

This Question Paper contains 20 printed pages.
(Part - A & Part - B)

Sl.No.

11 (E)
(JULY, 2018)

પ્રશ્ન પેપરનો સેટ નંબર જેની સામેનું વર્તુળ OMR શીટમાં ઘટ્ટ કરવાનું રહે છે.
Set No. of Question Paper, circle against which is to be darken in OMR sheet.

01

Part - A : Time : 1 Hour / Marks : 50

Part - B : Time : 2 Hours / Marks : 50

(Part - A)

Time : 1 Hour]

[Maximum Marks : 50

Instructions :

- 1) There are 50 Multiple Choice Questions (M.C.Q.) in Part - A and all questions are compulsory.
- 2) The questions are serially numbered from 1 to 50 and each carries 1 mark.
- 3) Read each question carefully, select proper alternative and answer in the O.M.R. sheet.
- 4) The OMR sheet is given for answering the questions. The answer of each question is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle ● of the correct answer with ball-pen.
- 5) Set No. of Question Paper printed on the upper-most right side of the Question Paper is to be written in the column provided in the OMR sheet.
- 6) Rough work is to be done in the space provided for this purpose in the Test Booklet only.

1) Which type of bond carbon atoms forms with other atoms?

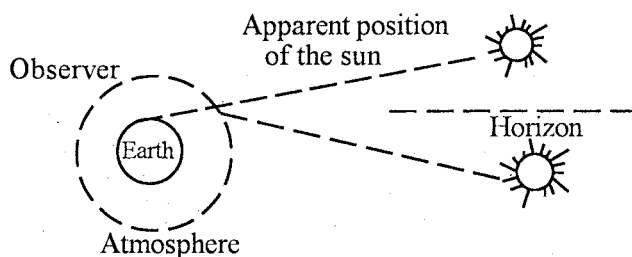
- (A) Ionic bond (B) Hydrogen bond
(C) Metallic bond (D) Covalent bond

2) Which of the following has higher surface area (SA) to volume (V) ratio?

- (A) Red blood cell
(B) Bucky ball
(C) DNA
(D) Human Hair

Rough Work

- 3) Which of the following is not a characteristic of light?
- (A) Light travels with $3 \times 10^8 \text{ms}^{-1}$ speed.
- (B) Light is an electromagnetic radiation which produces sensation in our eye
- (C) Light travels on a straight path
- (D) Light is a mechanical wave
- 4) Which of the following formula is wrong in accordance with Snell's law?
- (A) $\frac{n_1}{\sin \theta_1} = \frac{n_2}{\sin \theta_2}$
- (B) $n_{21} = \frac{\sin \theta_1}{\sin \theta_2}$
- (C) $n_1 \sin \theta_1 = n_2 \sin \theta_2$
- (D) $\frac{1}{n_2} \sin \theta_1 = \frac{1}{n_1} \sin \theta_2$
- 5) When sunlight enters into an atmosphere, it gets refracted. Because of this atmospheric refraction, virtual image of sun is formed during sunset and sunrise as shown in below diagram.



Due to this atmospheric refraction, the day _____

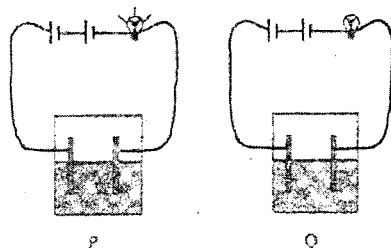
- (A) becomes four minutes longer than the actual one.
- (B) becomes four minutes shorter than the actual one.
- (C) becomes longer in summer and shorter in winter.
- (D) length of the day can not be said anything.

Rough Work

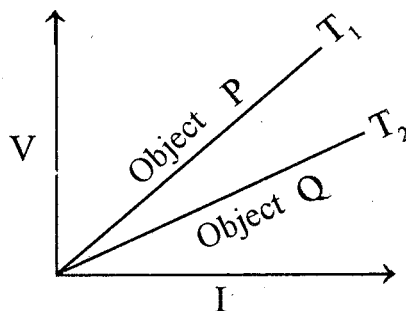
- 6) In modern communication, use of optical fiber is increased for sending information. The reason behind this is, speed of light is more than speed of electron. Optical fiber used in communication systems works on which principle?
- (A) Reflection
 - (B) Dispersion
 - (C) Scattering
 - (D) Total internal reflection
- 7) Which of the following is complementary colour of red colour?
- (A) Magenta
 - (B) Cyan
 - (C) Green
 - (D) Yellow
- 8) The SI unit of electric energy or heat energy is _____.
- (A) joule (J)
 - (B) Volt (V)
 - (C) ampere (A)
 - (D) watt (W)
- 9) If an electric bulb connected to 220V line draws an electric current of 0.5A, then what will be the resistance of filament of a bulb?
- (A) 220Ω
 - (B) 22Ω
 - (C) 440Ω
 - (D) 44Ω

Rough Work

- 10) Diya took two beakers for electricity experiment. When she connected the circuit with first beaker as shown in P, bulb starts glowing. Now she connected the circuit with second beaker, as shown in Q, bulb did not glow. To remove her confusion she again performed the experiment with first beaker and she founds that bulb is glowing. For the observation of second beaker Q, What is reason behind such observation?



- (A) Filament of bulb was damaged
 (B) Battery of circuit was finished
 (C) Beaker Q contains distilled water
 (D) Beaker P contains distilled water
- 11) $V \rightarrow I$ graph is given below, observation of object P is done at T_1 temperature and observation of object Q is done at T_2 temperature. What we can conclude for these two temperature?



- (A) $T_1 > T_2$
 (B) $T_1 < T_2$
 (C) $T_1 = T_2$
 (D) We can not predict from the graph

Rough Work

- 12) Who gave principle of electromagnetic induction?
- (A) Faraday
(B) Oersted
(C) Ampere
(D) Volta
- 13) What is the reason for short circuit from the following?
- (A) Positive and negative wire connected with each of the accidentally.
(B) Insulating layer of wire gets damaged
(C) The appliance becomes defective
(D) All of them
- 14) With the help of which law the direction of induction electric current in the circuit can be determined?
- (A) Fleming's left hand rule
(B) Fleming's right hand rule
(C) Right hand thumb rule
(D) Faraday's law
- 15) Make the correct pair from below
- | Artificial satellite | Function |
|----------------------|-------------------------|
| (1) INSAT | (P) Geographical survey |
| (2) METSAT | (Q) DTH transmission |
| (3) CARTOSAT | (R) Weather forecasting |
- (A) (1 ↔ P), (2 ↔ R), (3 ↔ Q)
(B) (1 ↔ R), (2 ↔ P), (3 ↔ Q)
(C) (1 ↔ Q), (2 ↔ R), (3 ↔ P)
(D) (1 ↔ P), (2 ↔ Q), (3 ↔ R)

16) Which statement is incorrect in reference to Galaxy from the following?

- (A) A big cluster of star is known as galaxy
- (B) There are three types of galaxies
 - 1) spiral
 - 2) elliptical
 - 3) irregular
- (C) There are about 10^{11} stars in each galaxy
- (D) Most of the stars are bluish in elliptical galaxy

17) Four friends are discussing about sun.

Shiv : Temperature of core region is about 2 crore K.

Vraj : Diameter of sun is 13,92,000km.

Nishant : Sun is star.

Shashank : Moving towards surface from core, its temperature reduces and becomes 6000k at surface

From the above discussion conclude that who is wrong?

- (A) Shashank
- (B) Shiv
- (C) Nishant
- (D) Vraj

18) By which poles of Mars are covered?

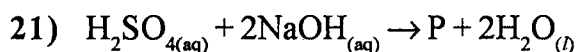
- (A) Dry ice
- (B) Water ice
- (C) Nitrogen
- (D) Iron

19) Metal oxide + water \rightarrow ?

- (A) Acid
- (B) Base
- (C) Salt
- (D) None of these

20) 2 years old Dhyani crying while playing. Her mother shows that red ant bites her and due irritation she is crying. Which of the following chemical enters into her body due to ant bite?

- (A) Sulphuric acid
- (B) Hydrochloric acid
- (C) Amino acid
- (D) Formic acid



The substance P is _____.

- (A) $\text{NaSO}_{4(l)}$
- (B) $\text{Na}_2\text{SO}_{4(aq)}$
- (C) $\text{Na}_2\text{SO}_{4(s)}$
- (D) $\text{NaSO}_{4(aq)}$

22) The table shows pH value of some foods

Vegetables	pH	Citrus fruits	pH	dairy/Egg products	pH	starches	pH
Beans	5.5	Lemons	2.3	Cheese	5.6	Corn	6.2
Peas	6.1	Limes	1.9	Eggs	7.8	Bread (White)	5.5
Spinach	5.4	Oranges	3.5	Milk	6.5	Potatoes	5.8

A patient has chronic indigestion due to an overproduction of stomach acid. Consumption of which food should she avoid most?

- (A) Vegetables
- (B) Citrus fruits
- (C) Dairy/egg
- (D) Starches

23) What is the chemical formula of cryolite?

- (A) NaAlF_6
- (B) Na_3AlF_6
- (C) Na_2AlF_6
- (D) NaAlF_4

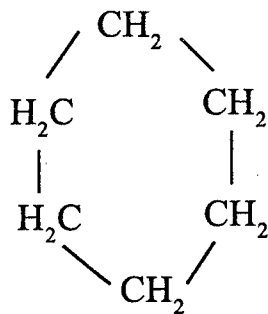
- 24) The iron sheets used in the roof of the house are galvanised sheets. What is galvanised sheets?
- (A) Iron sheets coated with very fine layer of zinc
 - (B) Zinc sheets coated with very fine layer of iron
 - (C) Iron sheets coated with very fine layer of Aluminium
 - (D) Aluminium sheets coated with very fine layer of Iron.
- 25) Which method is used for concentration of sulphide ores of metals?
- (A) Magnetic separation
 - (B) Froth flotation method
 - (C) Centrifugation
 - (D) Liquefaction
- 26) Concentrated sulphuric acid is a mixture of _____.
- (A) 90% water and 10% H_2SO_4
 - (B) 98% H_2SO_4 and 2% water
 - (C) 90% H_2SO_4 and 10% water
 - (D) 2% H_2SO_4 and 98% water
- 27) Physical properties of one gas is given below. From these properties identify the gas.
- i) Colourless, odourless and tasteless gas
 - ii) Gas is lighter than air
 - iii) It is insoluble in water
 - iv) It does not show any effect on wet blue or red litmus paper. It is a neutral gas.
- (A) Dinitrogen gas
 - (B) Ammonia gas
 - (C) Dihydrogen gas
 - (D) Dioxygen gas

Rough Work

28) The method that is used for direct extraction of sulphur from the core of the earth is called Frasch method. In this method, three concentric pipes are passed below the soil so that they touch the layer of the sulphur. Super heated water vapour is passed at 443K temperature in the soil of outermost cylinder, By which property of sulphur it melts?

- (A) Low melting point (B) High melting point
(C) High Boiling point (D) Low Boiling point

29) Which type of structure the substance shown in the diagram possess?



- (A) simple chain (B) branched chain
(C) cyclic (D) sub branched chain

30) Make the correct pair of below given data.

Carbonic compound	Molecular formula	No. of carbon
(1) Methane	(P) C_3H_8	(W) 5
(2) Pentene	(Q) C_4H_{10}	(X) 3
(3) Propane	(R) CH_4	(Y) 4
(4) Butane	(S) C_5H_{12}	(Z) 1

- (A) (1 ↔ R ↔ Z), (2 ↔ S ↔ W), (3 ↔ P ↔ X), (4 ↔ Q ↔ Y)
(B) (1 ↔ P ↔ X), (2 ↔ R ↔ Y), (3 ↔ Q ↔ Z), (4 ↔ S ↔ W)
(C) (1 ↔ Q ↔ Y), (2 ↔ P ↔ X), (3 ↔ R ↔ W), (4 ↔ S ↔ Z)
(D) (1 ↔ S ↔ W), (2 ↔ Q ↔ X), (3 ↔ R ↔ Y), (4 ↔ P ↔ Z)

Rough Work

- 31) To obtain the high octane number in gasoline, used in motor, 1ml tetraethyl lead is added to every 4 litre of gasoline. Which substance is added into this so that lead may not deposit on spark plug when gasoline is combusted?
- (A) Diethylene trichloride
(B) Triethylene dichloride
(C) Diethylene tribromide
(D) Diethylene dichloride
- 32) Which coal is used in production of steel?
- (A) Bituminous coal (B) Peat
(C) Lignite (D) Anthracite
- 33) Suppose your neighbour Ramankaka has bad habit of drinking alcohol. And you know this is a bad habit which affects person's social, mental, economical and physical health. Now you take him to deaddiction centre with the help of your father. Which medicine will be prescribed by the doctor to him in order to deaddict from alcohol?
- (A) Paracetamol
(B) PABA
(C) Copper sulphate solution
(D) Disulfiram
- 34) Which functional group does CH_3COCH_3 contains?
- (A) $-\text{CHO}$ (B) $>\text{C}=\text{O}$
(C) $-\text{COOH}$ (D) $-\text{OH}$
- 35) Which of the following is used in conveyor belt?
- (A) PVC (B) Polythene
(C) Neoprene (D) Teflon

Rough Work

36) Plant has autotrophic nutrition system. In this organisms synthesize their own food, like carbohydrate, from water and CO_2 with help of chlorophyll in presence of sun light. This process is known as photosynthesis. Which of the following reaction take place during photosynthesis process?

P : \rightarrow Absorption of light energy by chlorophyll

Q : \rightarrow Conversion of light energy into chemical energy

R : \rightarrow Reduction of CO_2 into carbohydrate

- (A) Only P (B) Only P and Q
(C) P, Q, R All (D) Only R

37) Which is the correct path of lymphatic system in human body?

- (A) intercellular space \rightarrow lymphatic capillaries \rightarrow lymph vessels \rightarrow large veins
(B) large veins \rightarrow intercellular space \rightarrow lymph vessels \rightarrow lymphatic capillaries
(C) lymphatic capillaries \rightarrow lymph vessels \rightarrow intercellular space \rightarrow large veins
(D) intercellular space \rightarrow large veins \rightarrow lymphatic capillaries \rightarrow lymph vessels

38) Where is tricuspid valve found in human heart?

- (A) Between two atria
(B) Between right atrium and right ventricle
(C) Between left atrium and left ventricle
(D) Between two ventricles

39) In plants, food and other substances are transported through _____.

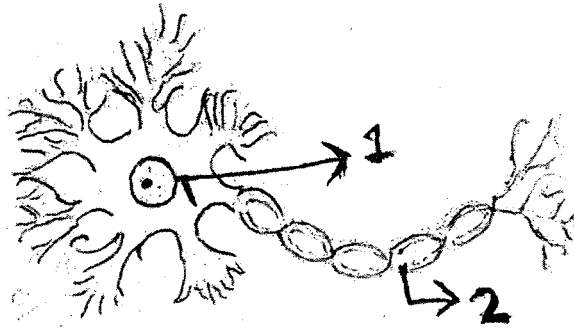
- (A) xylem (B) tracheids
(C) phloem (D) vessels

40) During which process blood is filtered out in Bowman's capsule?

- (A) Reabsorption (B) Secretion
(C) Ultrafiltration (D) None of these

Rough Work

41) In the following diagram lable 1 and 2 shows which part of nerve cell?

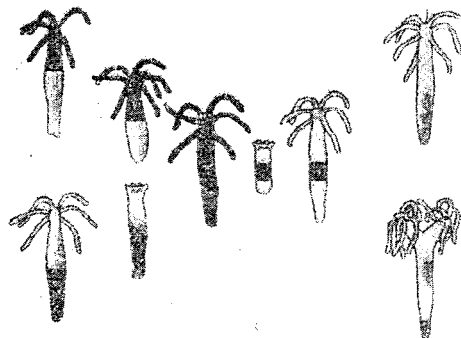


- (A) 1 Axon and 2 Soma (cell body)
- (B) 1 Axon and 2 dendrite
- (C) 1 Soma (cell body) and 2 Axon
- (D) 1 Soma (cell body) and 2 dendrite

42) Falguniben has problem of bulging of eyeball. Which type of disorder she has?

- (A) Hyperthyroidism
- (B) Hypothyroidism
- (C) Gigantism
- (D) Diabetes

43) Which type of asexual reproduction following diagram shows?



- (A) Budding
- (B) Spore formation
- (C) Multiple fission
- (D) Regeneration

Rough Work

- 44) Human population is increasing at an enormous rate. To control the rate of increase in population some methods are given below. By which method pregnancy can be controlled?
- 1) Mechanical barrier
 - 2) Chemical process
 - 3) Surgery
- (A) Only (1) and (2) (B) (1), (2) and (3) all
(C) Only (3) (D) Only (2) and (3)
- 45) Mendel performed his experiment on garden pea species and gave rules of heredity. Give the scientific name of the species.
- (A) *Zea mays* (B) *Pisum sativum*
(C) *Phaseolus mungo* (D) *rana tigrina*
- 46) Which is the correct path of evolution of eye?
- (A) planaria → insects → octopus → vertebrates
(B) insects → planaria → octopus → vertebrate
(C) vertebrate → octopus → insects → planaria
(D) octopus → insects → planaria → vertebrates
- 47) Ecosystem is an interacting system made up of :
- (A) Organism and their physical surroundings
(B) Producers and consumers
(C) Producers and their physical surroundings
(D) Consumers and their physical surroundings

- 48) Teacher and students discussing about conservation of energy and their discussion is given below :

Teacher : Whenever my students goes out from class, in recess, at home etc, they switch off lights and fans.

Student 1 : My father always goes to office in his private car.

Student 2 : My mother always uses pressure cooker for preparation of food.

Who is correct in reference with conservation of energy?

- (A) only teacher
 - (B) teacher and student 2
 - (C) only student 1
 - (D) teacher, student 1 and student 2 all.
- 49) Which reptiles does not included in Red data book?
- (A) Crocodile
 - (B) Python
 - (C) Snake
 - (D) Wall lizard
- 50) From where food chain starts and it ends?
- (A) starts with carnivores and ends with omnivores
 - (B) starts with primary produces and ends with carnivores
 - (C) starts with omnivores and ends with primary produces
 - (D) starts with herbivores and ends with carnivores

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(JULY, 2018)

(Part - B)

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

- 1) Write in a clear hand writing.
- 2) There are four sections in Part - B of the question paper and total 1 to 18 questions are there.
- 3) All questions are compulsory. Internal options are given.
- 4) The numbers at right side represent the marks of the questions.
- 5) Start new section on new page.
- 6) Maintain sequence.
- 7) Draw neat labelled diagram as per instructions.

SECTION - A

- Answer the following questions from 1 to 5 in short and to the point . Each question carries 2 marks.

- 1) Explain cylindrical fullerene. [2]

OR

How can we tackle future challenges using nano technology?

- 2) What is electrical potential? Write its definition and its units. [2]

- 3) What is pH scale? Why it was needed by S.P.L. Sorensen to invent it? [2]
- 4) Explain any two products obtained from destructive distillation of mineral coal. [2]

OR

What is catenation? Explain tetravalency of carbon.

- 5) Write the names of two dams of Gujarat. How are dams useful to the society? [2]

SECTION - B

- Answer the questions from 6 to 10 in short and to the point. Each question carries of 2 marks.

- 6) What are asteroids? Explain it in brief. [2]
- 7) Explain excretion in human being (figure not required) [2]
- 8) Explain forebrain of human. [2]
- 9) What is a global problem? Which are they? [2]
- 10) What are homologous organs? Explain it with examples. [2]

OR

What are analogous organs? Explain it with examples.

SECTION - C

- Answer the questions from 11 to 15 to the point. Each question carries 3 marks.

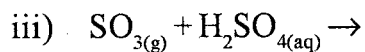
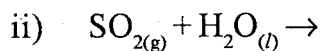
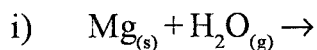
11) What is the defect of vision in the human eye? Vishal unable to see the far object clearly. So which type of defect of vision does it possess, explain it. [3]

12) What is solenoid? Give the characteristics of magnetic field resulting from solenoid? [3]

OR

Write three differences between AC current and DC current.

13) Write name, formula and physical state of products of following chemical reactions. [3]



14) What is polymer? How polythene is formed? Explain it. [3]

OR

Write preparation of ethanoic acid. Also write its any two uses.

15) Mention the physical changes observed in adolescent stage. [3]

SECTION - D

- Answer the following questions from 16 to 18 in details . Each question carries 5 marks.

16) Derive the formula of relation between radius of curvature (R), object distance (U) and image distance (V) for spherical mirrors. [5]

17) Explain the Bayer's method for extracting alumina from bauxite ore [5]

OR

Explain extraction of iron.

18) Write names, place of origin and work of any five digestive enzymes produced in human digestive system. [5]

OR

Explain respiration in different parts of plant using diagram.

