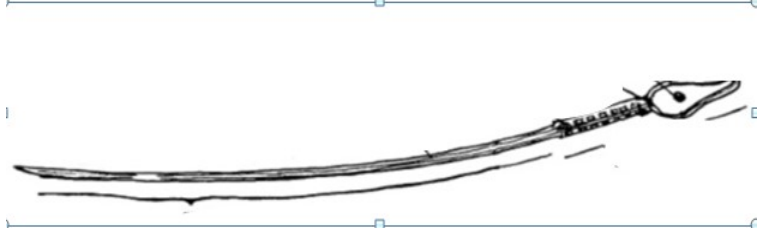
9	<p>(I) Leydig cells in the human testes secrete / produce</p> <p>A. Seminal fluid B. Testosterone C. Sperms D. a white, vis cons, alkaline secretion.</p> <p>OR</p> <p>(II) The embryonic stage that gets implanted in the human uterus is</p> <p>A. Blastocyst B. Morula C. Zygote D. Foetus.</p>	1
10	<p>A yellow peapod bearing yellow seeds reflects both dominant and recessive characters. Which one is the correct statement</p> <p>A. Yellow pod colour is recessive B. Yellow seed colour is recessive C. Both the characters are recessive D. Both the characters are dominant</p>	1
11	<p>(I) Choose wrong option</p> <p>To get rid of obesity, control your diet and</p> <p>A. avoid fried food B. avoid food items rich in carbohydrates C. avoid eating vegetables D. eat enough fruits</p> <p>OR</p> <p>(II) Among the food constituents the richest source of energy and also excess of which causes obesity is</p> <p>A. Proteins B. Carbohydrates C. Fats D. Vitamins</p>	1


12	<p>Suggest a permanent method of family planning to a couple who already have two children.</p> <p>A. Copper. T B. Vasectomy C. M.T.P D. Condoms.</p>	1
13	<p>(I) My nephew reads a book aloud clearly during the day but cannot see the words on the same page at night. He has been diagnosed with a deficiency of vitamin</p> <p>A. A B. B C. C D. D</p> <p style="text-align: center;">OR</p> <p>(II) Marasmus and Kwashiorkar occur in case of</p> <p>A. Under nutrition B. Malnutrition C. Overnutrition D. Balanced diet</p>	1
14	<p>The antibiotic obtained from <i>Streptomyces aureofaciens</i> is</p> <p>A. <i>streptomycin</i>. B. <i>cycloheximide</i>. C. <i>chloramphenicol</i>. D. <i>chlorotetracycline</i>.</p>	1
15	<p>Which bacterium helps to set milk into yoghurt?</p> <p>A. <u>Lactobacillus</u> B. <u>Preumococcus</u> C. <i>Azotobacter</i> D. <i>Mycobacterium</i></p> <p style="text-align: center;">OR</p> <p>1. Fermentation has a number of industrial applications, like</p> <p>A. In bakeries for preparing bread, cakes and biscuits. B. In breweries for preparing wine and other alcoholic drinks. C. In producing vinegar and in the tanning of leather. D. All the above.</p>	1

16	Which of the following cells is involved in cell-mediated immunity? (a) Leukaemia (b) T-cells (c) Mast cells (d) Thrombocytes	1
Q.No. 17 to 28 are the objective questions of 2 marks each: Some of these questions have 4 sub-parts. You have to do any 2 sub-parts out of 4 sub-parts in such questions.		
17.	Identify the <i>two</i> wrong statements about meristematic tissue in plants i. Cells are arranged with intercellular spaces ii. Round, oval or polygonal thin walled living cells iii. Every cell with lot of cytoplasm and prominent nucleus iv. Every cell with larger prominent vacuoles	2
18.	Fill in the blanks: (<i>Attempt any two parts from following questions (i to iv)</i>)	2
(i)	The 'brush border' in the lining of intestine is its epithelial lining made up of.....	
(ii)	A slide showed differentiated cells of..... Plant tissue of which were all structurally similar.	
(iii)	Both bacteria and amoeba are able to divide into two by the method of	
(iv)	_____ muscle fibre once it begins to contract does not stop contracting and relaxing all its life	
19.	Match the hormones in column I with their functions given in column II.	

(i)	<p style="text-align: center;">Column I</p> <p>(i) Testosterone (ii) Insulin</p>	<p style="text-align: center;">Column II</p> <p>(a) Causes breasts to develop in females (b) Regulates the amount of sugar in blood (c) Causes males to start producing sperms (d) Prepares body for an emergency</p>	
20	<p>In the flow chart given below write down the basic components of the nervous system in the empty spaces, a, b, c, and d. (attempt any two a-d)</p>		2
	<pre> graph TD NS[Nervous system] --> A["(a)"] NS --> B["(b)"] A --> Brain[Brain] A --> C["(c)"] B --> AP["Afferent pathway sensory device"] B --> EP["Efferent pathway"] AP --> SP["Somatic Pathway"] AP --> D["(d)"] EP --> D </pre>		
21.	<p>Match column –I statement with the right option of column - II</p>		2
	<p>a) Phylloclade b) Tuber</p>	<p>i. Protection ii. Reproduction iii. Storage iv. Photosynthesis</p>	

22.	<p>Complete the following flow chart from A-D (Attempt <i>any two parts</i> from (A-D))</p> <p>Sperms are deposited into the female reproductive tract and eggs released from “A” → union of sperm and ovum in “B” →to form a zygote. →zygote divides rapidly to form a spherical mass →”C” →Early embryonic stage called blastocyst get implanted into D</p> <p>A: __ B: ____ C ____ D ____</p>	2									
23.	<p>Identify A and B in the table given below</p> <p>Secretion</p> <table border="1"> <thead> <tr> <th><u>Secretion</u></th> <th><u>Source</u></th> <th><u>Function</u></th> </tr> </thead> <tbody> <tr> <td>Testosterone</td> <td>Testis</td> <td>A</td> </tr> <tr> <td>B</td> <td>Corpus luteum</td> <td>Maintains endometrium</td> </tr> </tbody> </table> <p style="text-align: center;">OR</p> <p>Given below are the names of some genetic diseases. Write down one symptom for <i>any two</i> disease</p> <ol style="list-style-type: none"> Haemophilia Colour blindness Kline felter syndrome Sickle cell anemia 	<u>Secretion</u>	<u>Source</u>	<u>Function</u>	Testosterone	Testis	A	B	Corpus luteum	Maintains endometrium	2
<u>Secretion</u>	<u>Source</u>	<u>Function</u>									
Testosterone	Testis	A									
B	Corpus luteum	Maintains endometrium									

24.	<p>Label the Given below structure of a human sperm and</p> <p>i. Mitochondria</p> <p>ii. Acrosome</p> 	2
25.	<p>Read the passage and fill in the blanks with appropriate words (<i>Attempt any two parts (A-D)</i>)</p>	2
	<p>Hypodermal cell within the <u> A </u> of the female's gametophyte enlarges and turns into <u> B </u> three of these degenerate and one becomes functional. The functional cell undergoes three Mitotic .divisions which results in the formation of <u> C </u> This enlarged structure with all haploid nucleii is called <u> D </u></p>	

26.	<p>(I) A large number of people in our country suffer from malnutrition. Malnutrition affects the health of the children adversely as it results in physical and mental retardation. Generally the growing children suffer from protein energy malnutrition. A number of children in the age group of 1-5 years suffer from this disease.</p> <p>i. Define Disease ii. Write any two common diseases of PEM seen in our country</p> <p style="text-align: center;">OR</p> <p>(II) Cereals, sugar, milk, Soybean, Amla, Maize, Carrot, legumes, orange, green vegetables. Categorise these food sources below (attempt any two)</p> <table border="1"> <thead> <tr> <th>Group of foods</th> <th>Name of the nutrients Source</th> </tr> </thead> <tbody> <tr> <td>i. Energy providing foods</td> <td></td> </tr> <tr> <td>ii. Body building foods</td> <td></td> </tr> <tr> <td>iii. Protective foods</td> <td></td> </tr> <tr> <td>iv. Roughage</td> <td></td> </tr> </tbody> </table>	Group of foods	Name of the nutrients Source	i. Energy providing foods		ii. Body building foods		iii. Protective foods		iv. Roughage		2
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27.	<p>A person has 47 chromosomes in his karyotype. He shows following symptoms in his life time. He Has thick tongue, Mental retardation and Drooping face.</p> <p>(i) Name the syndrome he is suffering from.</p>	2										
	<p>(ii) Write the karyotype i.e. number of autosomes and sex chromosomes present in that person.</p>											
28.		2										

	<p>The above figure shows the enlargement of a gland in the throat region a person. (Attempt any two)</p> <ol style="list-style-type: none"> 1. Name the gland that has got enlarged 2. What disease is the person suffering from? 3. What is it due to? 4. What preventive measures will you suggest so that other people donot suffer from this disease 	
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PART C: Subjective Questions

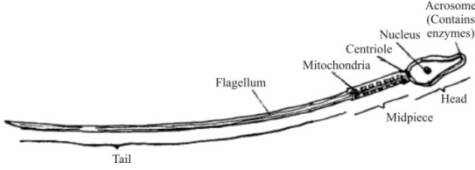
Q. No.	Question	Marks
29.	Write the phylum of each one of the following organisms belongs to. : (a) Earthworm (b) Shark (c) Starfish (d) Spider	2
30.	Give the technical terms for the following : (i) Plant tissue having singular cell (ii) Plant tissues which do not divide anymore	2
31.	Why cyanobacteria is included in Monera ? OR “Angiosperms are either Monocots or Dicots”. State any four differences between them.	2
32.	Build a food chain showing one producer and three consumers. What will be the trophic level of the final consumer of this food chain?	2
33.	Which are the two factors according to you that justify the need for family planning in our country?	2
34.	Under what conditions do populations become J – shaped and S – Shaped OR Write in the correct sequence the levels of organization of life starting from genes upto biosphere.	2
35.	(a) What are the two specific immune responses we develop in our body when we are infected? OR (b) Which types of cells are involved in each type? Explain with an example of each.	2
36.	<div style="text-align: center;"> <pre> graph TD Immigration --> DP[Density of Population] Emigration --> DP Natality --> DP Mortality --> DP </pre> </div> <p>(a) From the diagram above, mention factors (a) which increase density & (b) those that decrease density.</p>	2

37.	<p>(a) Which part of the ear is involved when a gymnast performs balancing feats?</p> <p style="text-align: center;">OR</p> <p>(b) Suppose you are stuck in traffic and have the feeling of urination. Which part of the nervous system do you think is responsible for this? Mention the role of that part.</p>	2
38.	<p>With the help of a neat labelled diagram explain Hypanthodium inflorescence, Give an example of it.</p>	3
39.	<p>(I) State non surgical method of contraception. Mention the name of the procedures.</p> <p style="text-align: center;">OR</p> <p>(II) State the functions of each of the following organs in human body : (i) Seminal vesicles (ii) Prostate glands (iii) Testis</p>	3
40.	<p>(I) Indian population is about to reach a stage of explosion. State any three reasons which may have contributed to such a situation.</p> <p style="text-align: center;">OR</p> <p>(II) Haemophilia is a sex linked disease in human beings. A carrier female has married a normal male. Show the genotype of both the individuals. What will be the phenotype of their progeny both daughter and son, with regard to the disease?</p>	3
41.	<p>(a) Correct the diagram of Central dogma given below</p> <p style="text-align: center;">DNA $\xrightarrow{\text{Transcription}}$ RNA $\xrightarrow{\text{Replication}}$ Protein</p> <p>(ii) Where in a eukaryotic cell, Transcription, Replication and translation occur?</p> <p style="text-align: center;">OR</p> <p>(b) With the help of a flowchart only, show the process of sex determination takes place in human beings.</p>	3
42.	<p>(i) With the help of a diagram only explain the Calvin cycle?</p> <p style="text-align: center;">OR</p> <p>i. In photosynthesis, there are two reactions light and dark reaction why are they called so? explain</p> <p>ii. What are the products obtained in each reaction?</p> <p>iii. What are P 680 and P700?</p>	5

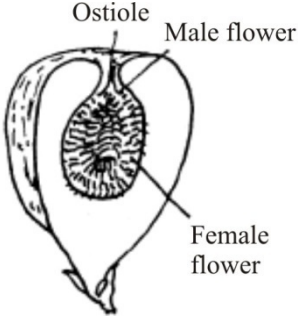
43.	<p>Draw a neat labelled diagram of a V.S. of a monocot leaf and label the following parts:</p> <p>a) xylem b) phloem c) Bundle sheath d) Bulliform cells e) Mesophyll tissue f) Vascular bundle</p> <p>OR</p> <p>Following is the list of hormones produced in our body. Write their expanded forms and write the names of the endocrine glands that produce them :</p> <p>(a) STH (b) TSH (c) FSH (d) LH (e) ADH</p>	5
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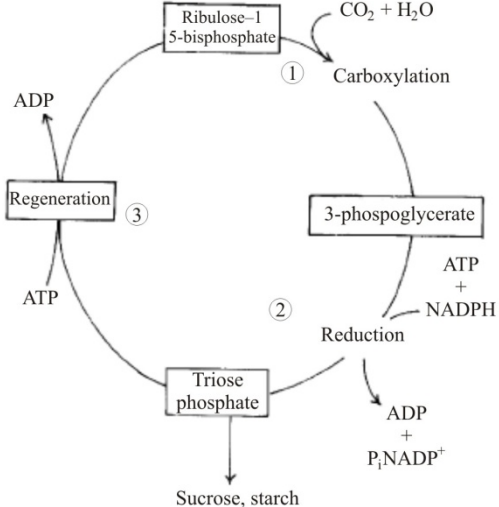
Biology Marking Scheme SECTION – A		
(Q.No. 1 to 16) MCQs of 1 marks each		
S.no	MCQs	Marks
1.	B	1

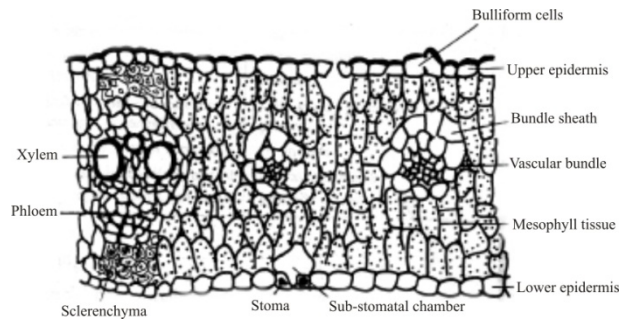
2.	(I) A OR (II) B	1
3	(I) A OR (II) B	1
4	(I) D OR (II) C	
5	B	1
6	A	1
7	C	1
8	(I) D OR (II) D	1
9	(I) B OR (II) A	1
10	A	1
11	(I) C OR (II) C	1
12	B	1
13	(III) A OR (IV) B	1
14.	D	
15	(V) A OR (VI) A	1
16	B	1
(Q.No. 17 to 28) Objective questions of (1X2=2 marks) each		
17	i. Cells are arranged with intercellular spaces (iv) Every cell with larger prominent vacuoles	1 X 2
18	Attempt any two parts (i) Ciliated columnar Cells (ii) Simple Plant Tissues (iii) Binary Fission (iv) Cardiac Muscle fiber	1X2
19	Attempt any two parts (i) Causes males to start producing sperms (ii) regulates the amount of Sugar in blood	1 X 2

20	<p>Attempt any two parts</p> <p>(i) (a) Central Nervous System. (ii) (b) Peripheral Nervous System. (iii) (c) Spinal cord (iv) (d) Autonomic pathway.</p>	1 X 2
21	(i) –a- (iv), (b) – (iii)	1 X 2
22	<p>Attempt any two parts</p> <p>(i) A-Ovary (ii) B-Fallopian Tubes (iii) C- Morula (iv) D-Uterus</p>	1 X 2
23	<p>A- Causes males to start producing sperms B- Progesterone</p> <p>OR</p> <p>a) Delayed blood clotting time b) Inability to discriminate between related colour shades like blue and green, red and green etc c) Gynaecomastia /Mental retardation/any other d) Distorted RBCs bearing sickle shape</p>	1 X 2
24		1 X 2
25	<p>Attempt any two parts</p> <p>(i) A. Nucellus (ii) B. Megaspore mother cell (iii) C. Eight Haploid Nuclei (iv) D. Embryo sac</p>	1 X 2
26	<p>(I) (i) Disease ; Disease is a malfunctioning process related to a certain part of the whole body in which normal functions are disturbed or damaged. Disease literally means not at ease (dis = not)</p> <p>(ii) Marasmus and Kwashiorkor are two Protein energy malnutrition diseases</p> <p>OR</p> <p>Energy Providing: cereals, sugar, milk, maize Body Building: Milk, soyabean, legumes Protective : Amla, orange, green vegetable, carrot (any two correct) Roughage helps in bowel movement/ smooth – removal of undigested food/ removing constipation/ Egestion Roughage : green vegetables, and mentioned fruits, maize (any two)</p>	1 X 2

27	<ul style="list-style-type: none"> • Down's syndrome/ Mongolism • Trisomy of 21st chromosome 	1 X 2				
28	<ol style="list-style-type: none"> 1. Enlargement of thyroid gland retarding of thyroxine hormone controls of physical and mental growth. 2. Goitre 3. Iodized salt; sea food; fish green leafy vegetable in diet 	1 X 2				
29	Earthworm –Annelida Star fish-Platyhelmenthis Shark- Chordata Spider - Arthropoda	1 X 2				
30	(i) Simple Tissues (ii) Parenchymatous tissues					
31	<p>Blue-green algae or Cyanobacteria are photosynthetic bacteria but they are placed under kingdom Monera because they are unicellular, they show prokaryotic features like lack of a well defined nucleus.</p> <p style="text-align: center;">OR</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Monocots</th> <th style="width: 50%; text-align: center;">Dicots</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Xylem vessels in roots towards periphery • Scattered vascular bundles in stem • Parallel Venation in leaves • Trimerous flowers • Single cotyledon in seed </td> <td> <ul style="list-style-type: none"> • Pith Near • Vascular bundles arranged in a ring in the stem • Reticulate venation • Flower pentamerous • Two cotyledons in a seed </td> </tr> </tbody> </table>	Monocots	Dicots	<ul style="list-style-type: none"> • Xylem vessels in roots towards periphery • Scattered vascular bundles in stem • Parallel Venation in leaves • Trimerous flowers • Single cotyledon in seed 	<ul style="list-style-type: none"> • Pith Near • Vascular bundles arranged in a ring in the stem • Reticulate venation • Flower pentamerous • Two cotyledons in a seed 	1 X 2
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32	Grass → Grasshopper → Frog → Snake (or any other) fourth trophic level	1 X 2				
33	<ul style="list-style-type: none"> • Small family can afford better health and educational facilities for the children • Smaller family → lesser pressure on water and space • Lesser pressure on transport • Lead to lesser environmental degradation. 	1 X 2				
34	(1) Populations become J – shaped when food is available in plenty, Populations become S – Shaped when food becomes limited <p style="text-align: center;">OR</p> Genes → cells →organ → organism → population Species → community → Ecosystem →biome →Biosphere	1 X 2				

35	Defence against microorganisms such as virus and bacteria; recognition and destruction of mutant cells. OR	1 X 2				
36	Populations become J – shaped when food is available in plenty, Populations become S – Shaped when food becomes limited	1 X 2				
37	(I) Vestibule OR (II) Parasympathetic nervous system.	1 X 2				
38	 <p>Fleshy receptacle forms a cup like cavity; has an apical opening; male and female flowers are borne on the inner wall of the cavity. (Any two)</p>	3				
39	<p style="text-align: center;">Non surgical method of contraception</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Male</th> <th style="width: 50%; text-align: center;">Female</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Use of condoms prevents fertilization of ovulated egg by sperm as condoms act as barriers </td> <td style="vertical-align: top;"> <p style="text-align: center;">Any one may be mentioned</p> <ul style="list-style-type: none"> • use of contraceptive pills cause hormonal changes thereby affecting ovulation • use of intrauterine device does not allow implantations of the foetus </td> </tr> </tbody> </table>	Male	Female	<ul style="list-style-type: none"> • Use of condoms prevents fertilization of ovulated egg by sperm as condoms act as barriers 	<p style="text-align: center;">Any one may be mentioned</p> <ul style="list-style-type: none"> • use of contraceptive pills cause hormonal changes thereby affecting ovulation • use of intrauterine device does not allow implantations of the foetus 	3
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40	<ol style="list-style-type: none"> 1. Lack of education – unawareness and illiteracy resulting in large families. 2. Advancement in medicines- increase in life span due to the availability of good health care/medicines 3. Desire for male offspring 	3				

41	<p>a) DNA $\xrightarrow{\text{Transcription}}$ mRNA $\xrightarrow{\text{Translation}}$ Protein</p> <p>Transcription and replication inside the nucleus, translation in the ribosome in the cytoplasm</p>	3
42	 <p style="text-align: center;">OR</p> <p>The light reaction is the first stage of photosynthesis, during which light energy is captured and used to make ATP and NADPH, whereas the dark reaction is the second stage of photosynthesis, during which the energy from ATP and NADPH is used to produce glucose from ... The chlorophyll a special pairs of the two photosystems absorb different wavelengths of light. The PSII special pair absorbs best at 680 nm, while the PSI special absorbs best at 700 nm. Because of this, the special pairs are called P680 and P700, respectively.</p>	5



OR

ADH (Antidiuretic hormone) is released by the posterior pituitary gland and is a non- tropic hormone.

TSH (thyroid-stimulating hormone), and FSH(follicle-stimulating hormone) are released by the anterior pituitary gland and are tropic hormones.

STH : Somatotropic Hormone

LH: Luteinizing Hormone