

**ANSWER KEY – CLASS 12 – BIOLOGY – P-1 – SET 1 – 2023 – 24**

<b>SECTION A</b>		
<b>Sl. No.</b>	<b>QUESTION</b>	<b>MKS</b>
1	a) <b>Flagella</b>	1
2	d) <b>GUG</b>	1
3	d) <b>peacock</b>	1
4	a) <b>Tube nucleus and a generative nucleus</b>	1
5	d) <b>RNA</b>	1
6	c) <b>Commensalism</b>	1
7	c) <b>Autogamy and geitonogamy</b>	1
8	d) <b>Monascus purpureus</b>	1
9	b)	1
10	b) <b>Endonuclease</b>	1
11	b) <b>Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet</b>	1
12	c) <b>disruptive</b>	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.                      b) Both A and R are true and R is not the correct explanation of A.                      c) A is true but R is false.                      d) A is false but R is true.</p>	
13	a	1
14	d	1
15	b	1
16	d	1
<b>SECTION B</b>		
17	a) b/w 2 <sup>nd</sup> and 4th Aug / 1 <sup>st</sup> week of august. b) Estrogen-high & progesterone -low.	1+1
18	4 diagrams pg. 23 fig 2.5b	0.5 X4
19	a) difference -any 1 b) DNA polymerase – polymerisation of deoxynucleotides and DNA-discontinuously synthesized fragments sre joined by DNA ligase.	1+1
20	a) RNA interference + converting the single stranded RNA to double stranded -using cellular defense mechanism in eukaryotes.	1+1
21	simple stirred tank bioreactor / Sparged stirred bioreactor. Pg.204 fig 11.7a/11.7b	2

SECTION C																			
22	1.oogonia formation – foetal 2.Primary oocytes-----prophase1 of meiosis1 arrested 3.Primary oocyte+ layer of granulosa layer-----primary follicle 4.primary follicle + more layer of granulosa layer + theca-----secondary follicle 5.secondary follicle -----transforms-----tertiary follicle----- 6.meiosis 1 completed-----secondary oocyte	0.5X 6																	
23	a) any two goals of HGP. b) any two benefits c) Expressed Sequence Tags & Sequence Annotation OR a) any two salient features of genetic code. b) Autosome linked recessive blood disease + The defect could be due to either mutation or deletion which ultimately results in reduced rate of synthesis of one of the globin chains (a and b chains) that make up haemoglobin. -a Thalassemia is controlled by two closely linked genes HBA1 and HBA2 on chromosome 16 of each parent and it is observed due to mutation or deletion of one or more of the four genes. The more genes affected, the less alpha globin molecules produced. -While b Thalassemia is controlled by a single gene HBB on chromosome 11 of each parent and occurs due to mutation of one or both the genes.	1 1 1 1 1 0.5 0.5																	
24	a) SSgg X ssGG + F <sub>1</sub> -SsGg b) <div style="text-align: center; margin: 10px 0;"> <math>ssgg \times SsGg</math> </div> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Sg</td> <td style="text-align: center;">sg</td> <td></td> </tr> <tr> <td style="text-align: center;">SG</td> <td style="text-align: center;">SSGg</td> <td style="text-align: center;">SSGg</td> <td rowspan="4" style="padding-left: 10px;">           Solid + Grey - 4            Striped + grey -            Solid + beige - 4            Striped + beige -            Solid + grey : striped            H : H = (1:1)         </td> </tr> <tr> <td style="text-align: center;">sG</td> <td style="text-align: center;">SsGg</td> <td style="text-align: center;">SsGg</td> </tr> <tr> <td style="text-align: center;">Sg</td> <td style="text-align: center;">SSgg</td> <td style="text-align: center;">SSgg</td> </tr> <tr> <td style="text-align: center;">sg</td> <td style="text-align: center;">Ssgg</td> <td style="text-align: center;">Ssgg</td> </tr> </table>		Sg	sg		SG	SSGg	SSGg	Solid + Grey - 4 Striped + grey - Solid + beige - 4 Striped + beige - Solid + grey : striped H : H = (1:1)	sG	SsGg	SsGg	Sg	SSgg	SSgg	sg	Ssgg	Ssgg	1 2
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25	a) A- homologous and B-Analogous b) group A – Divergent and group B- Convergent + any two points of difference.	1 1+1																	
26	-In agriculture, method of controlling pests that relies on natural predation -The organic farmer, therefore, works to create a system where the insects are not eradicated, but instead are kept at manageable levels by a complex system of checks and balances within a living and vibrant ecosystem Eg-the Ladybird and Dragonflies are useful to get rid of aphids and mosquitoes, respectively ./ An example of microbial biocontrol agents that can be introduced in order to control butterfly caterpillars is the bacteria <i>Bacillus thuringiensis</i> (often written as <i>Bt</i> ).( any one eg)	1 1 1																	

27	a) humoral immune response-B lymphocytes and cell-mediated immunity-T lymphocytes b) proteins + IgE c) cell mediated immunity-T lymphocytes can recognise self-cell from non-self cell	1 1 1
28	(a) When the prey population increases the predators also increases and vice versa. (b) Both the prey and predator population will decrease, predator due to competition and prey due to predation. (c) Any one example of morphological and chemical defenses	1 1 1
<b>SECTION D</b>		
	Q.no 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart	4
29	a) Mutualism -plant pollinator relationship -benefitting both. b) coevolution- tightly linked if one evolves other should evolve simultaneously or they will perish c) Mediterranean orchid -sexual deceit- brief explanation <b>OR</b> fig species- offers site for laying eggs + nutrition and pollinator- pollination	1 1 2
30	a) BOD- Bio Chemical Oxygen Demand b) high BOD greater pollution. c) sewage treatment for reducing the BOD – Biological treatment brief explanation. <b>OR</b> c) the consequences on human health- microbes -causing disease+ organic content pollution – brief explanation.	1 1 2
<b>SECTION E</b>		
31	i. Pancreas of pigs and cows – foreign antigen allergy earlier.  ii. Brief Explanation + technique- GE  iii. human- proinsulin + insulin produced by insulin company – matured iv. Brief Explanation of the maturation process <b>OR</b> a) PCR – Polymerase Chain Reaction + principle- multiple copies of our gene of interest b) Brief explanation of the 3 steps. c) primers – extension	1  2  1 1  1 3 1
32	Hershey and chase experiment -DNA and not protein is the genetic material + Description of the experiment <b>OR</b> Meselson and Stahl's Experiment – DNA replicates semi conservatively Description of the experiment	1 4  1 4

33	a) oral pills – hormonal and surgical methods – irreversible b) Saheli-non -steroidal with less side effects and once a week pill+ high contraceptive value. c) IUDS- Intra Uterine Contraceptive Device-brief explanation of its functioning. <b>OR</b> Pg 52 fig 3.11	1 2 2 5
<b>SET-II</b>		
1.	b) Formation of pollen tube.	1
4.	c) Alveoli cells	1
6.	a) Parasitism	1
18	Pg 32, fig 2.12(d)	2
20	Correction of a defective gene by inserting a functional gene to compensate for the non- functional gene. Brief explanation of the procedure	0.5 1.5
25	a) A- homologous and B-Analogous b) group A – Divergent and group B- Convergent + any two points of difference.	1 1+1
27	a) any 2 pts. of difference b) b) proteins + IgE	2 1