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STaRT-2012
SAMPLE TEST PAPER
CLASS-XI (SC.-BIOLOGY)

Time : 90 min. **Maximum Marks : 200**

GENERAL INSTRUCTIONS

1. he question paper contains **50** questions, **15 questions from Physics (1-15), 10 questions from Chemistry (16-25), 15 Questions from Biology (26-40) and 10 questions from Mental Ability (41-50).**

2. **The OMR sheet given in the examination hall is the Answer Sheet.**

3. **Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets in any form is not allowed.**

4. **Do not forget to mention your roll number neatly and clearly in the blank space provided in the answer sheet.**

5. **Each Question carries 4 marks. '1' mark will be deduct for each wrong answer. So attempt each question carefully.**

6. **No rough sheets will be provided by the invigilators. All the rough work is to be done in the blank space provided in the question paper.**

7. **In case of any dispute, the answer filled in the OMR sheet available with the institute shall be final.**

Name : _____ **Roll No. :** _____

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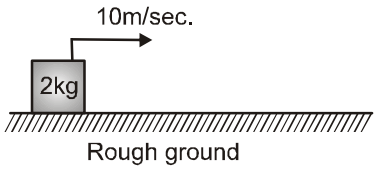
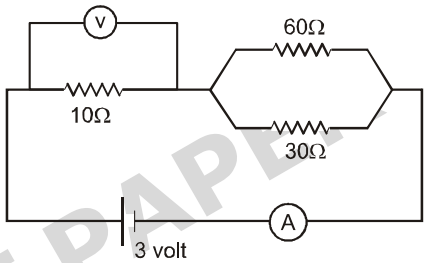
1. A block of mass 2 kg is given an initial velocity of 10 m/sec. on a rough horizontal ground. Due to the friction, the block comes to the rest after travelling 5m distance. What should be the constant friction force acting on the block?



(A) 10 N (B) 20 N (C) 30 N (D) 40 N

2. In the circuit shown, reading of the ammeter and the voltmeter are respectively :

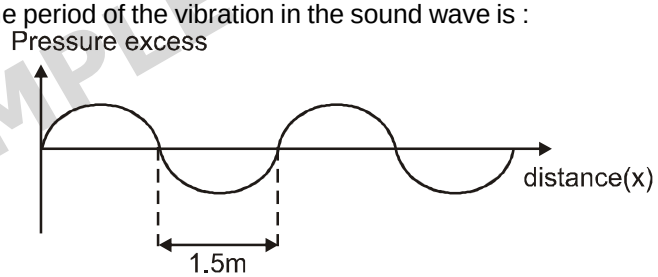
(A) 0.1 amp., 3 volt
(B) 0.1 amp., 1 volt
(C) 0.3 amp., 3 volt
(D) 0.3 amp., 1 volt



3. A 100 gm bullet is fired in forward direction with a velocity of 100 m/sec. Due to this, the free gun of mass 2 kg (excluding bullet) rebounds in backward direction. Total kinetic energy produced in this process is :

(A) 500 J (B) 25 J (C) 525 J (D) 475 J

4. The graph of pressure excess v/s distance (x) for a sound wave is shown above. If the speed of sound is 300 m/sec, the time period of the vibration in the sound wave is :

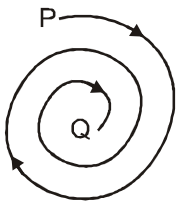


(A) 1 sec./vibration (B) 0.1 sec./vibration (C) 0.01 sec./vibration (D) 100 sec./vibration

5. A candle is used as an object and placed at a distance of 30 cm from a lens of power 5D (power may be positive or negative). At how much distance from the lens, should we place a screen, so that a sharp and inverted image of the candle can be formed :

(A) 30 cm (B) 40 cm (C) 50 cm (D) 60 cm

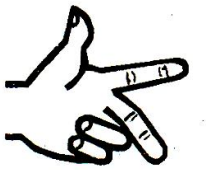
6. A motorcycle is moving along the path shown with constant speed 60 km/h. It takes two minutes to move from point P to point Q. The total length of the path from P to Q will be :



(A) 2 km (B) 3 km (C) 4 km (D) 5 km

Space For Rough Work

7. Suppose a positive charge is moving with a velocity $\vec{v}$ in a magnetic field $\vec{B}$, and experiences a magnetic force $\vec{F}$. According to the Fleming's left hand rule, the fore–finger, the central finger and the thumb will respectively point towards :



(A) $\vec{B}, \vec{V}$ and $\vec{F}$ (B) $\vec{V}, \vec{B}$ and $\vec{F}$

(C) $\vec{F}, \vec{V}$ and $\vec{B}$ (D) None of these

8. Which of the following objects will float in water :

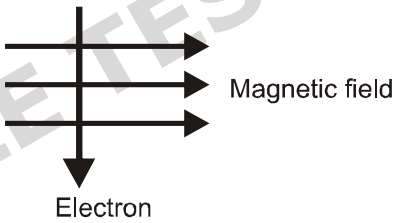
(A) mass = 50 g and volume = 20 cm^3 (B) mass = 200 g and volume = 500 cm^3

(C) mass = 40 g and volume = 20 cm^3 (D) mass = 1 g and volume = 0.5 cm^3

9. A cubical block is projected horizontally on a rough surface with speed v and it stops sliding after displacement 'x' when it is projected with speed 2v, displacement of the block before it stops sliding will be :

(A) x (B) 2x (C) 4x (D) 0.5 x

10. An electron enters a magnetic field at right angles to it, as shown in figure. The direction of force acting on the electron will be :



(A) to the right (B) to the left (C) out of the page (D) into the page

11. Which of the following lenses would you prefer to use while reading small letters found in a dictionary. lens is kept just above the dictionary ?

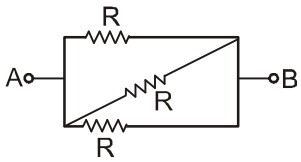
(A) A convex lens of focal length 50 cm (B) A concave lens of focal length 40 cm

(C) A convex lens of focal length 5 cm (D) A concave lens of focal length 5 cm

12. Equivalent resistance between A and B is :

(A) 2R (B) $\frac{R}{2}$

(C) $\frac{R}{3}$ (D) $\frac{3R}{2}$



13. Two particles P and Q start from rest and move for equal time on a straight line. Particle P has an acceleration of X m/s^2 for the first half of the total time and 2X m/s^2 for the second half. The particle Q has an acceleration of 2X m/s^2 for the first half of the total time and X m/s^2 for the second half. Which particle has covered larger distance?

(A) both have covered the same distance (B) P has covered the larger distance

(C) Q has covered the larger distance (D) none of these

Space For Rough Work

14. The minimum work done to accelerate a block on a smooth horizontal surface from rest to speed v
(A) is less than that required to accelerate if from v to 2v.
(B) is equal than that required to accelerate it from v to 2v.
(C) is more than that required to accelerate it from v to 2v.
(D) may be any one of the above since it depends on the force acting on the truck and the distance over which it acts.

15. Three resistance of value 1Ω, 2Ω and 3Ω are connected in parallel. If the effective resistance of the circuit has to be 1Ω , the value of the resistance to be connected in series to this circuit should be :

(A) $\frac{6}{11}\Omega$ (B) $\frac{5}{11}\Omega$ (C) $\frac{4}{11}\Omega$ (D) $\frac{3}{11}\Omega$

16. Which of following is responsible for temporary hardness of water ?
(A) $Ca(HCO_3)_2$ (B) Na_2CO_3 (C) $CaCO_3$ (D) $MgSO_4$

17. A solution turns red litmus blue, its pH is likely to be :
(A) 1 (B) 4 (C) 7 (D) 10

18. An atom which has a mass number of 15 and has 7 neutrons is an :
(A) isomer of nitrogen (B) isobar of oxygen (C) isotope of oxygen (D) isobar of carbon

19. 10 mL of a solution of NaOH is found to be completely neutralised by 8 mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount of H_2SO_4 solution (having the same molarity as that of initial HCl solution) required to neutralise it will be :
(A) 4 mL (B) 8 mL (C) 12 mL (D) 16 mL

20. Choose the correct statement with regard to redox displacement reactions.
(A) A less active metal displaces a more active metal.
(B) A more active non-metal is displaced by a less active non metal.
(C) A less active non-metal displaces hydrogen from dilute acids.
(D) A more active metal displaces hydrogen from dilute acids.

21. Element X forms a chloride with the formula XCl_2, which is a solid with a high melting point. X would most likely be in the same group of the Periodic Table as ?
(A) Na (B) Ca (C) Al (D) Si

22. Which of the following statements is not a correct statement about the trends when going from left to right across the periods of peridic Table -
(A) The atoms generally become smaller in size.
(B) The number of valence electrons increases.
(C) The atoms lose their electrons more easily.
(D) The oxides become more acidic.

23. Consider the following equilibrium situation and identify the correct statement :

$$2H_2(g) + CO(g) \rightleftharpoons CH_3OH(g)$$

(A) Addition of H_2 (g) would lead to increased production of CH_3OH (g).
(B) Addition of CH_3OH (g) would stimulate further consumption of CO (g).
(C) Increasing pressure would lead to the production of H_2 (g).
(D) Reducing the volume of the equilibrium will not disturb the equilibrium.

24. 3 moles of an ideal gas occupices 100L under certain conditions. 1.5 moles of the gas is removed and the temperature of the gas is doubled keeping the pressure constant. What is the new volume of the gas ?
(A) 50L (B) 200L (C) 400L (D) 100L

25. Decomposition reaction of ammonia is given as $2NH_3 \longrightarrow N_2 + 3H_2$. The concentration of NH_3 decreases to 40% in 10 min starting with 0.1mol/L. The average rate of decomposition of NH_3 in mol L^{-1} min^{-1} is :
(A) 6×10^{-3} (B) 4×10^{-3} (C) 4×10^{-2} (D) 6×10^{-2}

26. Archaebacteria differ from true bacteria in not having
(A) Mucopeptide substances in cell wall (B) Incipient nucleus
(C) Prokaryotic nature (D) Cell organelles

27. The bacterial genera carrying out nitritication, nitration, asymbiotic and symbiotic nitrogen fixation are
(A) Rhizobium, Azotobacter, Nitrosomonas, Nitrobacter
(B) Nitrosomonas, Nitrobacter, Azotobacter, Rhizobium
(C) Nitrosomonas, Nitrobcater, Azotobacter, Clostridium
(D) Nitrosomonas, Nitrobacter, Azotobacter, Rhizobium

28. Nitrogenase occurs in some blue-green algae in its
(A) Akinites (B) Heterocysts (C) Hormogones (D) Endospores

29. Red tide is caused by
(A) Ceratium (B) Noctiluca (C) Gonyaulax (D) All of these

30. Deuteromycetes are called fungi imperfecti as they lack
(A) True sexuality (B) Perfect stage (C) Fruiting body (D) All of these

31. Xylem with vessels is found in which gymnosperms
(A) Cycas and Pinus (B) Ephedra and Gnetum
(C) Araucaria and Taxus (D) Thuja and year

32. Synthesis of ATP in mitochondria takes place
(A) In matrix (B) Upon cristae
(C) In intracristal space (D) At outer membrane

33. Raphides are crystals of
(A) Calcium oxalate (B) Calcium carbonate
(C) Calcium phosphate (D) Magnesium carbonate

34. Species are considered as-
(A) Artificial concept of human mind which cannot be defined in absolute terms
(B) Real units of classification devised by taxonomists
(C) Real basic units of classification
(D) The lowest units of classification

35. In Amoeba and paramecium osmoregulation occurs through-
(A) Pseudopodia (B) Contractile vacuole (C) Nucleus (D) General surface

36. What happens if a bone of frog is kept in dilute hydrochloric acid ?
(A) Shrink in size (B) turn flexible (C) Crack into pieces (D) Assume black colour

37. An organic substance bound to an enzyme and essential for its activity is called-
(A) Isoenzyme (B) Coenzyme (C) Holoenzyme (D) Apoenzyme

38. Male and female genital pores in pheretima are found on which segment :
(A) 14^{th} & 18^{th} segment (B) 18^{th} & 14^{th} segment
(C) Inter-segmental grovves of 5/6 (D) Inter-segmental grooves of 6/7

39. National animal of India is-
(A) Panthera leo (B) Panthera tigris (C) Acinonyx (D) panthera pardus

40. In relation to digestion which one of the following is the correct matching of the site of action, given substrate, the enzyme acting upon it and the end product -

(A) Buccal cavity - Bacteria $\xrightarrow{\text{Lysozyme}}$ A.A and F.A

(B) Duodenum - Lipid $\xrightarrow[\text{Bile salts}]{\text{Lipase}}$ F.A. and glycerol

(C) Stomach - casein $\xrightarrow{\text{Pepsin}}$ Calsium paracasinate

(D) Stomach of ruminent - cellulose $\xrightarrow{\beta\text{–amylase}}$ D-glucose

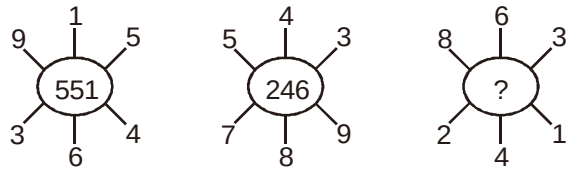
Directions : ***(41 to 43)*** Find the missing term :

41. 151, 158, 172, 182, ?
(A) 210 (B) 193 (C) 197 (D) 203

42. EIO, IOU, OUA, ?

(A) UAD (B) UAK (C) UAL (D) UAE

43.



(A) 262 (B) 622 (C) 631 (D) 631

Directions : (44 to 45) Column I contains five capital letters while column II contains five digits. Each letter corresponds to a single digit but not necessarily in that order.

स्तम्भ (column) I	स्तम्भ (column) II
BEIKL	61520
PNBTK	34568
XLPBE	57401
KNIXV	27396
XBNPE	45713

44. What is the value of BIKE ?

(A) 5261 (B) 6125 (C) 2560 (D) None of these

45. What is the value of PIN + NIP ?

(A) 423 (B) 744 (C) 777 (D) 747

46. In a row of girls, Rina and Mona occupy the ninth place from the right end and tenth place from the left end, respectively. If they interchanged their places, Rina and Mona occupy seventeenth place from the right and eighteenth place from the left, respectively. How many girls are there in the row ?

(A) 25 (B) 26 (C) 27 (D) Data inadequate

47. At what time between 4 and 5 will be hands of clock be in opposite direction ?

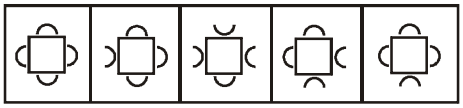
(A) $53\frac{7}{11}$ min. past 4 (B) $21\frac{9}{11}$ min. past 4 (C) $54\frac{6}{11}$ min. past 4 (D) $49\frac{1}{11}$ min.past 4

Space For Rough Work

Directions : (48 to 49) Each of the following questions consists of five figures marked 1, 2, 3, 4 and 5. These figures form a series. Find out the one from the answer figures that will continue the series.

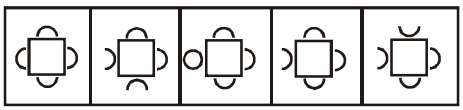
Problem Figures

48.



(1) (2) (3) (4) (5)

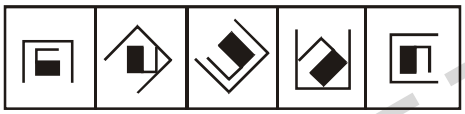
Answer Figures



(A) (B) (C) (D) (E)

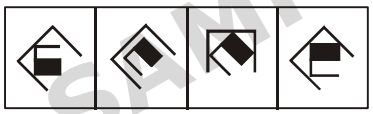
Problem Figures

49.



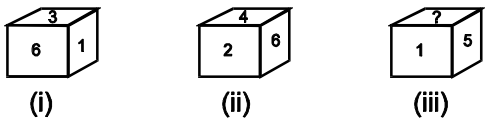
1 2 3 4 5

Answer Figures



(A) (B) (C) (D)

50. On the basis of the following figures you have to tell which number will come in place of '?'



(i) (ii) (iii)

(A) 2 (B) 3 (C) 6 (D) 4

ANSWER

1.	(B)	**2.**	(B)	**3.**	(C)	**4.**	(C)	**5.**	(D)	**6.**	(A)	**7.**	(A)	**8.**	(B)
9.	(C)	**10.**	(D)	**11.**	(C)	**12.**	(C)	**13.**	(C)	**14.**	(A)	**15.**	(B)	**16.**	(A)
17.	(D)	**18.**	(C)	**19.**	(B)	**20.**	(D)	**21.**	(B)	**22.**	(C)	**23.**	(A)	**24.**	(D)
25.	(A)	**26.**	(A)	**27.**	(B)	**28.**	(B)	**29.**	(C)	**30.**	(D)	**31.**	(B)	**32.**	(B)
33.	(A)	**34.**	(C)	**35.**	(C)	**36.**	(B)	**37.**	(B)	**38.**	(B)	**39.**	(B)	**40.**	(B)
41.	(B)	**42.**	(D)	**43.**	(B)	**44.**	(A)	**45.**	(D)	**46.**	(B)	**47.**	(C)	**48.**	(D)
49.	(D)	**50.**	(B)												