SECOND YEAR HIGHER SECONDARY EXAMINATION MARCH 2018

BOTANY FINALIZED SCHEME FOR VALUATION

Question paper Code : 9017 **MAXIMUM SCORE: 30**

Q. No		Value points	Splitted score	Total score
1		Any option give full score	1	1
2		Diapause	1	1
II. ANY ELEVEN FROM Q. No.3-15				
3	a	Stratosphere / Troposphere	1	2
	b	Dobson unit / Db / Du	1	
4		A – B 1.Butterfly – c)1-2 weeks 2.Crow – d)15 years 3.Parrot – a)140years 4.Tortoise – b)100-150years / a)140 yrs	½x4	2
5	a	Agarose (Natural polymer extracted from sea weeds)	1	2
	b	Elution	1	
6	a	E.coli cloning vector pBR322/ Cloning vector / Plasmid vector / vehicle for transferring genes / pBR322 / Vector	1	2
	b	i) Antibiotic resistance gene / tetracycline resistance gene / Selectable marker / Its explanation.	½	
		ii) Gene codes for the proteins involved in the replication of the plasmid / Encodes a restrictor of plasmid copy number / repressor of protein	½	
		iii)Origin of replication/ a sequence from where replication starts/any other feature of Ori.		
		Or		
		Q.No. a and two correct responses of Q.No. b give 2 score		
7		Filiform apparatus	1	2
		Guiding Pollen tube into the Synergid	1	
8		The semen is collected from the male that is chosen as a parent and injected into the reproductive tract of the selected female. Collected semen may be used immediately or can be frozen and used at later date. Frozen semen can be transported to, where the female is housed.	1+1	2

		It helps to overcome the problems of normal mating. Any other two advantages give 2 scores		
9		Vitamin A enriched Carrots, Spinach, Pumpkin Vitamin C enriched Bitter gourd, Bathua, Mustard, Tomato. Iron & calcium enriched Spinach and Bathua. Protein enriched Beans- Lablab, Garden peas etc. [Any two crops released by IARI give 2 scores]	1+1	2
10		Purify air and water, reduce global warming, mitigate droughts and floods, cycle nutrients, generate fertile soils, provide wildlife habitat, maintain biodiversity, pollinate crops, provide storage site for carbon, provide aesthetic, cultural and spiritual values etc. (Any four ecosystem services give 2 scores)	½ X 4	2
11		Phasing out of old vehicles, use of unleaded petrol, use of low-Sulphur Petrol & diesel, use of catalytic converters in vehicles, application of stringent pollution level norms for vehicles, switching over the entire public transport from diesel to CNG etc. (Any two such correct responses give 2 scores)	1+1	2
12		Cutting down the use of fossil fuel, improving efficiency of energy usage, reducing deforestation, planting trees, slowing down the growth of human population, reduce the emission of Green house gases etc. (Any two such correct responses give 2 scores)	1+1	2
13		Tolerant to abiotic stresses, reduced use of chemical pesticides, pest resistant crops, reduce post-harvest losses, increased efficiency of mineral usage by plants, enhanced nutrient value of food. (Any four such correct responses give 2 scores)	½ X 4	2
14		They prepared two DNA sequences corresponding to A & B chains of human insulin. Introduced them in plasmids of E.coli to produce insulin chains.	½ x 4	2

		Chains A & B were produced separately, extracted and combined by creating disulfide bonds to form human insulin / Its diagrammatic representation give full score 2 Or rDNA technology -1 Score		
15		When energy flows from a particular trophic level to the next higher trophic level, some energy is always lost as heat at each step. [According to 10% law of energy or Law of thermodynamics give full scores 2]	1+1	2
III ANY TWO FROM Q.No.16-18				
16	a b	RNA i (RNA interference) Nematode specific genes were introduced into the host plant through the Agrobacterium vector. This gene produces both sense and antisense RNA in the host cells. These two RNA's being complementary to each other and form dsRNA. dsRNA silences the specific mRNA of the nematode.	1 ½ X 4	3
17	a b	Exponential or geometric growth curve and or 'j' shaped growth curve / Its explanation Logistic or 'S' shaped or Sigmoid growth curve or Verhulst – Pearl Logistic growth curve / Its explanation Carrying capacity / Its explanation	1+1 1	3
18.		Functional megaspore is the first cell of female gametophyte. Nucleus of megaspore divides free mitotically by three times and form 8 nucleate embryosac. Four nuclei at micropylar end and four at chalazal end. Three nuclei are grouped at micropylar end to form three celled egg apparatus with two lateral synergids and egg cell at the centre. Three nuclei at chalazal end become three celled antipodals. Remaining two nuclei from each pole move towards the centre of	1+1+1	3

		embryosac and form large central cell with two polar nuclei. Mature embryosac is 7 celled and 8 nucleate. OR Its diagrammatic sketch / flow chart of embryosac development / any three sequential steps of embryosac development give full score 3		

SECOND YEAR HIGHER SECONDARY EXAMINATION MARCH 2018

SUBJECT : ZOOLOGY - II Year CODE. NO: 9017

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
I				
1.		Interstitial cells / Leydig cells	1	1
2.		Saheli / (b)	1	1
3.		Exocrine / (c)	1	1
II				
4.		Chromosome pattern of human female is XX and male is XY. Haploid gamates is produced by female contain only X while male produces either X or Y. Hence father determines sex OR Expression :- XX - XY type of sex determination / Heterogametic individual determines sex	2	2
5.		a) Natural methods - Periodic Abstinence Withdrawal / coitus interruptus Lactational amenorrhoea / Absence of menustration. (Any two carries 1 mark	2	2
		b) Barrier methods Condoms, Diaphragms, cervical cap, Vaults (Any two carries 1 mark	2	

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
6.	a)	Negatively charged DNA wrapped around positively charged histone octamer / Nucleosomes are chromatin beaded on string / DNA + Histone octamer / labelled digram of nucleosomes.	1	
	b)	Euchromatin - chromatin regions loosely arranged, transcriptionally active / lightly stained (Any one response)	½	2
		Hetero chromatin - Chromatin regions densely packed, transcriptally inactive / darkly stained (Any one response)	½	
7.	a)	Incomplete dominance	1	
	b)	Definition of Incomplete dominance / Blending of colours or genes / Gene interactions / Abnormal or less efficient enzymes / Non functional enzyme / No enzyme at all [Any one response]	1	2

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
8	A	Homologous Organs	½	
	B	Divergent evolution	½	
	C	Analogous organs	½	2
	D	Convergent evolution	½	
9		1) Gene migration / Gene flow 2) Genetic drift 3) Mutation 4) Genetic Recombination 5) Natural selection [Four correct responses]	4 × ½	2
10		1) Physical barriers Skin / mucous coating in respiratory system, Urenogenital system and gastro intestinal system 2) Physiological barriers Acid in stomach / saliva / tear 3) Cellular barriers PMNL / Natural killer cells / Monocyte Macrophages		

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
		4) Cytokine barriers – Interferons [½ barriers / 2 barriers with their appropriate example]	4 × ½	2
11.	A	Salmonellae / salmonella typhi	½	
	B	Common cold / cold	½	2
	C	Plasmodium falciparum / plasmodium	½	
	D	Elephantiasis / filariasis	½	
12		Drop in academic performance / Lack of interest in personal hygiene / Absent from schools / Isolations / Withdrawal symptoms / Depression / Fatigue / Aggressive and rebellious behaviour / Loss of interest in hobbies / Change in sleep and eating habit / Fluctuation in weight and loss of appetite [Four correct response]	4 × ½	2

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
13.		1) OH groups / hydroxyl groups of RNA is reactive and hence easily degradable 2) RNA is catalytic and hence reactive 3) Mutated at faster rate 4) Presence Uracil makes RNA less stable. 5) RNA is single stranded while DNA is double stranded [Two correct responses]	2×1	2
14.	A	Aspergillus niger	4×1/2	2
	B	Bacterium		
	c.	Cyclosporin A / Cyclosporin		
	d)	Monascus purpureus		
15.	a)	S - Species richness A - Area z - Slope of line / Regression coefficients c - Y intercepts	4×1/2	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
	b)	Alexander Von Humboldt	1	3
16	a)	Lactose Switch off lac operon as inducer / Lactose binds with the repressor undergoes structural modification hence can't bind with operator	1	
	b)	A. Repressor mr. RNA / Repressor / Regulator gene B. β galactosidase / lac Z / Structural gene C Permease / lac Y / Structural gene D Trans acetylase / lac a / Structural gene.	4 × ½ = 2	3
17.	a)	Gonorrhoea / Syphilis / Genital herpes / Genital warts / Trichomoniasis / Chlamydiasis / Hepatitis-B / AIDS [Any two]	2 × ½ = 1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
	b.	1) Avoid sex with unknown/ multiple partner 2) Always use condoms during coitus. 3) In case of doubt early detection by doctor (correct two responses)	2x1 = 2	3
18.	a)	Mendelian disorder, determined by alteration or mutation in the single gene / point mutation / gene mutation	1	
	b)	Phenyl keto neuria Autosomal recessive trait in which lack of enzyme to convert phenylalanine to tyrosine / Accumulation of Phenyl Pyruvic acid in brain and excreted through urine.	2	3