

FEDERAL BOARD OF INTERMEDIATE AND SECONDARY EDUCATION
H-8/4, ISLAMABAD

NO.0-27/FBISE/RESH/CC/BIO/SSC/ 477

07 March 2012

NOTIFICATION

In continuation of FBISE's notification bearing No. 0-27/FBISE/RESH/CC/BIO/SSC/1032 dated 13-12-2010, the contents of syllabus for the subject of Biology of Class-X to be effective w.e.f. the academic year 2012 and onwards are enclosed herewith.

2. The book developed by the Punjab Textbook Board and published by PLD Publishers, Lahore may be consulted for reference and supplementary material.
3. SSC Part-II examination 2013 will be held in accordance with the revised curriculum.
4. A copy of the said contents is also being hoisted on the FBISE's website www.fbise.edu.pk.

Encl: As above.



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All heads of institutions affiliated
with FBISE at SSC level

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13. All Sectional Heads of FBISE, Islamabad
14. Incharge, FBISE website
15. Incharge, FBISE Sub-Office, Gilgit

BIOLOGY

For Class X

10. **GASEOUS EXCHANGE**
 - 10.1 Introduction
 - 10.2 Gaseous Exchange in Plants
 - 10.3 Gaseous Exchange in Man
 - 10.3.1 Air Passage Way and Lungs
 - 10.3.2 Mechanism of Breathing
 - 10.4 Respiratory Disorders and their Causes (Asthma, Bronchitis, Pneumonia, Lung Cancer)
 - 10.5 Effects of Smoking
11. **HOMEOSTASIS**
 - 11.1 Introduction
 - 11.2 Homeostasis in Plants
 - 11.3 Homeostasis in Man
 - 11.4 Urinary system of Man
 - 11.4.1 Structure and Functioning of Human Kidney
 - 11.4.1.1 Structure of Kidney
 - 11.4.1.2 Structure of Nephron
 - 11.4.1.3 Functioning of Nephron
 - 11.5 Disorders of Human Excretory System
 - 11.5.1 Kidney Stones and Treatment
 - 11.5.2 Kidney Failure and Dialysis
12. **COORDINATION**
 - 12.1 Introduction
 - 12.2 Types of Coordination (Nervous and Chemical Coordination)
 - 12.3 Human Nervous System
 - 12.3.1 Components of Nervous System
 - 12.3.2 Structure and Function of Neuron
 - 12.3.3 Reflex Action and Reflex Arc
 - 12.4 Receptors of Man (Eyes and Ears)
 - 12.5 Endocrine System
 - 12.5.1 Important Endocrine Glands (Pituitary, Thyroid, Pancreas, Adrenal, Gonads)
 - 12.6 Nervous Disorders (Paralysis and Epilepsy)
13. **SUPPORT AND MOVEMENT**
 - 13.1 Introduction
 - 13.2 Human Skeleton (Axial Skeleton and Appendicular Skeleton)
 - 13.3 Ball-n- Socket and Hinge Joints
 - 13.4 Action of Antagonistic Muscles at a Hinge (Elbow) Joint
 - 13.5 Disorders of Skeletal System (Arthritis and Osteoporosis)
14. **REPRODUCTION**
 - 14.1 Introduction
 - 14.2 Reproduction in Plants
 - 14.2.1 Asexual Reproduction in Plants
 - 14.2.2 Sexual Reproduction in Plants
 - 14.3 Asexual Reproduction in Animals
 - 14.3 Sexual Reproduction in Rabbit
 - 14.3.1 Male Reproductive System
 - 14.3.2 Female Reproductive System
 - 14.4 Population Planning
 - 14.5 Sexually Transmitted Diseases (AIDS)
15. **INHERITANCE**
 - 15.1 Introduction
 - 15.2 Chromosomes and Genes

- 15.3 Law of Segregation
- 15.4 Law of Independent Assortment
- 15.5 Variation and Evolution

16. MAN AND HIS ENVIRONMENT

- 16.1 The Ecosystem: Levels of Ecological Organization; Components
- 16.2 Flow of materials and energy in the ecosystem
- 16.3 Biogeochemical Cycles (Carbon Cycle & Nitrogen Cycle)
- 16.4 Interactions in the Ecosystem (Competition; Predation; Symbiosis)
- 16.5 Ecosystem Balance and Human impact on environment (Population growth, Urbanization, Industrialization, Deforestation)
- 16.6 Pollution, its Consequences and Control
- 16.7 Conservation of Nature

17. BIOTECHNOLOGY

- 17.1 Introduction
- 17.2 Fermentation and Baking Industry
- 17.3 Genetic Engineering
- 17.4 Single Cell Protein and its Uses

18. PHARMACOLOGY

- 18.1 Introduction
- 18.2 Medicinal Drugs and Addictive Drugs
- 18.3 Antibiotics and Vaccines

LIST OF PRACTICALS

For Class-X

10. Gaseous Exchange

- 1. Activity to compare the breathing rate at rest and after exercise
- 2. Experiment to find out how much air a person can take into his lungs
- 3. Demonstration through experiment of breathing out air into limewater that carbon dioxide is exhaled during respiration
- 4. Demonstration of the presence of tar in cigarette smoke and also by charts showing pictures of lungs of smokers and nonsmokers

11. Homeostasis

- 5. Examination of the structure of kidney (sheep kidney/model)

12. Coordination in Man

- 6. Observation and recording of the difference in quickness of response of the two types of coordination (by asking a student to say a few words in front of the class and observe the change in heartbeat)
- 7. Experiment to observe the contraction in the shin muscle of frog in a Petri dish filled with methylene blue and using 12 V DC current
- 8. Study of bull eye

13. Support and Movement

- 9. Investigation of the nature of bone (by putting three pieces of rib bone of lamb in water, NaOH and dilute HCl)

14. Reproduction

- 10. Observation of binary fission of ameba using slides, photomicrographs or charts
- 11. Observation of budding in yeast from prepared slides
- 12. Examination of a bulb (onion), corn (*Edocasia*), rhizome (ginger) or stem tuber (potato) and its cultivation to get new plants
- 13. Propagation by stem cuttings (rose or any locally available plant) and *Bryophyllum* leaf
- 14. Examination of Mustard flower, Gram seed and Maize grain
- 15. Investigation of the conditions for seed germination

15. **Inheritance**
 16. Recording the heights of class fellows to predict which kind of variation is it and presentation of the data of class fellows' heights in graphical form (either histogram or bar chart)
16. **Man and His Environment**
 17. Investigation of an ecosystem e.g. a balanced aquarium/pond
17. **Biotechnology**
 18. Investigation about the role of yeast and bacteria in the fermentation of flour and milk
18. **Pharmacology**

No Practical Activity

REQUIRED APPARATUSES

S. NO.	APPARATUSES	QTY
01.	Aquarium	01
02.	Aquarium net	01
03.	Balance	10
04.	Beaker (50ml, 100ml, 250ml, 500ml, 1000 ml)	10 Each
05.	Bell jar	20
06.	Blades (Safety razor)	20
07.	Burner (Bunsen)	10
08.	Burner (Spirit Lamp)	20
09.	Conical Flask	20
10.	Cotton Wool	04
11.	Differential air Thermometer	10
12.	Dissecting Board	20
13.	Dissecting Box	20
14.	Dissecting Tray	20
15.	Dropper	20
16.	Funnel 4" and 6" dm	20 Each
17.	Glass Tube	04 Packets
18.	Incubator	01
19.	Inoculation Loop	06
20.	Insect Net	12
21.	Lens Paper	06
22.	Light Source	10
23.	Magnifying Glass	10
24.	Measuring Cylinder	10
25.	Microscope (Compound: 10X eye piece, 4X, 10X and 40X objectives)	20
26.	Microscope (Dissecting)	20
27.	Microscope Cover Slip	04 Packets
28.	Microscope Slide	04 Packets
29.	Petri Dish	20
30.	Pipette (10 ml)	10
31.	Plant Presser	04
32.	Plate (Glass)	06
33.	Potometer	04
34.	Preserved Specimens of representative animals	01 Each
35.	Reagent Bottles	20
36.	Specimen Jars	10
37.	Stop Watch	05
38.	Stopper (Cork)	20
39.	Syringe	10
40.	Test Tube Rack	08
41.	Thermometer	20

42.	Thermos Flask	20
43.	Tripod Stand	10
44.	Watch Glass	20

REQUIRED SLIDES

S. NO.	SLIDES	QTY
01.	Bacteria	02
02.	Cells of onion epidermis and <i>Hydrilla</i> Leaf	02
03.	Conjugation in <i>Paramecium</i>	02
04.	Mitosis and Meiosis in Onion root tip	02
05.	Nerve Cell	02
06.	Rhizopus and Mushroom	02
07.	Section of Mammalian kidney	02
08.	Sections of animal tissues	02
09.	Transverse Section of Artery, Vein and Capillary	02
10.	Transverse Section of Human Small Intestine	02
11.	Transverse Section of Leaf, Root and Stem of <i>Brassica</i>	02
12.	Transverse Section of Mammalian Air sacs	02
13.	Transverse Section of Woody stem	02

REQUIRED CHEMICALS

S. NO.	CHEMICALS	QTY
01.	Acetic acid	2.5 Litter
02.	Alcohol	2.5 Litter
03.	Ascorbic acid	2.5 Litter
04.	Benedict's solution	2.5 Litter
05.	Bromothymol blue solution	2.5 Litter
06.	Chloroform	2.5 Litter
07.	Copper sulfate solution	2.5 Litter
08.	Diastase	2.5 Litter
09.	Distilled water	2.5 Litter
10.	Eosine	2.5 Litter
11.	Ethanol	2.5 Litter
12.	Formaline	2.5 Litter
13.	Glucose solution 01%	2.5 Litter
14.	Glycerine	2.5 Litter
15.	Hydrogen carbonate indicator	2.5 Litter
16.	Iodine solution 01%	2.5 Litter
17.	Lime water	2.5 Litter
18.	Methylene Potassium hydroxide blue 01%	2.5 Litter
19.	Starch	2.5 Litter
20.	Sudan III solution	2.5 Litter
21.	Trypsin	2.5 Litter
22.	Wax	2.5 Litter

REQUIRED CHARTS

S. NO.	CHEMICALS	QTY
01.	Animal and Plant Cell	01
02.	Biodiversity	01
03.	Biogeochemical Cycles	01
04.	Cell Division	01
05.	Germination	01
06.	Human Body Systems	01

07.	Mandelian Genetics	01
08.	Mechanism of Enzyme Action	01
09.	Plant Propagation	01
10.	Reflex Arc	01
11.	Sexual Reproduction in Plants	01
12.	Structure of DNA	01
13.	Transport of Material in Plants	01

REQUIRED MODELS

S. NO.	MODELS	QTY
01.	DNA	01
02.	Human Brain	01
03.	Human Diaphragm and Intercostal Muscles	01
04.	Human Ear	01
05.	Human Eye	01
06.	Human Kidney	01
07.	Human Skeleton	01
08.	Neuron	01
09.	Pitcher Plant	01
10.	Sundew Plant	01