Entrance examination for grade 12 from 1995 – 2011

Grade 11 unit 1

The science of biology

1, Which of the following alternatives is consistent with the accepted sequence of scientific process?

A, Data from experiment, Hypothesis, Theory, Law

B, Hypothesis, Theory, Data from experiment, Law

C, Theory, Law, Hypothesis, Data from experiment

D, Hypothesis, data from experiment, Theory, Law

2, Which of the following disciplines links biology with geology?

A, Ethno biology  B, Paleontology  C, Anthropology  D, Geography

3,  Select the field of biology that is concerned with the study of cells?

A, Histology  B, Morphology  C, Cytology  D, Ecology

4, From which of the following scientists usually formulate a hypothesis?

A, Observation  B, Prediction  C, Theory  D, experiment

5, If letter d is observed under microscope, what would its image look like?

A, Letter d itself  B, Letter b  C, Letter q  D, Letter p

6, Using the following information choose the alternative that show the correct sequence of the scientific method?

1, Identify a problem  2, Observation

3, Formulate hypothesis  4, performing an experiment

A,  1,2,4,3  B, 1,4,2,3  C, 3,4,2,1  D, 2,1,3,4

7, Which one of the following piece of equipment do biologists use to sterilize objects?

A, Water bath  B, Incubator  C, Centrifuge  D, Autoclave

8, If an observer move microscope slide away from him while direction would the image of the object on the slide move?

A, Away from the observer  B, Toward the observer

C, Toward the left of the observer D, Toward the right of the observer

9, Which of the following is not recommended in an experiment?

A, Omitting the control group B, Using large sample size

C, Testing one variable at a time D, Proper recording of the data

10, In an experiment, what do we call the group that does not recessive the variable being tested?

A, Control group B, experimental group C, Replication D, Observation group

11, What is the term used to describe the tentative explanation given to scientific problem?

A, Data B, Hypothesis C, Theory D, Principle

12, If you wrote and observe letter p under microscope, which image would you see?

A, Letter p B, Letter b C, Letter d D, number 9

13, If an object is magnified 500x when viewed under microscope fitted with 40x objective lens, what is the magnification power of the ocular lens?

A, 10x B, 12.5x 50x D, 95x

14, Suppose students noticed that many plants in a garden died following an excess application of certain fertilizer, to which step of scientific method would this correspond?

A, Formulation of hypothesis B, Experimentation

C, Observation D, Collecting information to support hypothesis

15, Suppose in an experiment designed to test hypothesis that water is essential for seed germination, equal number of soaked seeds were placed in vials A, B, and C ( group I ) and dry seeds in vials D and E (group II), Which one of the following is not true about this experiment?

A, vials D and E are replications

B, Group I is experimental group

C, The experiment lacks a control group

16, What is theory in biology?

A, A statement without proof

B, Its growth rate eventually decline

C, Hypothesis that has been supported by experimental and/or observations

D, Proof that a hypothesis is true and that it is ready to conduct experiments to prove or disprove the hypothesis

17, Which area of biology studies how growth differentiation and morphological changes?

A, Physiology B, Development C, Taxonomy D, Cytology

18, What would be approximate image size of a cell with size of 0.03 microns viewed under compound microscope with magnification power marked as 10X on the eye piece and 100X on the objective lenses?

A, 10 microns B, 20 microns C, 30 micros D, 40 microns

19, Using the following information, choose the alternative that shows the correct sequence of scientific method?

1, Forming hypothesis 2, Performing an experiment

3, Identifying the problem 4, Observation

A, 4,3,1,2 B, 4,3,2,1 C, 2,1,4,3 D, 3,2,4,1

20, Which one of the following corresponds to the first step of the scientific method?

A, Analyze the data collected B, Identify the topic to be studied

C, under take the research D, State the results

21, When trying to view an object under the microscope and after switching to the light power objective, which adjustment knob do you use in order to see a clear picture?

A, The course adjustment B, the middle adjustment

C, The fine adjustment D, The arm of the microscope

22, Choose the alternatives that illustrate the medical application of biotechnology?

A, biofuel production B, Biosensors for testing blood glucose level

C, DNA finger printing technology D, Protein production rom single cells

23, If you observe a piece on which several small squares are drawn under which of the following magnification of the microscope do you count more number of squares?

A, 40X B, 100X C, 400x D, 1000X

24, In scientific method which one of the following is used to test a hypothesis?

A, Observation B, theory C, Experiment D, Prediction

25, After dividing plant materials into two groups and experimenter has applied a fertilizer to group A plants and not group B plants, What are group B Plants?

A, Control group B, experimental group C, Test group D, Variable group

26, Which one of the following best describes modern biology?

A, The study of animals B, the study of animals and plants

C, The study of all living things D, The study of transfer of energy

27, What is the total magnification power of a microscope with 10x ocular lens and 25x objective lens?

A, 2.5X B, 35X C, 250X D, 2.500X

28, What does an ornithologist study?

A, The biology of animals B, the biology of frogs and reptiles

C, The biology of fishes D, the biology of birds

29, A field biologist who studies the behavior of primates in the forest is most likely expected to frequently use which method of data collection?

A, experiment Animal dissection C, Observation D, Comparative biochemistry

30, Which one of the following objective and ocular combinations of the light microscope, respectively, gives the largest field of vision?

A, 10x and 10x B, 4x and 10x C, 40x and 12x D, 100x and 10x

31, What term is used to express the ability of microscope to show detail clearly?

A, Enlargement C, reduction C, Magnification D, Resolution

32, Which of the following corresponds to the beginning step of scientific work?

A, Testing hypothesis B, Making observation C, Conducting experiment D, Drawing conclusion

33, Which tool of biologist is more suitable culturing bacteria in laboratory?

A, Test tubes  B, Microscopes  C, Petridish  D, Beakers

34, Which one of the following types of microscope is the best to show the detail of the surface of the object?

A, optical microscope  B, Compound microscope

C, Scanning electron microscope  D, transmission electron microscope

35, Which of the following laboratory equipment is used to separate the organelles of the cell according to their density?

A, Incubator  B, Centrifuge  C, Measuring cylinder D, Filter paper with fine pores

36, In experiment that is testing the effect of temperature on the germination rate of certain seeds, in which one of the following should the experimental and the control group differ?

A, The amount of water they receive  B, The age of the seeds assigned to them

C, The number of seeds assigned to them  D, The temperature at which they are kept

37, Which of the following is not in agreement with scientific method?

A, Putting forward testable hypothesis  B, Carrying out experiments in duplicates

C, putting forward personal value judgment  D, Analyzing results and drawing conclusion

38, To which major area of relevance and applications of biology is the production of transgenic organisms related?

A, Agriculture  B, Environment  C, Biotechnology  D, Medicine

39, A cell was examined under compound light microscope with eyepiece lens 10x and objective lens 40x. What is the total magnification power of the microscope?

A, 40  B, 30  C, 10  D, 400

40, In an experiment designed to test an effect of different concentration of fertilizer on the growth rate of a plant, which one of the following is dependent variable?

A, The growth rate of the plant B, Plants assigned to the control group

C, Concentration of the fertilizer applied D, Plants assigned to the experimental group

41, A biologist applied a scientific method repeatedly, gathered a large amount of supporting experimental data and finally described a pattern or relationship between different factors. What is the best term that refers to the facts established in this way?

A, Theory B, Hypothesis C, Prediction D, Law

42, Which of the following scientific methods comes following observation?

A, Prediction B, experiment C, Hypothesis D, Theory

43, What is the specialist in biology called if he/she studies fossils to generate new knowledge on the origin and evolution of living things of past geological period?

A, Geneticists B, Ecologists C, Paleontologists D, Comparative biochemists

44, Which of the following field equipment is used to determine an exact location of the place?

A, Theodolite B, global positioning system C, Field microscope D, field PH kit

45, What is the theory in biology?

A, The explanation of some aspects of natural world that have been repeatedly confirmed through repeated observation and experimentation

B, A rejected hypothesis

C, A hypothesis not supported by experiment and observation

D, An opinion or educated guess resulting from observation

46, For which of the following is a theodolite used in biology education?

A, measuring the height of tree

B, Recording positions where a species is found

C, Measuring the rate of flow of water in a cell

D, Measuring the PH of water or soil

47, What is the branch of biology that studies the about origin and gradual changes of living things?

A, Microbiology B, Evolution C, Mutation D, Reproduction

48, While conducting research, which of the following should a biologist do first?

A, Generate hypothesis B, conduct experiment

C, Communicate the result D, Identify research question/problem

49, Which field studies the way in which individual trait organisms are transmitted from one generation to the next?

A, Genetics B, ecology C, evolution D, Morphology

50, Biotechnology can be applied in environmental remediation. To which of the major application areas of biotechnology is this most related?

A, Medicine and nutrition B, Medicine and industry

C, Biodiversity and industry D, Agriculture and environment

51, Suppose an experiment conducted to test new drug, 20 people were given the drug and 20 people a placebo. What is the control of the experiment?

A, People who receive the placebo B, People who receive the new drug

C, the new drug itself D, The new drug and the placebo

52, Which of the following steps of the scientific methods comes before all the others?
A, Hypothesis B, Experiment C, Conclusion D, Reporting the result

53, What we call a scientist who specializes in studying insects?

A, ecologist B, Paleontologist C, Entomologist D, microbiologist

54, Which tool of the biologists more frequently used to study cell structure in the laboratory?

A, Dissecting kit B, centrifuge C, Microscope D, Petridish

55, Which of the following is formulated as possible outcome of an experiment?

A, hypothesis B, prediction C, Data analysis D, Recording the data

56, In scientific method, what is the importance of back ground research for a given problem?

A, To formulate a hypothesis B, To make prediction

C, To prepare report of the result D, To make conclusion

57, What is the ultimate source of scientific knowledge?

A, Observation B, Guessing C, Trial and error D, Observation and experimentation

58, What did Francesco Redi proves through his scientific experiment?

A, Maggot appeared spontaneously on foods placed anywhere

B, Maggots do not appear in foods kept in jars that are protected with a cover

C, Maggot do not appear in foods kept in open jars

D, Flies appear spontaneously on rotting meats kept in closed or open jars alike

59, What do you call reasoning techniques in science where general principles are used to analyze specific cases?

A, Introduction B, deduction C, Pseudo deduction D, Pseudo induction

60, What does ethnologist study

A, insect diets B, soil types C, Fossil fuel D, Animal; behavior

61, Choose the step that comes at last step in the scientific method?

A, proposing the research hypothesis B, Formulation of scientific theory

C, Conducting experiments D, Making prediction

62, Which of the following is a worthwhile the biological problem scientific investigation?

A, Estimation of the amount of carbon in the forest ecosystem

B, How a carrying dog can tell who among elders of the village is going to die next

C, How witchcrafts inflict bad health by curving a healthy by curving a healthy person

D, How the traditional medicine men/women cure a possessed person

63, Which of the following laboratory glassware is used for culturing bacteria?

A, Petri dish B, Test tube C, Filter paper D, Measuring cylinder

64, Which of the following is the correct sequence of steps in the scientific research?

A, Hypothesis formation → Conclusion→ Experiment → Question

B, Question → Hypothesis formation → Experiment →Conclusion

C, Hypothesis formation →Question → experiment→ Conclusion

D, Question→ hypothesis formation→ Conclusion →Experiment

65, For what purpose do biologists use GPS receiver?

A, To produce area maps B, To measure tree height

C, To estimate tree ages D, To count tree rings

66, In an experiment designed to study the effect of temperature on the rate of germination, which of the following should the experimenter vary?

A, Seed number B, Water quality C, Temperature D, Seed size

67, What is the specific name of biological scientists who do research that tries to find evidence of life on other planet in the solar system?

A, Neurobiologists B, paleontologist C, Astrobiologists D, Bio geographers

68, How does a simple microscope differ from a compound microscope?

A, A simple microscope has no lens B, A simple microscope has got two lenses

C, A simple microscope uses mirror as lens D, A simple microscope has only one lens

69, Which of the following types of microscope is most suitable for detailed study of the surface of an object?

A, Field microscope B, optical microscope

C, Scanning electron microscope D, dissecting microscope

70, Which of the following is consistent with science?

A, Proof by investigation of the causes of phenomena

B, Proof by a reference to a respected leader

C, Proof by reference to unknown objects

D, Proof based on lessons from a person one believes

71, Which of the following are all tools mainly used in the laboratory rather than in field situation?

A, Centrifuge, microscope, Measuring cylinder, Petri dish

B, Flow meters, centrifuges, theodolites, Microscope

C, Centrifuge, plant presses, flow meters, microscope

D, Theodolites, petri dish, GPS receivers, measuring cylinder

72, Which aspect of biotechnology is considered strictly genetic engineering?

A, Providing gene therapy B, Production of new types of plants

C, Monoclonal antibodies D, Mapping of the human genome

73, The word science comes from Latin word ‘scientia ‘means

A, Study B, Experiment C, Life D, Knowledge

74, Which of the following laboratory tools is least accurate to measure 1 ml of liquid?
A, Pippete B, Measuring cylinder C, Burette D, Beaker

75, In a report of scientific experiment, description of which of the following comes before all the others?

A, Procedure B, results C, Hypothesis D, conclusion

76, Which of the following is publicity an undesired research activity?

A, breeding a new crop variety

B, Synthesis of a new vaccine

C, Manufacture of a new effective drugs

D, Breeding a new pathogenic microorganisms

77, Among the following, choose the field which is a branch or a part of biotechnology?

A, Parasitology B, Immunology C, Physiology D, genetic engineering

78, Which of the following is used by biologists to study the internal anatomy of the experimental animals?
A, Dissecting kit B, Hand lens C, Petri dish D, GPS

79, Which of the following is the best scientific approach come to conclusion evidence showing that a given event is caused by a certain factor?

A, having strong belief B, Making a good guess

C, Conducting an experiment D, Making systematic observation

80, Which of the following is a step in starting a research process?

A, Searching source of information to locate problem

B, Survey of related literature

C, Identification of a problem

D, searching for solution to the problem

81, For which of the following purpose Global positioning System (GPS) used?

A, Map of an area B, Theodolite C, Microwave D, Satellite signal

82, The set in which scientists usually conduct two or more sets of the same experiment at the same time?

A, Experimental group B, Experimental design C, replication D, control group

83, What material do microbiologists use to culture bacteria in the laboratory?

A, Most soil B, the royal jelly C, Agar nutrient D, Mixture of iodine and sugar

84, For which of the following purpose biologists use centrifuge?

A, Measuring volume B, Fractionation of cell content

C, Culturing microorganisms D, Magnifying cell parts

85, What is the type of scientific research that is directly concerned with studies of the ways of solving problems related too human needs?

A, Basic science B, current science C, Space science D, Applied science

86, Which of the following is the Greek word for life?

A, Bios B, Logos C, Cientia D, Cell

87, The hypothesis which scientists try to disprove is called

A, Alternative hypothesis B, Ad hoc hypothesis C, Auxiliary hypothesis D, Null hypothesis

88, In which of the following is the current state if biology more of promises than realized major contributions?

A, food production and population control

B, Pest control and understanding about diseases

C, Food production by GMO and genetic engineering

D, Understanding of health and biodiversity conversation

**Answer**

| No. | Answer | No. | Answer | No. | Answer | No. | Answer |
|---|---|---|---|---|---|---|---|
| 1 | D | 26 | C | 51 | A | 76 | D |
| 2 | B | 27 | C | 52 | A | 77 | D |
| 3 | C | 28 | D | 53 | C | 78 | A |
| 4 | A | 29 | C | 54 | C | 79 | C |
| 5 | D | 30 | D | 55 | B | 80 | C |
| 6 | D | 31 | D | 56 | A | 81 | A |
| 7 | D | 32 | B | 57 | D | 82 | A |
| 8 | B | 33 | C | 58 | B | 83 | C |
| 9 | A | 34 | D | 59 | B | 84 | B |
| 10 | A | 35 | B | 60 | D | 85 | D |
| 11 | B | 36 | D | 61 | B | 86 | A |
| 12 | C | 37 | C | 62 | C | 87 | D |
| 13 | B | 38 | C | 63 | A | 88 | C |
| 14 | C | 39 | D | 64 | B | 89 | |
| 15 | C | 40 | A | 65 | A | 90 | |
| 16 | C | 41 | A | 66 | C | 91 | |
| 17 | B | 42 | C | 67 | C | 92 | |

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|---|---|---|---|---|---|---|---|
| 18 | C | 43 | C | 68 | D | 93 | |
| 19 | A | 44 | C | 69 | C | 94 | |
| 20 | C | 45 | B | 70 | A | 95 | |
| 21 | C | 46 | A | 71 | A | 96 | |
| 22 | B | 47 | B | 72 | B | 97 | |
| 23 | D | 48 | D | 73 | D | 98 | |
| 24 | C | 49 | A | 74 | D | 99 | |
| 25 | A | 50 | D | 75 | C | 100 | |