

BOARD Q. E PAPER
10
SOLUTION

For March 2018 Board Exam Self Practice Paper

SCIENCE AND TECHNOLOGY
QUESTION PAPER-10

STANDARD-10
Practice Paper
011(E)

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

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

PART-A

[Maximum Marks : 50

Time : 1 Hour]

Instructions : As per Question Paper-I

1. What is the thermal conductivity of copper at room temperature?

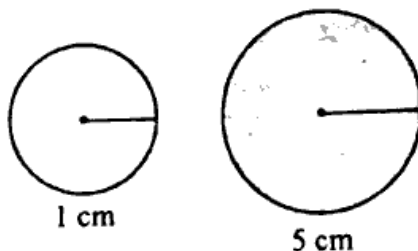
- (A) $3500 \frac{\text{Watt}}{\text{m.K}}$ (B) $385 \frac{\text{Watt}}{\text{m.K}}$ (C) $3500 \frac{\text{Watt}}{\text{cm.K}}$ (D) $358 \frac{\text{Watt}}{\text{m.K}}$

2. What will be the $\frac{SA}{V}$ for the following two spheres ?

- (A) 1, 5
(B) 0.1, 0.5

(C) $3, \frac{3}{5}$

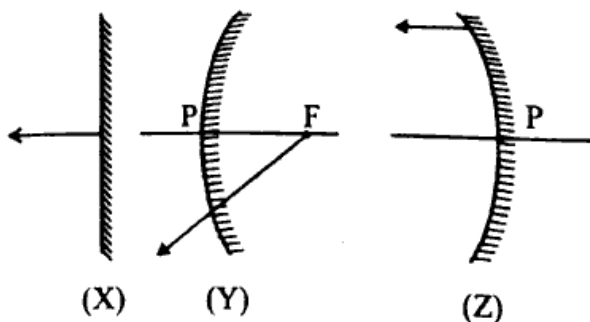
(D) $\frac{5}{3}, 3$



3. Sonali wants the image of a given object beyond the concave mirror. She should place the object _____.

- (A) between the centre of curvature and the principle focus
(B) between the pole and the principal focus
(C) at the principal focus
(D) beyond the centre of curvature

4. Figure given below shows three different mirrors X, Y and Z along with reflected rays. Find out the correct use of the mirror.



Mirror → Options ↓	X	Y	Z
A	Dressing table	side glass in vehicles	Doctor's use
B	Doctor's use	Dressing table	Side glass in vehicle
C	Side glass in vehicle	Doctor's use	Dressing table
D	Doctor's use	Side glass in vehicle	Dressing table

5. Which colour of light scatters minimum due to atmosphere?
 (A) Red (B) Green (C) Blue (D) Violet

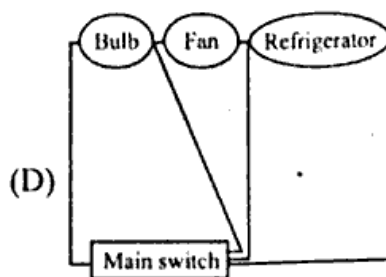
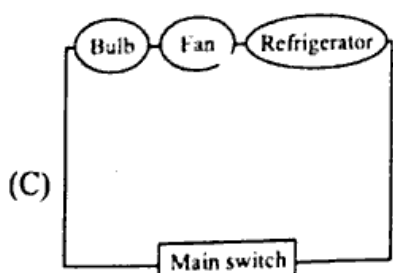
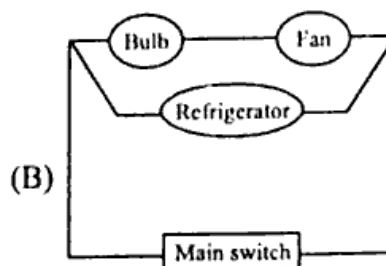
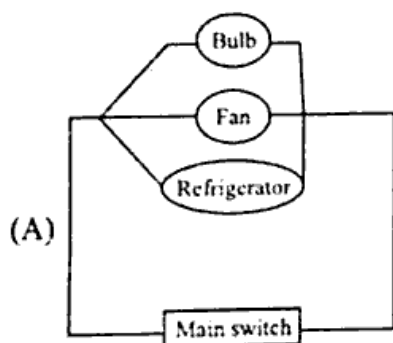
6. Match of the Column-A and Column-B following :

Column-A	Column-B
(a) Twinkling of stars	(1) Total internal reflection
(b) Tyndall effect	(2) Reflection, refraction and dispersion
(c) Sparkling of diamond	(3) Atmospheric refraction
(d) Formation of rain-bow	(4) Scattering of light

- (A) (a-3), (b-4), (c-2), (d-1) (B) (a-3), (b-4), (c-1), (d-2)
 (C) (a-1), (b-3), (c-2), (d-4) (D) (a-4), (b-3), (c-2), (d-1)
7. Of the following which does not result into white colour ?
 (A) Blue, Yellow (B) Green, Magenta (C) Blue, Green (D) Red, Cyan

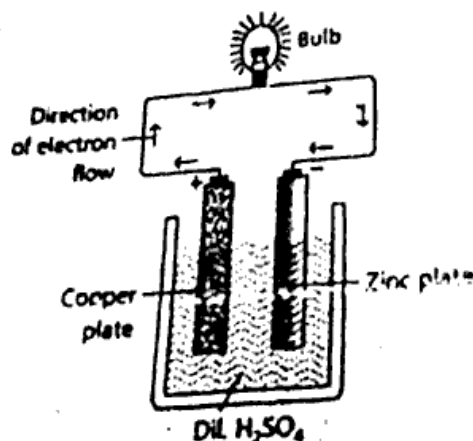
8. What is the unit of 'W' in the formula $V = \frac{W}{Q}$.

- (A) watt (B) volt (C) joule (D) $\frac{\text{joule}}{\text{coulomb}}$
9. Which of the following A.C. electric current is present in your house ?



10. Observe the following figure properly and identify the mistake.

- (A) Zinc plate should be taken as positive and negative.
 (B) Water should be taken instead of dil. H_2SO_4
 (C) Direction of flow of electrons is wrong
 (D) Bulb will glow.



11. Who showed that an electric current can be obtained with the help of a magnetic field?
 (A) Michael Faraday (B) H.C. Oersted (C) Ampere (D) Volta

12. Match of the Column-A and Column-B following :

Column-A	Column-B
(a) Right hand thumb rule	(1) Direction of induced electric current
(b) Fleming's left hand rule	(2) Direction of magnetic field
(c) Fleming's right hand rule	(3) Direction of magnetic force

- (A) (a-3), (b-2), (c-1) (B) (a-2), (b-3), (c-1)
 (B) (a-2), (b-3), (c-1) (D) (a-2), (b-1), (c-3)
13. In India A.C. changes direction after every _____ second and hence the frequency of A.C. is _____ Hz.

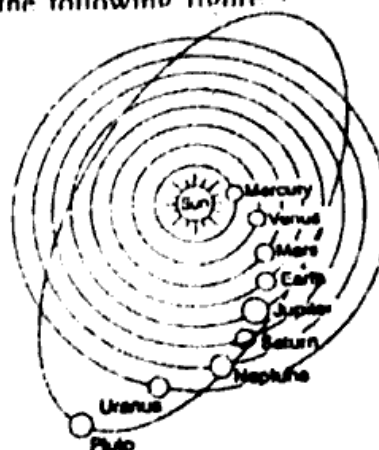
- (A) 1 s, 60 Hz (B) 1 s, 50 Hz (C) $\frac{1}{100}$ s, 50 Hz (D) $\frac{1}{120}$ s, 60Hz

14. Which of the following is not a member of the solar system ?

- (A) Asteroids (B) Shooting star (C) Sun (D) Artificial satellite

15. Which planets are not arranged properly in the following figure ?

- (A) Mars, Earth, Uranus, Neptune
 (B) Jupiter, Venus, Uranus, Neptune
 (C) Mars, Earth, Jupiter, Venus
 (D) Mars, Earth, Uranus, Pluto



16. The imaginary sphere which covers the sky with the Earth at its centre is called _____

- (a) Solar sphere (B) Lunar sphere (C) Celestial sphere (D) Milky sphere

17. Match the following :

Part-1	Part-2	Part-3
(1) INSAT 4A	(P) Equatorial orbit	(X) Geological survey of Earth's crust
(2) IRS-1	(Q) Polar Orbit	(Y) Study of oceanography
(3) RESOUR-CESAT		(Z) DTH service

- (A) (1 - P, X), (2 - P - Y), (3-Q-Z) (B) (1 - P, Z), (2 - Q - X), (3 - Q - Y)
 (C) (1 - Q, Y), (2 - Q - X), (3 - P - Z) (D) (1 - Q, Z), (2 - P - Y), (3 - Q - X)

18. Mrs. Dixit took the students to the science laboratory for demonstrating how the pH is approximately measured using litmus paper. She took various solutions and tested their effects on the litmus paper. Any change in colour was to be noticed by the students. Based on their experiments they got the following colour on the litmus paper:
 (i) Orange (ii) Green (iii) Pink and (iv) Blue

Can you identify the pH values associated with these colours ?

- (A) (i - 6) (ii - 8) (iii - 2) (iv - 10) (B) (i - 10) (ii - 2) (iii - 4) (iv - 9)
 (C) (i - 10.5) (ii - 8) (iii - 6) (iv - 7) (D) (i - 6) (ii - 9) (iii - 8) (iv - 2)

19. Given below are few problems that can occur due to imbalance of pH level. Also given, are the possible solutions, Match them and select the correct option.

Problems	Solution
(a) Acidity in stomach	(p) Use baking soda solution
(b) pH value of soil has become less than 6.5	(q) Use lime
(c) you have been bitten by honey bee	(r) Use gypsum
(d) pH value of soil has become more than 7.3	(s) Use magnesium hydroxide

- (A) (a-s), (b-q), (c-p), (d-r) (b) (a-s), (b-p), (c-q), (d-r)
 (C) (a-r), (b-q), (c-p), (d-s) (D) (a-p), (b-r), (c-q), (d-s)

20. $K_2SO_{4(aq)} + Ca(OH)_{2(aq)} \rightarrow \underline{\hspace{2cm}} + 2KOH_{(aq)}$
 (A) $Ca_2SO_{3(l)}$ (B) $2CaSO_{3(s)}$ (C) $CaSO_{4(s)}$ (D) $2Ca_2SO_{2(aq)}$

21. What will be OH concentration in aqueous solution having pH 8 ?

- (A) 1×10^{-8} M (B) 1×10^{-6} M (C) 8×10^{-6} M (D) 8×10^{-8} M

22. Slag is useful _____.

- (A) As sealing wax (B) In construction of roads
 (C) In water purification plants (D) For manufacturing iron vessels

23. Arrange Al, Na, Cu and Ag in order of their reactivities.

- (A) $Na > Al > Cu > Ag$ (B) $Al < Na < Ag < Cu$
 (C) $Ag < Cu < Al < Na$ (D) $Cu > Ag > Na > Al$

24. Column-I contains name/types of metallurgical process and II contains the processes done in them. Match and select the correct alternative.

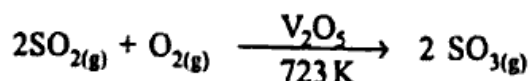
Column-I	Column-II
(a) Smelting	(p) For converting carbonate ores into oxide
(b) Zone refining	(q) For refining metals having low melting points
(c) Calcinations	(r) For refining minute particles of impurities
(d) Liquification	(s) Converting ores into molten form under high temperature

- (A) (a-s), (b-r), (c-p), (d-q) (B) (a-s), (b-p), (c-q), (d-r)
 (C) (a-p), (b-q), (c-r), (d-s) (D) (a-p), (b-r), (c-s), (d-q)

25. $Cu(OH)_{2(s)} + 4NH_4OH_{(aq)} + \underline{\hspace{2cm}}$

- (A) $2[Cu(NH_3)_4] (H_2O)_{(aq)} + 2H_2O_{(l)}$ (B) $[Cu(NH_3)_4] (OH)_2_{(aq)} + 4H_2O_{(l)}$
 (C) $[CuNH_4]_{(aq)} + 2SO_{2(g)} + 2H_2O_{(l)}$ (D) $[Cu(OH)_2(s)] + (NH_4)_2 SO_4O_{(l)}$

26. In the following reaction, which catalyst was used before vanadium pentoxide :



- (A) Nickel (B) Iron oxide (C) Oleum (D) Platinum

27. While producing dihydrogen gas in industry, one of the steps that come in the form of an equation is $CO + H_2O \rightarrow CO_2 + H_2$.

The paragraph given below explains the process to remove the dihydrogen gas. Read it carefully.

To separate dihydrogen gas from the above mixture, it is passed through water at 30 bar pressure. Carbon dioxide is insoluble in water and also dihydrogen gas. Hence, dihydrogen gas can be collected separately in jar. Do you think the process is entirely correct? If no, what is the error?

- (A) The pressure is 300 bar not 30.
- (B) Carbon dioxide is soluble in water and so it dissolves
- (C) The mixture is passed through oxygen not water.
- (D) Nothing is wrong in the above process.

28. What is the angle between any two bonds in methane molecule?

- (A) 105°, 54'
- (B) 109°, 28'
- (C) 119°, 28'
- (D) 190°, 28'

29. What was the main purpose of the company established by George Beal and Steetman?

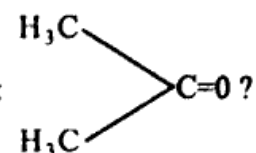
- (A) To locate places from where natural gas can be extracted.
- (B) To supply mineral oil to vehicles and industries.
- (C) To extract large amount of natural oil for industrial use.
- (D) To dig wells and establish huge refineries of mineral oil.

30. The oil available at Ankleshwar contains _____% sulphur containing compounds.

- (A) 0.8
- (B) 0.9
- (C) 0.4
- (D) 0.3

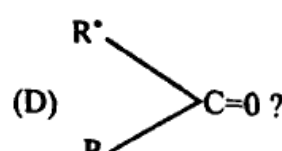
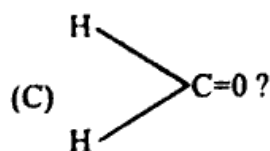
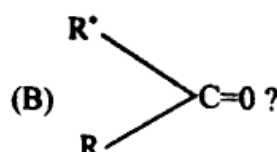
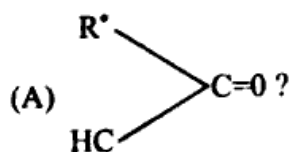
31. Ethyle chloride $\xrightarrow{\text{Ethanol}}$ _____.

- (A) $\text{CH}_2 = \text{CH}_2 + \text{Cl}_2$
- (B) $\text{HC} = \text{CH} + 2\text{Br}_2$
- (C) $\text{CH}_2 = \text{CH}_2 + \text{KCl} + \text{H}_2\text{O}$
- (D) $\text{HC} = \text{CH} + 2\text{H}_2 + \text{CaC}_2$

32. Which compound is this : 

- (A) Methanone
- (B) Propanone
- (C) Butanone
- (D) Ethanone

33. Carboxylic acids have general formula _____.



34. Which of the following sequences is correct for respiratory system?

- (A) Nasal Passage → Nostril → Pharynx → Laropharynx → Trachea → Bronchi → Lungs
- (B) Nostril → Nasal Passage → Pharynx → Laropharynx → Trachea → Bronchi → Lungs
- (C) Nasal Passage → Nostril → Laropharynx → Pharynx → Trachea → Bronchi → Lungs
- (D) Nostril → Nasal Passage → Laropharynx → Pharynx → Trachea → Bronchi → Lungs

35. Plant like Cuscuta show _____ nutrition, whereas the banyan tree shows _____ nutrition.

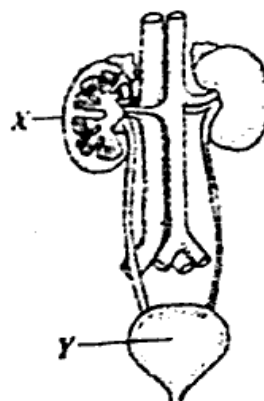
- (A) autotrophic, saprophytic (B) saprophytic, autotrophic
(C) Saprophytic, holozoic (D) parasitic, autotrophic

36. The digested food absorbed from, _____ goes into _____.

- (A) blood, cells (B) small intestine, cells
(C) small intestine, blood
(D) small intestine, large intestine

37. Label 'X' and 'Y' in the following figure :

- (A) X-Ureter, Y = Urethra
(B) X-Urethra, Y = Ureter
(C) X-Kidney, Y = Urinary bladder
(D) X-Ureter, Y = Urinary bladder



38. Which of the following statement is true for transportation in multicellular organisms?

- (A) Transportation of water from mouth to stomach
(B) Transfer of enzymes from one place to another
(C) Substance synthesized in one part of the body is transported to another part of the body
(D) None of the above

39. How do plant cells change their shape ?

- (A) By changing the amount of water (B) By changing the amount of air
(C) By changing the size of the cell (D) By decreasing in size

40. Match the list :

Column-A	Column-B
(a) Ultrafiltration	(1) Nephron
(b) Storage of urine	(2) Bowman's capsule
(c) Excretory units	(3) Kidneys
(d) Bean shaped	(4) Urinary bladder

(A) (a-2), (b-4), (c-1), (d-3) (B) (a-4), (b-2), (c-3), (d-1)

(C) (a-2), (b-1), (c-4), (d-3) (D) (a-3), (b-4), (c-1), (d-2)

41. What does CNS stand for ?

- (A) Central Numbering System (B) Central Neuron System
(C) Central Nervous System (D) Central Nervous Syndrome

42. Enlargement of certain body parts like hand, feet and jaws results due to _____.

- (A) hypo secretion of GH (B) Under secretion of GH
(C) too much secretion of GH after adolescence
(D) hyper secretion of GH

43. Compared to other animals, the ability of speech has developed more in humans. Mainly development of which organ is responsible for this ?
(A) Mouth (B) Tongue (C) Heart (D) Brain

44. What is the basic event in the reproduction ?
(A) Cleavage of nucleus (B) Formation of double chromosomes
(C) Creation of another copy of the cell (D) Adaptation of the organism

45. Match the Column-A with Column-B.

Column-A	Column-B
(a) Leaf of Bryophyllum	(1) Layering
(b) Lemon plant	(2) Vegetative propagation
(c) Bougainvillea	(3) Grafting
(d) Crysanthemum	(4) Cutting

(A) (a-2), (b-3), (c-4), (d-1) (B) (a-3),(b-4), (c-1), (d-2)
(C) (a-4), (b-3), (c-2), (d-1) (D) (a-2), (b-1),(c-4), (d-3)

46. T stands for True and 'F' for False. Which sequence is true for the following statements?

(A) A male gamete possess 23 chromosomes.
(B) A zygote possesses 46 chromosomes.
(C) Each cell of the body possesses 23 pairs of chromomes.
(D) Meiosis occurs in every cell

(A) TTTF (B) TFTF (C) TFFT (D) FFTF

47. Who was the first scientific to perform series of experiments to study acquired and inherited trait ?

(A) Wattson (B) Sutton (C) Mendel (D) Khurana

48. Which of the following is situated in the stratosphere layer ?

(A) Troposphere (B) Ozone layer (C) Homosphere (D) Static layer

49. Which of the following statements is true for variation in organisms ?

(1) The occurrence of different among the individuals of the same species is known as variation.

(2) Variations decrease the possibilities of survival.

(3) The process of evolution decreases the variation in organisms.

(4) During meiosis, crossing over takes place between the genes and hence, new combinations are formed, which ultimately results in producing variations.

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

50. Match Column 'A' with Column 'B'.

Column-A	Column-B
(a) Endangered plant species	(1) Gudukhar, Dugong
(b) Endangered reptiles	(2) Pleasant, Hornbill
(c) Endangered birds	(3) Python, Wall Lizard
(d) Endangered animals	(4) Red Data Book

(A) (a-3), (b-4), (c-2), (d-1) (B) (a-2), (b-1), (c-4), (d-3)
(C) (a-3), (b-4), (c-2), (d-1) (D) (a-4), (b-3), (c-2), (d-1)

PART-B

Time : 2 Hours] March 2018 (Self Practice) Board Exam [Max. Marks : 50

Instructions : As per Question Paper-1

SECTION-A

- Answer the questions 1 to 5 in approximately 30 words. (2 marks each) 10
1. Explain how nanotechnology will be useful in energy sector. OR
Explain the structure of buckyball.
 2. Two lamps of 100 w and 60 w are connected in series with 220 v line. How much total current will flow through the circuit ? OR
 2. The resistance of copper wire of length 2 cm and $1.7 \times 10^{-6} \text{ cm}^2$ are the cross - section in $2 \times 10^{-2} \Omega$. What would be its resistivity ?
 3. What are Jovian planets ? Give the characteristics of these planets. OR
What is called fossil fuel ? Write its uses.
 4. State and explain reaction of acid with Metal Oxide.
 5. Write a short note on fermentation of acid with Metal Oxide. OR
 5. Explain energy flow in an ecosystem.

SECTION-B

- Answer the questions 6 to 10 in approximately 30 words. (2 marks each) 10
6. What are Jovian planets? Write the characteristics of Jovian planets.
 7. How can reduce and recycle save the environment ?
 8. Explain : Strong base and Weak base.
 9. What is evolution ? Explain. OR
How are character inherited?
 10. Define transpiration and transportation in plants.

SECTION-C

- Answer the questions 11 to 15 in approximately 50 words. (3 marks each) 15
11. Explain the phenomenon of mirage taking place in summer at hot regions.
 12. What is solenoid ? Give the characteristics of magnetic field resulting from the current carrying solenoid. OR
Explain Tyndall effect.
 13. Describe Fransch's method of extraction of sulphur.
 14. What is Rubber ? Explain it. OR
 14. Write oxidation, reduction and addition reactions of methanal with hydrogen cyanide.
 15. Explain female reproductive system.

SECTION-D

- Answer the questions 16 to 18 in approximately 100 words. (5 marks each) 15
16. Write the principle, construction, working and use of astronomical telescope with its neat diagram.
 17. Explain extraction of Aluminum from bauxite. OR
 17. Explain - Hall - Herault method for extraction of aluminum metal from alumina.
 18. Discuss the process of following organs and its function.
(1) Nostrils (2) Nasal cavity (3) Pharynx (4) Tracheae (5) Lungs OR
 18. Describe the process of respiration in the following parts of a plant (with diagram).
(1) root (2) stem

