

INDIAN SCHOOL MUSCAT

FIRST PRE-BOARD EXAMINATION

JANUARY 2020

SET A

CLASS XII

Marking Scheme – BIOLOGY [THEORY]

Q.NO.	Answers	Marks (with split up)
1.	C] It is formed by steroid hormones	1
2.	B] <i>Plasmodium falciparum</i> OR B] UV rays	1
3.	C] Agarose OR A] Human alpha-lactalbumin	1
4.	B] C peptide chain OR	1
5.	D] ecosystem productivity will increase with increase in number of species in an ecosystem	1
6.	Encystation and sporulation OR Dioecious- Date palm, papaya ; Monoecious – cucurbits, Chara	1+1
7.	Law of dominance , G J Mendel	1 ½ + ½
8.	i) a) Neanderthal man b) Australopithecines ii) <i>Ramapithecus</i> and <i>Dryopithecus</i>	½ + ½ ½ + ½
9.	Acts as inoculum/ starter/Contains LAB and it would convert milk into curd and increased vit B12	½ each
10.	A palindrome in DNA is a sequence of base pairs that reads same on the two strands, When orientation of reading is kept the same, i.e 5' to 3' Any one example	1+1
11.	Brood parasitism.. egg of the parasite bird will resemble the egg of host in all respects thereby the host cannot distinguish the eggs.	1+1
12.	Organism which meet their energy requirement by degrading the dead and decaying organic matter. Some fungi and some bacteria	1+1
13.	Formation of corpus luteum/ CL secretes progesterone/ endometrium thickens further/ stops uterine movement.	1+1+1
14.	Both the options correct working and explanation with ratios	3
15.	Theorem Four factors OR	1 2

	Two features and two causes	2+1
16.	i) Identification of DNA with desirable genes ii) Introduction of the identified DNA into the host iii) Maintenance of the introduced DNA in the host and transfer of this DNA into its progeny.	
17.	Disadvantages- causes allergy and other types of reactions Concerns:- removal of C-peptide / assembling two polypeptide chains	1 2
18.	MOET. Steps and significance.	1+2 marks
19.	i) Does not take into account organisms that occupies more than one position at different trophic level. ii) Not considering food web iii) Saprophytes are not taken into account.	1 1 1
20.	i) Tropic envt. Is less seasonal ii) temperate countries are subject to glaciation iii) availability of solar radiation in tropical region.	3
21.	Natural ageing of lake by nutrient enrichment. Initial stage in lake. Changes and final stage of a lake.	3
22.	Correct labelling c- formation of pollen D- tapetum damage- no nutrition for developing pollen. May affect pollen maturation.	2 $\frac{1}{2}$ $\frac{1}{2}$
23.	(a) A - Template strand B - Coding strand (b) In initiation sigma factor associates with RNA polymerase to initiate transcription, Rho factor gets associated to RNA polymerase to terminate transcription	1 1 1
24.	(a) A—Gametocytes of Plasmodium enter the mosquito when it bites a malarial patient and feed on blood. (b) C—Fertilisation. It occurs in the intestine of mosquito. (c) B—Salivary gland of the female Anopheles mosquito. These release sporozoites of Plasmodium.	1 1 1

25.	<p>The Pollen grain germinates on the stigma to produce pollen tube through one of the germ pore, the contents of the pollen grain / vegetative cell / generative cell / two male gametes move into the pollen tube , the pollen tube grows through the tissues of stigma and pollen tube to reach the ovary , the pollen tube enters (through micropyle) enters the synergids through filiform apparatus, pollen tube releases two male gametes in the cytoplasm of the synergids, one of the male gametes fuses with egg cell / female gamete completing syngamy , to form (diploid) zygote , the other male gamete fuses with two polar nuclei in the (central cell) to produce (triploid) primary endospermic cell , three haploid cells fuse called triple fusion , two type of fusion syngamy and triple fusion is called double fertilisation</p> <p>OR</p> <p>Systematic representation of oogenesis</p>	$\frac{1}{2} \times 10$
26.	<p>One difference with working of each.</p> <p>OR</p> <p>(a) George Gamow : Proposed that the Genetic code is constituted of 3 nucleotides / provided proof that the codon is a triplet</p> <p>Hargobind Khorana : Synthesized RNA molecule with a defined combination of bases (homopolymers and copolymers)</p> <p>Marshall Nirenberg : Cell free system for protein synthesis / helped the genetic code to be deciphered</p> <p>Severo Ochoa : Described enzyme (Polynucleotide phosphorylase)which polymerises RNA with defined sequence in a template independent manner</p>	5

	(enzymatic synthesis of RNA) (b) Genetic code - Codes for a specific amino acid which is required for protein synthesis /provides information about the specific amino acid that form a particular protein / polypeptide	
27.	<p>(a) Vaccine – It is inactivated or weakened pathogen that is inoculated into the body of the child Vaccines generate memory - B & T - cells that recognize the pathogen quickly on subsequent exposure , produce specific antibodies against the pathogen / antigen</p> <p>(b) Active Immunity – Immunity that an organism develops due to direct exposure of pathogen by producing antibodies in the body eg .vaccination / infections / hepatitis etc. Passive Immunity - readymade antibodies are directly given to protect the body from foreign pathogens eg. Colostrum / tetanus / antitoxin for snake bite etc. OR Biofertilizers – are organisms that enrich the nutrient quality of the soil Role – (i) increase nutrient quality (ii) fix atmospheric nitrogen (iii) resistant to root borne pathogens (iv) tolerance to salinity and drought (v) overall increase in plant growth and development (any four) These are preferred to chemical fertilizers because - They do not pollute soil / air / water - do not spoil soil texture or pH of the soil</p>	<p>1</p> <p>1</p> <p>1</p> <p>1/2</p> <p>1</p> <p>1/2</p> <p>1</p> <p>2</p> <p>1</p> <p>1</p>

SET – B

Answer for Uncommon Questions

1	C] Fertilisation	1
2	D] Pneumonia pathogen infects alveoli whereas the common cold affects nose and respiratory passage but not the lungs. OR D] They show contact inhibition.	1
3	A] Endonuclease OR B] <i>Agrobacterium tumefaciens</i>	1
4	C] Eli Lilly	1
5	A] Forest conservation	1

9	(i) Whisky, brandy, rum . by distillation (ii) Wine, beer . without distillation	2
11	Clown fish gets protection from its predators by moving around the stinging tentacles of the sea anemone = 1 The sea anemone is neither helped or harmed by the interaction with the fish = ½ Commensalism = ½	2
13	Permanent cure ,Bone marrow transplantation and enzyme replacement therapy,introducing cDNA of a functional ADA using retrovirus into the stem cells/early embryonic stages	1+1+1
17	Co-extinction is a phenomenon in which when a species becomes extinct, the plant and animal species associated with it, in an obligatory manner, also become extinct.e.g., - In case of a co-evolved plants and its pollinator, if one of them becomes extinct, invariably the other one becomes extinct. -If a host fish becomes extinct, the unique parasites depending on it would also become extinct. The three other causes are: (I) Habitat loss and fragmentation (ii) Over-exploitation (iii) Invasion of alien species	3
20	Definition/ uterine contraction/ oxytocin	1+1+1
27	Organisms used+ experiment steps+ results+ inference	1+2+1+1

SET-C

Answers for uncommon questions

1	B] Amniotic fluid	1
2	D] Proportion of CO ₂ increases & in Hb proportion of O ₂ decreases. OR C] Ig-A	1
3	B] Plasmid OR B] 2.4 grams per litre	1
4	D] Genes of another organism	1
5	A] I, II, IV, V	1
6	<i>Drosophila melanogaster</i> = ½ Grown in simple synthetic medium, complete the life cycle in two weeks / short life cycle, single mating produce more progeny , dimorphism, many heritable variations / easy to handle. (any three) = 1½	2
7	Gaseous and sedimentary cycle. Atmosphere and rock/soil/ To meet with the deficit which occurs due to imbalance in the rate of influx and efflux of nutrients.	2

14	<p>TC (Tertiary consumer) 10J (10% available) = $\frac{1}{2}$</p> <p>SC (Secondary consumer) 100J (10% available) = $\frac{1}{2}$</p> <p>PC (Primary consumer) 1000J (10% available) = 1</p> <p>PP (Primary Producer) 10,000J (1% available) = 1</p> <p>1,000,000 J of Sunlight</p>	3
15	Definition/ explanation 1+2	3
19	<p>(a) Meristem(apical, axillary) = $\frac{1}{2}$</p> <p>(b) Explant /Virus free meristem is grown in nutrient medium, under aseptic conditions, tissue proliferates to form undifferentiated mass / callus, transferred to a medium containing auxin and cytokinin. = $\frac{1}{2} \times 4 = 2$</p> <p>(c) Tissue culture /micropropagation = $\frac{1}{2}$</p>	3
25	<p>PMC / Microspore mother cell undergoes meiosis, to form microspore tetrad by the process called microsporogenesis, Each microspore develops into pollen grain , each pollen grain undergoes unequal mitotic division, and produces two cells - the vegetative cell and generative cell = $\frac{1}{2} \times 5$</p> <p style="text-align: center;">OR</p> <p>Hypothalamus produces Gonadotropins releasing hormone , which induces anterior pituitary , to release LH , and FSH , to effect oogenesis , and ovulation , the graafian follicle after shedding ovum becomes corpus luteum , which secretes progesterone , to maintain endometrium , and implantation of the embryo = $\frac{1}{2} \times 10$</p>	