

This Question Paper contains 8 Printed Pages.

Sc & Tech

N-11(E)

(JULY, 2011)

પ્રશ્ન પેપરનો સેટ નંબર Set No. of Question Paper	
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**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. What is molecular formula of Ethanal ?  
 (A) HCHO (B) CH<sub>3</sub>OH  
 (C) CH<sub>3</sub>CHO (D) CH<sub>3</sub>CH<sub>2</sub>OH
2. U shaped part at the beginning of small intestine is called .....  
 (A) Duodenum (B) Gall Bladder  
 (C) Urinary Bladder (D) Rectum
3. Which cells produce disease resistance substance (immuno potential substance)?  
 (A) RBC (Erythrocytes) (B) Leucocytes  
 (C) Blood platelets (D) Blood Corpuscles
4. Which are the excretory structure in Earthworm ?  
 (A) Nephridium (B) Flame cells  
 (C) Osculum (D) Contractile Vacuole
5. Where the antigens for the blood group are situated ?  
 (A) On WBC (B) Blood plasma  
 (C) On RBC (D) Blood platelets

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6. Which of the following is not a Natural Satellite ?  
(A) Triton (B) Demos  
(C) Aryabhata (D) Sheron
7. What is used in Endoscopy for checking the internal body parts of human beings in medical field ?  
(A) Optical fibres (B) Photochromatic glass  
(C) Pyrex glass (D) Optical glass
8. Who invented (constructed) the pH scale ?  
(A) Boyle (B) Sorensen  
(C) Lewis (D) Guldberg
9. Eating soda's (Baking soda) molecular formula is .....  
(A) NaCl (B) Na<sub>2</sub>CO<sub>3</sub>  
(C) NaHCO<sub>3</sub> (D) CaCO<sub>3</sub>
10. Which is the bluish planet of the Solar system ?  
(A) Mercury (B) Saturn  
(C) Venus (D) Neptune
11. What is manufactured (prepared) from Cobalt steel ?  
(A) Transformer (B) Electro-magnet  
(C) Helmet (D) Permanent magnet
12. Which catalyst is used in the preparation of vegetable ghee (Dalda) from vegetable oil by hydrogenation process ?  
(A) Nickel (B) Chromium  
(C) Nichrome (D) Manganese
13. What is the unit of Rate of Reaction ?  
(A) Molar (B) Second  
(C) Molar / Second (D) Minute
14. Which ions are free in acid as per Arrhenius opinion ?  
(A) H<sup>+</sup> (B) OH<sup>-</sup>  
(C) N<sup>-</sup> (D) O<sup>-</sup>

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15. Which pigment is responsible for photoperiodism in plants ?  
 (A) Auxin (B) Ethylene  
 (C) Chloroform (D) Phytochrome
16. In which organism the nerve net is found ?  
 (A) Sponges (B) Hydra  
 (C) Earthworm (D) Cockroach
17. The hormones secreted by Hypothalamus regulates the functioning of which gland ?  
 (A) Pituitary (B) Thyroid  
 (C) Thymus (D) Pancreas
18. By what name grafting of root system contains part of plant is known?  
 (A) Stock (B) Scion  
 (C) Sucker (D) Rhizome
19. Name the organ, where the various parts of central nervous system and cerebellum are connected by the transverse band of nerves.  
 (A) Spinal cord (B) Pons  
 (C) Medulla Oblongata (D) In heart
20. What is the diameter of Hydrogen atom ?  
 (A) 1.0 nm (B) 0.1 nm  
 (C) 2.0 nm (D) 0.2 nm
21. Through which of the following, electricity is transformed into light ?  
 (A) Nanotubes (B) Nanocrystal  
 (C) Nanocomposite (D) Nano fabrication
22. How many times greater is the thermal conductivity of Carbon nanotube than Silver ?  
 (A) 10 (B) 100  
 (C) 1,000 (D) 10,000
23. What is the velocity of Light in vacuum ?  
 (A)  $3 \times 10^6 \text{ ms}^{-1}$  (B)  $3 \times 10^7 \text{ ms}^{-1}$   
 (C)  $3 \times 10^8 \text{ ms}^{-1}$  (D)  $3 \times 10^9 \text{ ms}^{-1}$
24. Which coloured light is least deviated in a spectrum obtained through the prism ?  
 (A) Violet (B) Blue  
 (C) Red (D) Yellow

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25. What is the name of the hormone secreted by Testis ?  
(A) Progesterone (B) Oestrogen  
(C) Insulin (D) Testosterone
26. Which mineral element is responsible for Minamata ?  
(A) Mercury (B) Lead  
(C) Copper (D) Zinc
27. In female, the time period of 45-50 years of age is known by .....  
(A) Menstruation (B) Menopause  
(C) Gestation period (D) Lactation
28. From which year the Forest Conservation Act was implemented ?  
(A) 1980 (B) 1986  
(C) 1972 (D) 1968
29. Which disease is caused due to Treponema Pallidum ?  
(A) AIDS (B) Syphilis  
(C) Gonorrhoea (D) Hepatitis
30. Who proposed the 'mutation theory' ?  
(A) Weismann (B) Lamarck  
(C) Darwin (D) Hugo Deveries
31. Which type of chromosome possesses satellite ?  
(A) Telocentric (B) Acrocentric  
(C) Sub-metacentric (D) Metacentric
32. Which of the following shows regeneration ?  
(A) Amoeba (B) Paramoecium  
(C) Planeria (D) Rhizopus
33. In which organism, high incubation temperature results in the development of male ?  
(A) Tortoise (B) Lizard  
(C) Grasshopper (D) Human

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34. Which is the monomer of Natural Rubber ?  
 (A) Chloroprene (B) Neoprene  
 (C) Isoprene (D) Polythene
35. Which alloy is used to prepare Scientific Balance ?  
 (A) Steel (B) Stainless steel  
 (C) Brass (D) Magnesium
36. With which group '— anal' suffix is used ?  
 (A) — CHO (B) — OH  
 (C)  $\begin{array}{l} \diagdown \\ \diagup \end{array} \text{C}=\text{O}$  (D) C — C
37. Which solvent (liquid) is used to remove nail polish from nails ?  
 (A) Methanal (B) Methanol  
 (C) Propanol (D) Acetone
38. Which substance is used in Hall-Heroult method, to bring the melting point down ?  
 (A) Bauxite (B) Limonite  
 (C) Cryolite (D) Haemetite
39. Which non metal exists in a liquid state ?  
 (A) Bromine (B) Mercury  
 (C) Chlorine (D) Sulphur
40. What is the chemical formula of Bleaching powder ?  
 (A)  $\text{CaCl}_2$  (B)  $\text{CaOCl}_2$   
 (C)  $\text{Ca(OH)}_2$  (D)  $\text{CaSO}_4$
41. Which acid is considered as the King of chemicals ?  
 (A) HCl (B)  $\text{HNO}_3$   
 (C)  $\text{H}_2\text{SO}_4$  (D)  $\text{H}_2\text{SO}_3$

42. Who gave the principle of Electromagnetic Induction ?  
(A) Faraday (B) Oersted  
(C) Volta (D) Ampere
43. 1 amu mass = ..... eV.  
(A) 931.48 (B) 931.84  
(C) 913.48 (D) 913.84
44. One electric heater having  $50 \Omega$  resistance connected with 220 V, then how much electric current will pass through it ?  
(A) 4.4 A (B) 44 A  
(C) 0.44 A (D) 4.04 A
45. Who did the successful experiment of artificial nuclear conversion for the first time ?  
(A) Fermi (B) Rutherford  
(C) Hahn (D) Strassman
46. Which source of energy is considered as competent (great) source in future ?  
(A) Geothermal Energy (B) Natural Gas  
(C) Hydrogen (D) Biogas
47. Which lens is used by the person having the defect of vision 'Farsightedness' ?  
(A) Convex lens (B) Concave lens  
(C) Cylindrical lens (D) Bifocal lens
48. Which scientist gave the information about electron for the first time ?  
(A) Coulomb (B) Volta  
(C) Ampere (D) Thompson
49. At which place, the image of the object is formed in human eye ?  
(A) Pupil (B) Cornea  
(C) Iris (D) Retina
50. What is the unit of Electric charge ?  
(A) Ampere (B) Coulomb  
(C) Volt (D) Ohm

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**PART - B****Time : 2.00 Hours]****[Maximum Marks : 50****Instructions :-**

- (i) This question paper contains 4 sections and total 18 questions.  
(ii) All questions are **compulsory** with internal options.  
(iii) As per instruction, draw clear, clean and proportionate diagrams & label them.  
(iv) Figures on the right side indicate marks.

**SECTION - A***Questions from No. 1 to 5 are Short answer type questions.**Answer each in maximum word limit of 30 words. (Each carries 2 marks)*

- |           |  |   |
|-----------|--|---|
| 1.        | Write main differences between AC and DC current.                  | 2 |
| 2.        | Give brief information about Mars.                                 | 2 |
| <b>OR</b> |  |   |
| 2.        | Write short note on 'Galaxy'.                                      |   |
| 3.        | Write the method of latest industrial production of Ethenoic acid. | 2 |
| 4.        | Write uses of Washing soda.  | 2 |
| <b>OR</b> |  |   |
| 4.        | Write method of preparation of Bleaching powder with equation.     |   |
| 5.        | Write physical properties of Non-metals.                           | 2 |

**SECTION - B***Questions from No. 6 to 10 are Short answer type questions. Answer each of them in the word limit of 30 words. (Each carries 2 marks)*

- |    |  |   |
|----|--|---|
| 6. | State the working (functioning) of Space Shuttle in space. | 2 |
| 7. | State the criteria for Chemical Equilibrium.               | 2 |

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8. State Environmental problems. 2
9. Write the method of Haber's process of Ammonia production. 2

**OR**

9. Write uses of Sulphur.
10. Write short note on forebrain of human being. 2

**SECTION - C**

*Questions from No. 11 to 15 are Short answer type questions. Answer each in word limit of 50 words. (Each carries 3 marks)*

11. Draw the diagram of Electric motor and explain its construction and working. 3
12. Explain the parallel connection of resistance and derive the equation for equivalence resistance. 3

**OR**

12. Explain Electrolysis process and write Faraday's laws.
13. State six characteristics of ideal fuel. 3
14. Explain the structure of 'Tracheid'. 3
15. By drawing the diagram, explain structure of DNA molecule. 3

**OR**

15. State the evidences of biological evolution. Explain any one of them.

**SECTION - D**

*Questions from No. 16 to 18 are included in this section. Answer each of them in the word limit of 100 words. (Each carries 5 marks)*

16. Derive Lens formula  $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ . 5
17. Explain Bayer's process of obtaining Alumina from Bauxite. 5

**OR**

17. Discuss in detail, the chemical reactions taking place in 'Blast Furnace'.
18. Draw the diagram of digestive system of Grasshopper and explain it. 5

**OR**

18. Write a note in detail about respiratory organs of Human beings.