ANNEXURE -A

DAV PUBLIC SCHOOLS, ODISHA ZONE
HALF YEARLY EXAM 2023-24,SUBJECT: BIOLOGY(044), CLASS : XII,SET-01

BLUE PRINT OF QUESTION PAPER

Sl No.	Units	Marks Allotted in Syllabus	MCQ (12 Nos.)	A&R (4 Nos.)	SA (5 Nos.)	LA-I (7 Nos.)	CASE BASED (2 Nos.)	LA-II (3 Nos.)	TOTAL (33 NOS.)
1	**REPRODUCTION**	18	Q1(1) Q2(1) Q3(1) Q4(1)	Q13(1)	Q17(2)	Q22(3) Q23(3)		Q31(5) OR	9(18)
2	**GENETICS AND EVOLUTION**	24	Q5(1) Q6(1) Q7(1) Q8(1)	Q14(1)	Q18(2) Q19(2) OR	Q24(3) Q25(3)	Q29(4)	Q32(5) OR	11(24)
3	**BIOLOGY & HUMAN WELFARE**	14	Q9(1)	Q15(1)	Q20(2)	Q26(3) Q28(3) OR	Q30(4)		6(14)
4	**BIOTECHNOLOGY & ITS APPLICATIONS**	14	Q10(1) Q11(1) Q12(1)	Q16(1)	Q21(3)	Q27(3) Q28(3)		Q33(5) OR	7(14)
	MARKS	**70**	**12**	**04**	**10**	**21**	**08**	**15**	**33(70)**

ANNEXURE -B

DAV PUBLIC SCHOOLS, ODISHA ZONE

HALF YEARLY EXAM 2023-24 SUBJECT: BIOLOGY (044) CLASS : XII,SET-01

QUESTION WISE ANALYSIS

SL.NO	Units	Forms of Questions - (MCQ ,A & R TYPE, SA, LA-I,CBQ, LA-II)	Marks Allotted	Question no for (R)& (U), (Ap), (An) (E)&(C),
1	**REPRODUCTION**	MCQ:- 1,2,3,4 A & R:-13 SA:-17 LA-I:-22,23 Case:-Nil LA-II:-31	18	(K)& (U):- 2,3,4,17, 22,23, 31 (Ap):-1,13 (An) (E)&(C):-nil
2	**GENETICSAND EVOLUTION**	MCQ:-5,6,7,8 A & R:-14 SA:-18,19, LA-I:-24,25 CBQ:-29 LA-II:-32	24	(K)& (U): 7,29,32 (Ap):-6,8,24,25 (An) (E)&(C):-5,14,18,19
3	**BIOLOGY & HUMAN WELFARE**	MCQ:-9 A & R:-15 SA:-20 LA-I:-26,28 CBQ:-30	14	(K)& (U):-9,15 ,20,26 (Ap):-30 (An) (E)&(C):-28
4	**BIOTECHNOLOGY & ITS APPLICATIONS**	MCQ:-10,11,12 A & R:- 16 SA:-21 LA-I:-27 LA-II:-33	14	(K)& (U):-11,12 (Ap):-10,16,21,27 (An) (E)&(C):-33
TOTAL	33(70)			

Knowledge and understanding – 50% (35 marks)

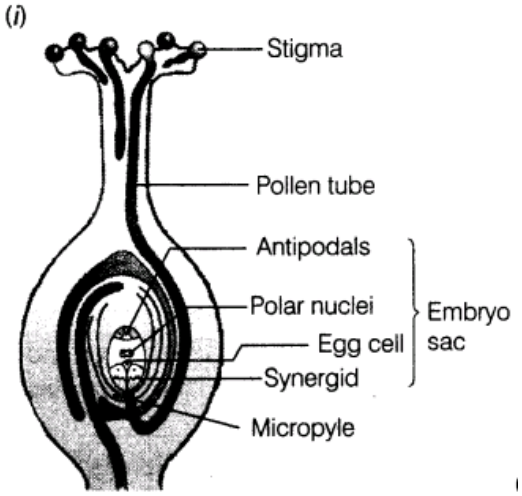
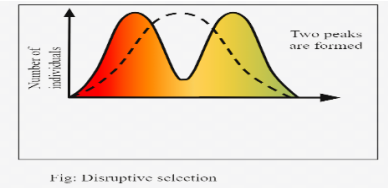
Applications 30% (21 marks)

Analysis , Evaluate and create 20% (14 marks)

ANNEXURE –C

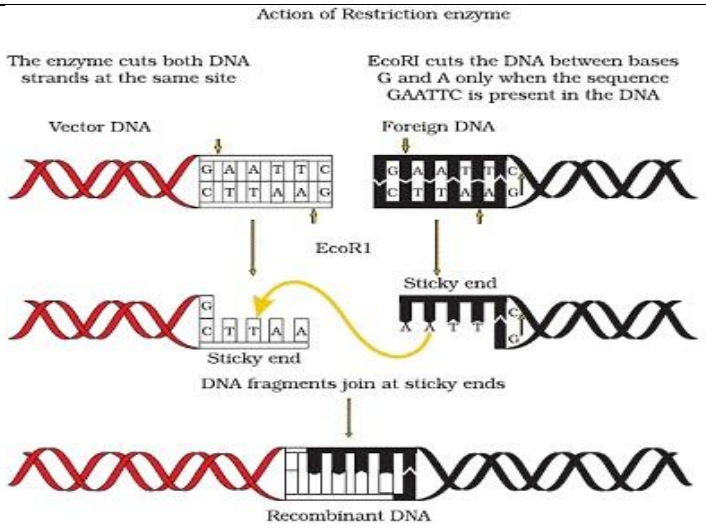
	DAV PUBLIC SCHOOLS, ODISHA ZONE			
	HALF YEARLY EXAM-2023-24, SUBJECT-BIOLOGY CLASS: XII			
	MARKING SCHEME -SET-1			
QSTN NO	Value Points	Marks Allotted	Total Marks	Page no of old NCERT /Textbook
1	c) 9n	1	1	26
2	a) being a diploid tissue	1	1	36
3	(d) Trophoblast | Inner cell mass | get attached to the endometrium | differentiated as embryo	1	1	52
4	a)Point P	1	1	61
5	d) 0:1:31	1	1	105
6	c)Down's syndrome	1	1	90
7	d) A-iv, B-iii, C-i, D-ii	1	1	112,117
8	b) Divergent evolution leads to formation of homologous organs.	1	1	131
9	c. Macrophages- Mucus-secreting cells that trap microbes entering the body.	1	1	150
10	c) Probe hybridizes to its complementary DNA → Autoradiography→ mutated gene does not appear on the photographic film.	1	1	212
11	b. EcoRI, BamHI,ampR,Ori	1	1	199
12	d). Patient does not require periodic infusion of such genetically engineered lymphocytes	1	1	211
13	c. A is true but R is false	1	1	38

14	a. Both assertion and reason are true, and the reason is the correct explanation of the assertion.	1	1	98
15	d) A is false but R is true.	1	1	188
16	b) Both A and R are true and R is not the correct explanation of A.	1	1	202
17	**Section-B** a) A - Estrogen , B – Progesterone b) A –Proliferative phase/Ovulatory phase, B – Secretory phase	½x4	2	51
18	a) B- Transcription, cytoplasm b)3'-5' c)Nucleotide triphosphates OR a) Cross B, the strength of crossing over is high. - If distance between two genes present in one chromosome is more, occurrence of crossing over is more, if distance is less between two genes, occurrence of crossing over is less. b) Cross A- genotypes of recombinant female: y+y w+ w Cross B- genotype of recombinant male: w+wm+m	½x2 ½ ½ ½ ½ ½ ½	2 2	109 136,137
19	Test cross In a test cross the plant with dominant phenotype is crossed with recessive parent. PP x pp(Punnet square) If all plants produced purple flowers then the dominant trait is pure breed(homozygous dominant).	½ ½ ½ ½	2	75
20	A-Sporozoite B-Asexual reproduction C-Haemozoin D-Gut of Mosquito	½ x4	2	148
21	a. Simple stirred tank bioreactor, A stirred-tank reactor is cylindrical in shape or having a curved base that simplifies the mixing of the reactor substances . b. Flat bladed impeller facilitates even mixing & oxygen availability throughout bioreactors. c.A bioreactor provides the optimal conditions for achieving the desired products by providing optimum growth conditions like temp., pH, oxygen, substrate, salts, vitamins.	½ x 2 ½ ½	2	204
22	Section-C a) A-implants, B-Copper-T	½+½	3	60 61

	b) Implants inhibit ovulation and implantation as well as the quality of cervical mucus to prevent /retard entry of sperms Release of cu ions suppresses the sperm motility and the fertilizing capacity of sperms. c) All RTIs are spread by sexual contacts. Thus, all RTIs are STDs. Example-Syphilis But All STDs are not RTIs as they don't affect reproductive tracts. Example: HIV, Hepatitis B or C	½+½ ½+½		
23	Diagram.  	1 Labelings ½x4	3	32
24	DNA Fingerprinting i.Isolation of DNA ii.Digestion of DNA into small fragments by RE iii.Separation of DNA bands by gel electrophoresis iv.Transfer to nitrocellulose membrane(Blotting) v.Hybridisation with labelled VNTR probes and Autoradiography	½ ½x5	3	121
25	a) Genetic drift. Sometimes the change in allele frequency is so different in the new sample of population that they become a different species/ The original drifted population becomes founders and the effect is called **founder effect**. b)p2+2pq +q2=1 c)More individuals acquire peripheral character value at both ends of distribution curve  Fig: Disruptive selection	½ ½ ½ 1 ½	3	133

26	(i) The chemical nature of the coat: Viral protein coat. (ii) Enzyme B - Viral DNA is produced by the enzyme reverse transcriptase. (Process called reverse transcription.) X: viral RNA introduced into a cell, C = Viral DNA. (iii) Host cell (D) = Macrophage. iv) helper T-lymphocytes. OR a)The first infection of chicken pox produces a primary response and antibodies are generated against chicken pox virus, subsequent encounter with the same virus elicit a highly intensified secondary response, due to the memory cells formed during the first encounter. This kind of immunity is active immunity. a) Tetanus is caused by a microbe which has a deadly and fast action. Action of vaccine is slow and which may be fatal.	½ ½ x 3 ½ ½ ½x3 ½ ½ x 2	3 3	155 152
27	a) DNA is negatively charged hence move from cathode to anode. b) Agarose. obtained from sea weed c) Stained with Ethidium bromide, expose to UV rays, Elution	½ ½x2 ½x3	3	198
28	a) The primary effluent is continuously agitated, to allow the growth of aerobic microbes. b) A small amount of activated sluge serves as inoculum for the aeration tank and rest of it is transferred to anaerobic sludge digester for anaerobic respiration. c) The major part of the activated sludge is pumped into large tanks called **anaerobic sludge digesters** where methanogens grow anaerobically, digest the bacteria and the fungi in the sludge and produce biogas.	½x2 ½x2 ½x2	3	184
29	**Section-D** (a) This representation is of beta globin chain of haemoglobinIn a normal person the mRNA possesses the codon GAG which codes for glutamic acid. (b) In the sufferer, the GAG is replaced by GUG in the mRNA which codes for valine, point mutation (c) Glutamic acid is replaced by valine during translation, due to which RBC would be sickle-shaped. Autosomal,recessive disorder OR (c) Both, As it is an autosomal disease both male and females are equally affected. Hb^AHb^s , Hb^sHb^s	½x2 ½x2 1+½x2 ½x4	4	89

30.	a) Flowering branch of *Datura* species, hallucinogens b) Treatment of insomnia and mental depression. c) *Erythroxylum cocca,*Interferes with dopamine secretion Central nervous system,hallucination OR Smack, acetylation of morphine Opioids, Depressant/slows down body functions.	½x2 ½x2 ½x2 ½x2 ½x2 ½x2	4	159
	SECTION -E			
31	a.Only one sperm(that has entered zona pellucida) shall enter in to the ovum .Others will be degenerated. b.Prevents polyspermy c.Completes meiosis II, to form egg , second polar body. d.Sperm lysin/Enzymes present in acrosome e.Ampullary region of fallopian tube ,zygote,2n OR a) Bagging- The gynoecium of pistillated flower should be covered by polythene bag before maturation. ↓ When the ovary matured, the bag is removed. ↓ The desired pollen grains collected are dusted over the stigma and re-bagged to avoid contamination with unwanted pollen grains. Artificial hybridization/controlled pollination. b)Self-incompatibility This is a genetic mechanism and prevents self-pollen (from the same flower or other flowers of the same plant) from fertilising the ovules by inhibiting, pollen germination or pollen tube growth in the pistil. c)In chasmogamous flower, the anther and stigma are exposed. No. Cleistogamous flower are closed flower, anther and stigma remain inside. So no cross pollination.	½ x2 ½ ½ x 3 ½ ½x3 ½x4 ½ ½x2 ½ ½x2	5 5	26 31,33
32	a.B-Beta galactosidase,C- Permease,D-Transacetylase b.Operator c.Presence of lactose, lactose binds to repressor and inactivates it d. i gene is a constitutive gene and always expressed and switch off the operon e.Ara operon, His operon OR	½ x 3 ½ 1 1 ½ x 2	5	79

	(a) 5'-3' (b)UAA (c) UTR increases the efficiency of translation UTR-untranslated regions found before start codon at 5' end and after stop codon at 3' end. (d)UCC,CUU (e)Peptidyl transferase,23S rRNA	½ ½ 1 ½+½ ½ x 2 ½ x 2	5	117
33	 b)a recombinant DNA is inserted within the coding sequence of an enzyme, â-galactosidase. This results into inactivation of the enzyme, which is referred to as **insertional inactivation**. The presence of a chromogenic substrate gives blue coloured colonies if the plasmid in the bacteria does not have an insert. Presence of insert results into insertional inactivation of the â-galactosidase and the colonies do not produce any colour, these are identified as recombinant colonies. Or a) 27 varities b) The 'new' variety of Basmati has been developed by crossing the Indian Basmati variety with the semi-dwarf varities of the U.S c) Neem and turmeric d) – It is called biopirarcy. - Biopirarcy refers to the use of bioresources by multinational companies and other organisations without proper authorization from the countries and people without compensatory payment. e) -India has framed the Indian Bill -Recently, the parliament has cleared the second amendment of the Indian Patent Bill.	½ x 6 (Any six correct labellings) ½ x 4 ½ 1 ½ x 2 ½ 1 1	5 5	208,209 202