PART-A

Time : 60 Minutes] *[Total Marks : 50*

Instructions : (1) There are **50** objective type questions in this part and **all** are **compulsory**.

(2) The questions are serially numbered from **1** to **50** and each carries **1** mark.

(3) You are supplied with separate OMR sheet with the alternatives (A) ○, (B) ○, (C) ○, (D) ○ against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

July 2013

■ From the following **1** to **50** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against the number in OMR sheet.

■ Each question carries **1** mark.

1. Which metal is not more active than the magnesium ?

(A) Potassium (B) Calcium (C) Iron (D) Sodium

2. Which metal blocks are used to prevent the corrosion in steamer along with plates of iron in sea water ?

(A) Nickel (B) Carbon (C) Magnesium or Zinc (D) Mangenize

3. Which of the following is used as a preservative in juice of fruits and jams ?

(A) SO_2 (B) CO_2 (C) NH_3 (D) H_2

4. Which of the following non-metallic element possesses luster ?

(A) Iodine (B) Sulphur (C) Phosphorus (D) Carbon

5. What is the chemical formula of Oleum ?

(A) $H_2S_2O_3$ (B) H_2SO_3 (C) $H_2S_2O_7$ (D) H_2SO_4

6. Which process is important for osmoregulation ?

(A) Respiration (B) Circulation (C) Excretion (D) Nutrition

7. Shown here is a part of a blood report.

Lab. No.	: 1163005
Patient's Name	: Mr. Nikhil Singh
Age / Sex	: 23/M

STAR DIAGNOSTICS
Laboratory, R.I.A. & Research Centre
Date : 10-10-2010

COMPLETE BLOOD COUNT

Test	Result	Reference Range
Blood Haemoglobin Levels	: 13.3 units	13.00 - 18.00
R.B.C. Count	: 4.98 units	4.50 - 5.50
Total W.B.C. Count	: 12800 units	4,000 - 11,000
PCV	: 41.8 units	40.00 - 54.00
Platelet count	: 230.0 units	150 -450

(Note : 'Reference Range' shows the range of normal values.)

The amount of which of the blood components in the report shown above indicates that something could be wrong in the body ?

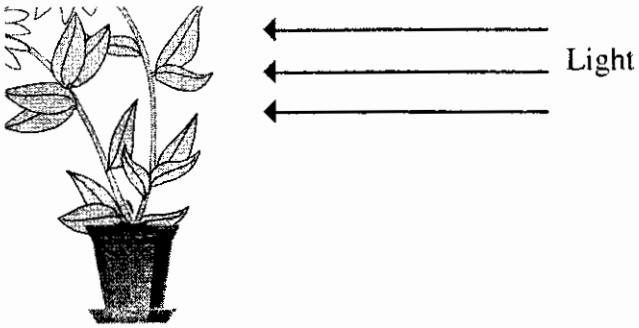
(A) Platelet Count (B) R. B. C. Count

(C) Total W.B.C. Count (D) Blood Haemoglobin Levels

8. Bowman's Capsule Possesses a mass of capillaries, which is known as ?

(A) Veins (B) Blood capillaries (C) Glomerulus (D) Arteries

9. The diagram shows a plant which has received light from one side only. Which characteristics is the plant showing ?



(A) reproduction and nutrition (B) growth and irritability (response)

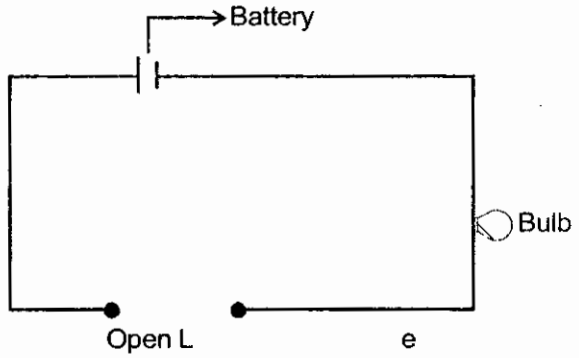
(C) irritability (response) and reproduction (D) excretion and growth

10. Hypothalamus is a part of ..... .

(A) Fore brain (B) Cerebellum (C) Mid brain (D) Hind brain

11. The setup shwon here is to be used by group of students to classify materials as conducting and non-conducting. The materials they want to classify are :

Pencil Lead	Wax	Glass	Paper	Plastic	Paper Clip	Copper wire	Aluminium Foil



What is the very FIRST thing that they should do before starting to-test any materials?

(A) Without placing anything between the open leads, connect the circuit and check if the bulb lights up.

(B) Check with a person working in the laboratory whether the given materials are conductors.

(C) Place a known insulator between the leads given and check if the bulb glows.

(D) Place the items one by one between the open leads given and if the bulb glows then list Ahem as conductors.

12. Si is a ....

(A) insulator (B) semiconductor (C) alloy (D) conductor

13. In volta's electric cell which of the following energy, conversion take place ?

(A) Electrical energy in to chemical energy

(B) Chemical energy in to electrical energy

(C) Chemical energy in to heat energy

(D) Heat energy in to electrical energy

14. 15 Ω, 10 Ω and 5 Ω resistors are connected in parallel. What is the equivalent resistor of this connection ?

(A) Less than 5 Ω (B) more than 30 Ω

(C) 30 Ω (D) more than 15 Ω

15. With the help of which law the direction of a magnetic field can be decided ?

(A) Fleming's left hand rule (B) Fleming's. right hand rule

(C) Right hand thumb rule (D) Faraday's law

16. Red coloured wire coming out of electric board is known as ..... .

(A) live wire (B) earthing wire (C) fuse wire (D) neutral wire

17. What is the frequency of 220V AC ?

(A) 50 Hz (B) 220 Hz (C) zero (D) 60 Hz .

18. Matter in the core region of the sun is in ..... state.

(A) Plasma (B) Liquid (C) Gaseous' (D) Solid

19. According to astronomer ptolemy what is in the centre of universe ?

(A) Earth (B) Milky way (C) Stars (D) Sun

20. A 400 km thick, bright layer around the sun is known as ..... .

(A) Photosphere (B) Chromosphere (C) Terrestrial (D) None of these

21. What are shooting stars ?

(A) Stars (B) Meteors (C) Meteorite (D) Comets

22. C_3H_8 is the molecular formula of which compound ?

(A) Propane (B) Ethane (C) Butane (D) Methane

23. How many carbons are present in the mixture of hydrocarbon of natural gas ?

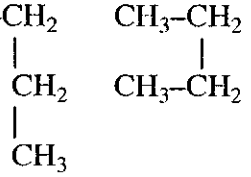
(A) 1 to 4 (B) 1 to 3 (C) 2 to 4 (D) 1 to 2

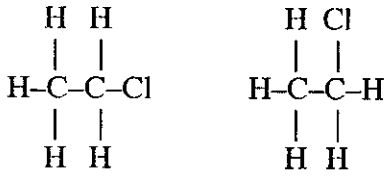
24. What is the matured form of coal ?

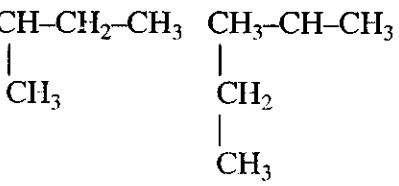
(A) Lignite (B) Bitumen (C) Anthracite (D) Peat

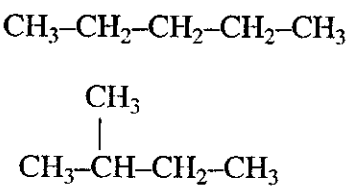
25. Isomers are molecules that have the same molecular formula, but a different arrangement of the atoms in space. That excludes any different arrangements which are simply due to the molecule rotating as a whole, or rotating about particular bonds.

Which of the following sets of molecules represent isomers ?

(A) 

(B) 

(C) 

(D) 

26. Which functional group is possessed by ketone ?

(A) > C = O (B) –CHO (C) –COOH (D) - OH

27. If one of the hydrogene atom of an alkane is displaced by hydroxyl group than which type of compound we get ?

(A) Ketone (B) Ester (C) Alcohol (D) Aldehyde

28. By burning ethanol in the air which type of flame is produced ?

(A) Colourless (B) Blue (C) Yellow (D) Red

29. The filaments of certain algae breaks again and again and each part develope as individual algae, which type of process is this ?

(A) Fragmentation (B) Binary Fission

(C) Multiple Fission (D) Budding

30. In which disease lesions in mucus membrane of urinogenital track and ulcer take place?

(A) Genetical Harpis (B) AIDS (C) Syphilis (D) Gonorrhea

31. When will sex determination in human take place ?

(A) During fission of unfertilised egg. (B) When fertilised ovum take place

(C) During fertilisation (D) During sexual intercourse

32. Where is the origin of Homo sapiens ?

(A) Philippines (B) Eurasia (C) Indonesia (D) Africa

33. Which disease take place when there is a increase of sugar in blood and urine

(A) Dwarfism (B) Diabetes (C) Goiter (D) Hyperthyroidism

34. Carbon atoms forms ..... bonds with other carbon atoms.

(A) ionic (B) metallic (C) covalent (D) hydrogene

35. 4×10^{11} nm = _____?_____ m.

(A) 400 (B) 40 (C) 0.4 (D) 4000

36. Goldsmiths often add another metal (usually copper) to pure gold while making ornaments. Which of these could be the possible reason

(A) to increase its melting point (B) to increase its hardness

(C) to reduce its specific heat (D) to reduce its electrical conductivity

37. How the exact pH of an aqueous solution is measured ?

(A) Litmus paper (B) pH meter. (C) Universal indicato (D) pH paper

38. At which value of pH of the innerside of the mouth, decay, of teeth take place ?

(A) Higher than 3.5 (B) Higher than 5.5

(C) Lower than 5.5 (D) Lower than 3.5

39. On which factor the types of acid, concentrated and dilute acid, are based on ?

(A) On property (B) On ionisation (C) On quantity (D) (A) and (B) both

40. In human digestive system, the enzyme amylase is secreted by which organ ?

(A) Stomach (B) Salivary glands (C) Liver (D) Pancreas

41. Which of the following is an example of non-biodegradable waste ?

(A) Paper (B) Fruits (C) Polythene (D) Vegetables

42. Which wavelength of the harmful UV radiations prevented by Ozone layer from entering the earth's atmosphere?

(A) 200 nm - 310 nm (B) 400 nm - 700 nm

(C) 320 nm - 400 nm (D) more than 700 nm

43. In which book endangered plant species names are published ?

(A) Yellow Data Book (B) Green Data Book

(C) Red Data Book (D) Endangered species book

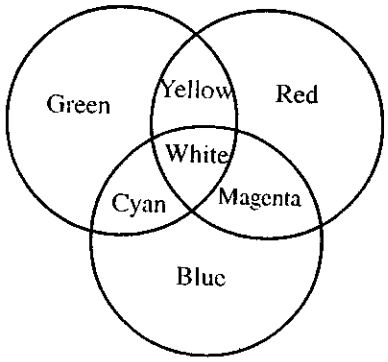
44. Which type of source of air pollution, volcano is ?
(A) artificial and natural (B) artificial (C) natural (D) man made

45. The absolute refractive index of any medium is always .....
(A) 1 (B) < 1 (C) > 1 (D) 0

46. Which of the lens with focal length 10 cm, 20 cm, 25 cm and 50 cm has maximum power ?
(A) 50 cm (B) 20 cm (C) 25 cm (D) 10 cm

47. Which of the following are primary colours ?
(A) Red, Green, Blue (B) Red, Green, Violet
(C) Yellow, Green, Blue (D) Red, Blue, Yellow

48. Any three colours of light, which produce white light when combined with the correct inten-sity, are called PRIMARY COLOURS of light. (Red, Green and Blue)
Colours produced by the addition of equal intensities of two primary colours of light are called SECONDARY COLOURS of light. (Yellow, Cyan and Magenta)
Any two colours of light, which produce white when combined, are said to be COMPLEMENTARY' COLOURS of each other.
Study the figure given here and answer the following question.
Which of the following colours is a complementary colour of 'BLUE'?
(A) Yellow
(B) Magenta
(C) Red
(D) Cyan



49. Which colour of light scatters maximum due to atmosphare ?
(A) Red (B) Yellow (C) Green (D) Blue

50. Which metal is used in thermometer?
(A) Copper (B) Mercury (C) Sodium (D) Silver

PART-B

Time : 2 Hours] *[Maximum Marks : 50*

Instructions : (i) There are total **four** sections in this part and total 18 questions.
(ii) **All** questions are compulsory.
(iii) Draw neat labelled diagrams wherever required.
(iv) There are internal options in some questions. Pay attention to them.
(v) Figures to the right indicate marks.

SECTION-A

❖ **Answer the questions 1 to 5 in approximately 30 words. (2 marks each)** **10**

1. Write .the four improvement expected in the future due to Nano technology.

OR

1. What is the future challenges using nano technology ?
2. If an electric bulb connected to 220 V line draws an electric current of 0.5 A, then what wil be the resistance of filement of a bulb ?

3. What is neutralisation reaction ? Write two neutralisation reactions.

4. Explain the statement : Anthracite is more used than the bituminous coal.

OR

4. Write two difference between LPG and CNG.

5. What is wild life ? What is its importance ?

SECTION-B

❖ **Answer the questions 6 to 10 in approximately 30 words. (2 marks each)** **10**

6. What is solar system ? Write the name of the planet of the solar system in sequence.

7. What is circulatory system ? Write the name of circulatory fluids and which material they transport ?

8. Give scientific reason. It is advisable to use Iodine containing salt in daily food.

9. In what way homologus organ give evidence for evolution ?

OR

9. In what way analogous organs give evidence for evolution ?

10. What are global problems ? Write the global problems faces by living organism.

SECTION-C

❖ **Answer the questions 11 to 15 in approximately 50 words. (3 marks each)** **15**

11. Write the three difference between Myopia and Hypermetropia.

12. What precautions should be taken during the use of electricity ?

OR

12. Write short note : Fuse

13. Describe Frasch's method of extraction of sulphur.

14. Write the uses of condensation polymer and Addition polymer.

OR

14. Explain the fermentation reaction and its importance.

15. What is artificial propagation in plants. Write the names of method used for artificial propagation in plants and in which plants they are used.

SECTION-D

❖ **Answer the questions 16 to 18 in approximately 100 words. (5 marks each)** **15**

16. Derive the formula for spherical mirror $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$.

17. Explain the extraction of iron by blast furnace.

OR

17. Explain the Hall-Heroult method to obtain aluminium from alumina by electrochemical reduction.

18. Explain the respiratory system in human.

OR

18. Draw a labelled diagram of the human digestive system. With the help of this diagram, describe the process of digestion of food in human.

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