This Question Paper contains 12 Printed Pages.

Sl. No. 903915

N-11 (E)

(MARCH, 2012)

પ્રશ્ન પેપરનો સેટ નંબર Set No. of Question Paper
9

PART - A

Time : 75 minutes] ***[Maximum 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.

- 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. Who invented the simple battery first ?

(A) Faraday (B) Ohm

(C) Volta (D) Alva Edison

2. Which of the following oxide is not a neutral oxide ?

(A) CO (B) N_2O

(C) H_2O (D) SO_2

3. What is IUPAC name of Acetone ?

(A) Propanal (B) Propanone

(C) Propanol (D) Propanoic acid

4. What is the diameter of nano-shells which are attached only to Cancerous cells ?

(A) 400 nm (B) 200 nm

(C) 100 nm (D) 50 nm

5. Which metal causes Minamata disease ?

(A) Copper (B) Lead

(C) Manganese (D) Mercury

6. What is the chemical formula of Silver glance ?

(A) AgCl (B) Ag_2S

(C) SiO_2 (D) $AgNO_3$

7. Which organic compounds contains —OH functional group ?

(A) Carboxylic acid (B) Ketone

(C) Aldehyde (D) Alcohol

8. What is the atomic number of Transuranic elements ?

(A) $Z = 92$ (B) $Z < 92$

(C) $Z > 92$ (D) $Z \leq 92$

9. Give the name of theory proposed by Ernst Haeckel.

(A) Theory of germplasm (B) Theory of mutation

(C) Theory of recapitulation (D) Theory of natural selection

10. Which space shuttle met with an accident at the time of landing, in which Indian Astronaut Kalpana Chawla died in February 2003 ?

(A) Colombia (B) Challenger

(C) Discovery (D) PSLV

11. Which compound is condensation polymer ?

(A) Nylon (B) PVC

(C) Natural Rubber (D) Teflon

12. What will be produced in a reduction reaction of Methanal with H_2 gas in the presence of Pd catalyst ?

(A) CH_3OH (B) C_2H_5OH

(C) C_3H_7OH (D) $C_4H_{10}OH$

13. Which structure is developed in the wall of Uterus to provide nutrition to foetus ?

(A) Amnion (B) Fallopian tube

(C) Umbilical cord (D) Placenta

14. Pons connects which two organs with the help of transverse band of nerves ?

(A) Nerves of brain and spinal cord.

(B) Both the cerebral hemispheres.

(C) Cerebellum and Central nervous system.

(D) Sympathetic and Parasympathetic.

15. Which of the following hormones is responsible for shedding of leaves in plants ?

(A) Abscisic acid (B) Gibberellin

(C) Cytokinin (D) Auxin

16. Which metal of the following metals is more active ?

(A) Mg (B) Zn

(C) Ca (D) Al

17. In which plant, vegetative propagation by leaf takes place ?

(A) Sweet potato (B) Potato

(C) Phalsa (D) Bryophyllum

18. What is the percentage of Carbon in hard steel ?

(A) 0.1 to 0.4 (B) 1.5 to 2.5

(C) 2.5 to 3.5 (D) 0.5 to 1.5

19. When current passes through a conductor, in which direction magnetic field is produced ?

(A) In a direction of current.

(B) In the opposite direction of current.

(C) Circular around the conductor.

(D) Perpendicular to the direction of current.

20. Which organism normally shows asexual reproduction by fragmentation ?

(A) Oscillatoria (B) Amoeba

(C) Paramoecium (D) Penicillium

21. Which material provides the mechanical support to cells of trachea ?

(A) Prothrombin (B) Cellulose

(C) Lignin (D) Pectin

22. How many Light-year away, the Sun is located from the galactic centre ?

(A) 250 (B) 30,000

(C) 22.5 (D) 15,000

23. In which material, Sulphur is soluble ?

(A) Carbon disulphide (B) Bromine

(C) Heavy water (D) Distilled water

24. Give the chemical formula of Calcium sulphate hemihydrate.

(A) $CaSO_4 \cdot 2H_2O$ (B) $CaSO_4 \cdot \frac{1}{2}H_2O$

(C) $CaSO_4 \cdot 10H_2O$ (D) $CaSO_4 \cdot H_2O$

25. Which pair of the following is complementary colours ?

(A) Blue and yellow (B) Green and yellow

(C) Red and magenta (D) Blue and magenta

26. What is the formula for Electric Power ?

(A) $P = I^2Rt$ (B) $P = \frac{W}{t}$

(C) $P = VI \times t$ (D) $P = VQ$

27. What is the name of finger like projections in the small intestine of human ?

(A) Vermiform Appendix (B) Villi

(C) Gizzard (D) Food vacuole

28. Who developed the treatment technique for industrial and sewage waste water ?

(A) NEERI (B) NACO

(C) WHO (D) ISRO

29. Which metal oxide is used to obtain blue coloured glass ?

(A) Ferric oxide (B) Chromium oxide

(C) Manganese oxide (D) Cobalt oxide

30. Which mineral is necessary for blood clotting ?

(A) Calcium (B) Magnesium

(C) Phosphorus (D) Iron

31. By which, hormones are circulated ?

(A) Water (B) Nerve

(C) Blood (D) Cytoplasm

32. Which catalyst is used for the industrial production of Hydrogen ?

(A) Iron (B) Nickel

(C) Vanadium pentoxide (D) Palladium

33. Which satellite is launched by India for Direct to Home (DTH) ?

(A) INSAT - 4 A (B) IRS-1

(C) METSAT (D) CARTOSAT

34. Which compound is used for bleaching cloths in laundry ?

(A) Bleaching Powder (B) Washing Powder

(C) Baking Powder (D) Plaster of Paris

35. Which planet has atmosphere up to 1% of the atmosphere of the Earth ?

(A) Mars (B) Venus

(C) Jupiter (D) Saturn

36. Give the unit of rate of reaction.

(A) Molar (B) Second

(C) Second/Molar (D) Molar/Second

37. Which plant shows thigmonastic response ?

(A) Sunflower (B) Mimosa

(C) Periwinkle (D) Bryophyllum

38. Which chromosome has satellite ?

(A) Telocentric (B) Metacentric

(C) Acrocentric (D) Sub-metacentric

39. Which scientist gave the law of Active mass ?

(A) Goldberg and Waag. (B) Lowry and Bronsted.

(C) Boyle and Arrhenius. (D) Lewis and Sorensen.

40. Who gave the principle of Electromagnetic induction ?

(A) Volta (B) Ampere

(C) Faraday (D) Oersted

41. Which elements are present in the alloy of Solder ?

(A) Copper and Zinc (B) Copper and Tin

(C) Nickel and Chromium (D) Lead and Tin

42. In spectrum obtained with prism, which colour is deviated maximum ?

(A) Red (B) Yellow

(C) Violet (D) Blue

43. If 0.3 A current passes through a lamp, how many electrons will pass in 60 seconds ? ($e = 1.6 \times 10^{-19}$)

(A) 2.88×10^{20} (B) 1.125×10^{20}

(C) 2.25×10^{20} (D) 1.8×10^{20}

44. Which device is used to convert electric energy into a mechanical energy ?

(A) Electric generator (B) Solenoid

(C) Electric motor (D) Electric iron

45. Which organs perform the same function but structurally different ?

(A) Homologus organs.

(B) Analogus organs.

(C) Vestigial organs.

(D) Structurally homogeneous organs.

46. How much the temperature of Scrotum in male is lower than the temperature of the body ?

(A) 0° C (B) 3° C

(C) 34° C (D) 37° C

47. Rays of light are entering from glass to glycerine. If refractive indexes of glass and glycerine are respectively 1.5 and 1.47, find the refractive index of glycerine with respect to glass.

(A) 0.03 (B) 1.02

(C) 2.20 (D) 0.98

48. At which place in eye, image is formed of a person having far-sightedness (hypermetropia) ?

(A) On retina (B) Behind retina

(C) Infront of retina (D) On lens of eye.

49. In Sponges, which structure is used for excretion ?

(A) Contractile vacuole (B) Flame cells

(C) Nephridia (D) Osculum

50. At which depth, we get necessary temperature for OTEC in oceans ?

(A) 0 m to 20 m (B) 100 m to 300 m

(C) 400 m to 600 m (D) 700 m to 900 m

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PART - B

Time : 2.00 Hours] ***[Maximum Marks : 50***

Instructions :-

(i) There are total **four** sections in this part.

(ii) **All** questions are **compulsory.**

(iii) Draw neat labelled diagram as per instructions.

(iv) There are internal options in some questions. Pay attention to them.

(v) Figures to the right indicate marks.

SECTION - A

Give short answer (in limit of 30 words) of the following questions.

1. At which temperature range; Petrol, Diesel, Kerosene and lubricating oil is obtained in fractional distillation of Petroleum ? **2**

2. What is Molarity ? Give its unit. **2**

OR

2. What is slow and fast reaction ? Give example.

3. Why Carbon is important in development of Nano-technology ? **2**

4. Give the definition of Solar constant and its value. **2**

OR

4. Write the name of various types of Coal and give the percentage of Carbon in each.

5. Give short information about Mercury. **2**

SECTION - B

Write short answer (in the limit of 30 words) of the following questions.

6. Calculate the pH of 0.04 M aqueous solution of NaOH.
($\log_{10} 4 = 0.6021$) **2**

7. Write uses of Baking powder ($NaHCO_3$). **2**

8. How pure water can be obtained by sewage treatment ? **2**

9. Write the process of making Ethyl acetate by esterification with equation. **2**

OR

9. Write difference between Soap and Detergent.

10. Give short information regarding Spinal cord of human. **2**

SECTION - C

Write answers in short (in the limit of 50 words) of the following questions.

11. Explain the work of an Electric Generator with diagram. **3**

12. Explain allotropes of Sulphur. **3**

OR

12. Complete the following chemical reactions :

(i) $S_{(s)} + 2H_2SO_{4(aq)} \rightarrow$

(ii) $SO_{2(g)} + 2H_2S_{(g)} \rightarrow$

(iii) $H_2S_2O_{7(l)} + H_2O_{(l)} \rightarrow$

13. Describe Erythrocyte (RBC) in short. **3**

14. Explain Sex determination. **3**

15. Explain Electroplating with suitable example. 3

OR

15. Explain series connections of Resistors and derive the formula of equivalent resistance.

SECTION - D

Write the answer of the following questions in detail (in the limit of 100 words).

16. Derive lens formula $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$. 5

17. What is concentration or enrichment of Ore ? Explain the method of enrichment of ore containing Sulphide with diagram. 5

OR

17. Explain Bayer's method for obtaining Alumina from Bauxite with equations.

18. Write short note : Aerobic respiration and Anaerobic respiration. 5

OR

18. What is Nutrition? Describe nutrition in Amoeba. (Draw diagram).

(Space for Rough Work)