TEST PAPER
KVPY-2018

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INSTRUCTIONS FOR MARKING ON ANSWER SHEET

1. Immediately fill the particulars on this page of the Test Booklet with Blue / Black Ball Point Pen. Use of pencil is strictly prohibited.
2. The Test Booklet consists of **80** questions.
3. There are Two parts in the question paper. The distribution of marks subjectwise in each part is as under for each correct response.

MARKING SCHEME :

PART-I

MATHEMATICS
Question No. **1 to 15** consist of **ONE (1)** mark for each correct response.
PHYSICS
Question No. **16 to 30** consist of **ONE (1)** mark for each correct response.
CHEMISTRY
Question No. **31 to 45** consist of **ONE (1)** mark for each correct response.
BIOLOGY
Question No. **46 to 60** consist of **ONE (1)** mark for each correct response.

PART-II

MATHEMATICS
Question No. **61 to 65** consist of **TWO (2)** marks for each correct response.
PHYSICS
Question No. **66 to 70** consist of **TWO (2)** marks for each correct response.
CHEMISTRY
Question No. **71 to 75** consist of **TWO (2)** marks for each correct response.
BIOLOGY
Question No. **76 to 80** consist of **TWO (2)** marks for each correct response.

4. Candidates will be awarded marks as stated above in Instructions No. 3 for correct response of each question.for Part-I **0.25** marks will be deducted for indicating incorrect response of each question and for Part-II **0.50** marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the Answer sheet.
5. No candidate is allowed to carry any textual material, printed or written, bits of papers, paper, mobile phone, any electronic device, etc., except the Admit Card inside the examination hall/room.
6. Rough work is to be done on the space provided for this purpose in the Test Booklet only. This space is given at the bottom of each page.
7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the candidates are allowed to take away this Test Booklet with them.
8. Do not fold or make any stray marks on the Answer Sheet.

PART-I
One Mark Questions

MATHEMATICS
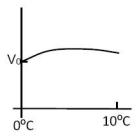
Choose the correct (✓) answer:
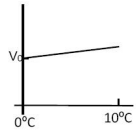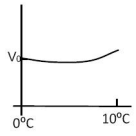
1. The number of pairs (a, b) of positive real numbers satisfying $a^4 + b^4 < 1$ and $a^2 + b^2 > 1$ is

   (1) 0   (2) 1

   (3) 2   (4) more than 2

2. The number of real roots of the polynomial equation $x^4 - x^2 + 2x - 1 = 0$ is

   (1) 0   (2) 2

   (3) 3   (4) 4

3. Suppose the sum of the first m terms of an arithmetic progression is n and the sum of its first n terms is m, where m ≠ n. Then the sum of the first (m + n) terms of the arithmetic progression is

   (1) 1 – mn   (2) mn – 5

   (3) – (m + n)   (4) m + n

4. Consider the following two statements:

   I. Any pair of consistent linear equations in two variables must have a unique solutions.

   II. There do not exist two consecutive integers, the sum of whose squares is 365.

   Then

   (1) Both I and II are true

   (2) both I and II are false

   (2) I is true and II is false

   (4) I is false and II is true.

5. The number of polynomials p(x) with integer coefficients such that the curve y = p(x) passes through (2, 2) and (4, 5) is

   (1) 0   (2) 1

   (3) more than 1 but finite   (4) infinite

6. The median of all 4-digit numbers that are divisible by 7 is

   (1) 5497   (2) 5498.5

   (3) 5499.5   (4) 5490

7. A solid hemisphere is attached to the top of a cylinder, having the same radius as that of the cylinder. If the height of the cylinder were doubled (keeping both radii fixed), the volume of the entire system would have increased by 50%. By what percentage would the volume have increased if the radii of the hemisphere and the cylinder were doubled (keeping the height fixed)?

   (1) 300%   (2) 400%

   (3) 500%   (4) 600%

8. Consider a triangle PQR in which the relation $QR^2 + PR^2 = 5PQ^2$ holds. Let G be the point of intersection of medians PM and QN. Then $\angle QGM$ is always

   (1) less than 45°   (2) obtuse

   (3) a right angle   (4) acute and larger than 45°

9. Let a, b, c be the side-lengths of a triangle, and l, m, n be the lengths of its medians. Put $K = \dfrac{l+m+n}{a+b+c}$. Then, as a, b, c vary, K can assume every value in the interval

   (1) $\left(\dfrac{1}{4}, \dfrac{2}{3}\right)$ (2) $\left(\dfrac{1}{2}, \dfrac{4}{5}\right)$

   (3) $\left(\dfrac{3}{4}, 1\right)$ (4) $\left(\dfrac{4}{5}, \dfrac{5}{4}\right)$
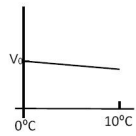
10. Let x_0, y_0 be fixed real numbers such that $x_0^2 + y_0^2 > 1$. If x, y are arbitrary real numbers such that $x^2 + y^2 \leq 1$, then the minimum value of $(x - x_0)^2 + (y - y_0)^2$ is

(1) $\left(\sqrt{x_0^2 + y_0^2} - 1\right)^2$ (2) $x_0^2 + y_0^2 - 1$

(3) $(|x_0| + |y_0| - 1)^2$ (4) $(|x_0| + |y_0|)^2 - 1$

11. Let PQR be a triangle which PQ = 3. From the vertex R, draw the altitude RS to meet PQ at S. Assume that RS = $\sqrt{3}$ and PS = QR. Then PR equals

(1) $\sqrt{5}$ (2) $\sqrt{6}$

(3) $\sqrt{7}$ (4) $\sqrt{8}$

12. A 100 mark examination was administered to a class of 50 students. Despite only integer marks being given, the average score of the class was 47.5. Then, the maximum number of students who could get marks more than the class average is

(1) 25   (2) 35

(3) 45   (4) 49

13. Let s be the sum of the digits of the number $15^2 \times 5^{18}$ in base 10. Then

(1) s < 6   (2) $6 \leq s < 140$

(3) $140 \leq s < 148$ (4) $s \geq 148$

14. Let PQR be am acute-angled triangle in which PQ < QR. From the vertex Q draw the altitude QQ_1, the angle bisector QQ_2 and the median QQ_3, with Q_1, Q_2, Q_3 lying on PR. Then

(1) $PQ_1 < PQ_2 < PQ_3$ (2) $PQ_2 < PQ_1 < PQ_3$

(3) $PQ_1 < PQ_3 < PQ_2$ (4) $PQ_3 < PQ_1 < PQ_2$

15. All the vertices of a rectangle are of the form (a, b) with a, b integers satisfying the equation $(a - 8)^2 - (b - 7)^2 = 5$. Then the perimeter of the rectangle is

(1) 20   (2) 22

(3) 24   (4) 26

PHYSICS

16. A block of wood is floating on water at 0°C with volume V_0 above water. When the temperature of water increases from 0 to 10°C, the change in the volume of the block that is above water is best described schematically by the graph

17. A very large block of ice of the size of a volleyball court and of uniform thickness of 8m is floating on water. A person standing near its edge wishes to fetch a bucketful of water using a rope. The smallest length of rope required for this is about

(1) 3.6m   (2) 1.8m

(3) 0.9m   (4) 0.4m

18. A box filled water has a small hole on its side near the bottom. It is dropped from the top of a tower. As it falls, a camera attached on the side of the box records the shape of the water stream coming out of the hole. The resulting video will show

(1) the water coming down forming a parabolic stream.

(2) the water going up forming a parabolic stream.

(3) the water coming out in a straight line.

(4) no water coming out.

19. An earthen pitcher used in summer cools water in it essentially by evaporation of water from its porous surface. If a pitcher carries 4 kg water and the rate of evaporation is 20 g per hour, temperature of water in it decreases by ΔT in two hours. The value of ΔT is close to (ratio of latent of evaporation to specific heat of water is 540°C)

(1) 2.7 °C   (2) 4.2 °C

(3) 5.4 °C   (4) 10.8 °C

Space For Rough Work

20. Two plane mirrors are kept on a horizontal table making an angle θ with each other as shown schematically in the figure. The angle θ is such that any ray of light reflected after striking both the mirrors returns parallel to tis incident path. For this to happen, the value of θ should be
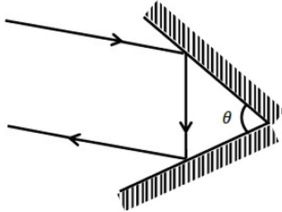
(1) 30° (2) 45°
(3) 60° (4) 90°

21. A certain liquid has a melting point of – 50° C and a boiling point of 150° C. A thermometer is designed with this liquid and its melting and boiling points are designated as 0° L and 100° L. The melting and boiling points of water on this scale are

(1) 25° L and 75° L, respectively,

(2) 0° L and 100° L, respectively,

(3) 20° L and 70° L, respectively,

(4) 30° L and 80° L, respectively,

22. One can define an alpha-Volt (αV) to be the energy acquired by an a particle when it is accelerated by a potential of 1 Volt. For this problem you may take a proton to be 2000 times heavier than an electron. Then

(1) 1 αV = 1 eV/4000

(2) 1 αV = 2 eV

(3) 1 αV = 8000 eV

(4) 1 αV = 1 eV

23. In a particle accelerator, a current of 500 μA is carried by a proton beam in which each proton has speed of 3×10^7 m/s. The cross sectional area of the beam is 1.50 mm^2. The charge density in this beam in Coulomb/m^3 is close to

(1) 10^{-8} (2) 10^{-7}
(3) 10^{-6} (4) 10^{-5}

24. Which of the following is NOT true about the total lunar eclipse?

(1) A lunar eclipse can occur on a new moon and full moon day.

(2) The lunar eclipse would occur roughly every month is the orbits of earth and moon were perfectly coplanar.

(3) The moon appears red during the eclipse because the blue light is absorbed in earth's atmosphere and red is transmitted.

(4) A lunar eclipse can occur only on a full moon day.

25. Many exoplanets have been discovered by the transit method, wherein one monitors a dip in the intensity of the parent star as the exoplanet moves in front of it. The exoplanet has a radius R and the parent star has radius 100R. If I_0 is the intensity observed on earth due to the parent star, then as the exoplanet transits,

(1) The minimum observed intensity of the parent star is $0.9\, I_0$

(2) The minimum observed intensity of the parent star is $0.99\, I_0$

(3) The minimum observed intensity of the parent star is $0.999\, I_0$

(4) The minimum observed intensity of the parent star is $0.9999\, I_0$

26. A steady current I is set up in a wire whose cross-sectional area decreases in the direction of the flow of the current. Then, as we examine the narrowing region

(1) the current density decreases in value.

(2) the magnitude of the electric field increases.

(3) the current density remains constant.

(4) the average speed of the moving charges remains constant.

27. Select the correct statement about rainbow:

(1) We can see a rainbow in the western sky in the late afternoon.

(2) The double rainbow has red on the inside and violet on the outside.

(3) A rainbow has an arc shape since the earth is round.

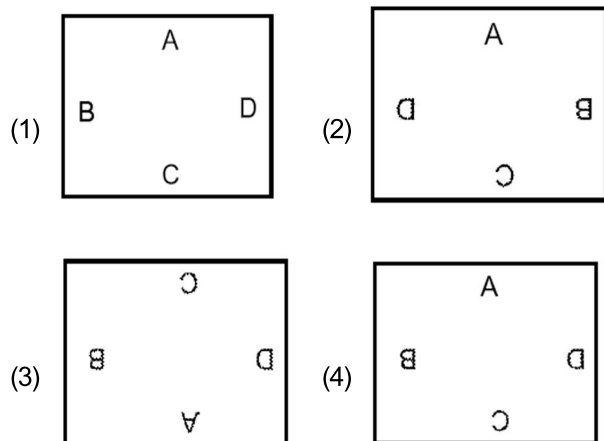(4) A rainbow on the moon is violet on the inside and red on the outside.

28. Remote sensing satellites move in an orbit that is at an average height of about 500 km from the surface of the earth. the camera onboard one such satellite has a screen of area A on which the images captured by it are formed. If the focal length of the camera lens is 50 cm, then the terrestrial area that can be observed from the satellite is close to

(1) 2×10^3 A

(2) 10^6 A

(3) 10^{12} A

(4) 4×10^{12} A

29. Letters A, B, C and D are written on a cardboard as shown in the picture.

```
┌─────────────────┐
│        A        │
│                 │
│ D             B │
│                 │
│        C        │
└─────────────────┘
```
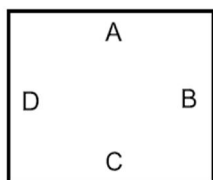
The carboard is kept at a suitable distance behind a transparent empty glass of cylindrical shape. If the glass is now filled with water, one sees an inverted image of the patern on the cardboard when looking through the glass. Ignoring magnification effects, the image would apper as

(1)
```
┌─────────────────┐
│        A        │
│                 │
│ B             D │
│                 │
│        C        │
└─────────────────┘
```

(2)
```
┌─────────────────┐
│        A        │
│                 │
│ ◖             ꙅ │
│                 │
│        ꙅ        │
└─────────────────┘
```

(3)
```
┌─────────────────┐
│        ꙅ        │
│                 │
│ ꙅ             ◖ │
│                 │
│        ∀        │
└─────────────────┘
```

(4)
```
┌─────────────────┐
│        A        │
│                 │
│ ꙅ             ◖ │
│                 │
│        ꙅ        │
└─────────────────┘
```

30. If a ball is thrown at a velocity of 45 m/s in vertical upward direction, then what would be the velocity profile as function of height ? Assume g = 10 m/s^2.

(1)

(2)

(3)

(4)
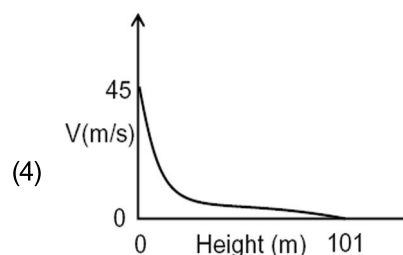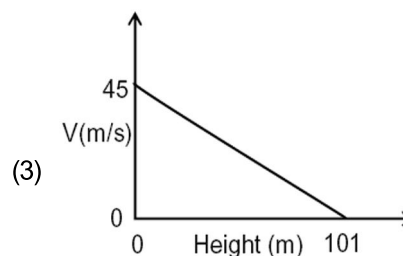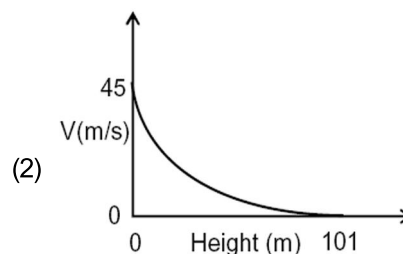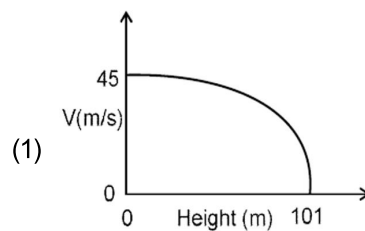
CHEMISTRY

31. The number of water molecules in 250 mL of water is closest to

[Given: Density of water is $1.0\,g\,mL^{-1}$; Avogadro's number $= 6.023 \times 10^{23}$]

(1) 83.6×10^{23} (2) 13.9×10^{23}

(3) 1.5×10^{23} (4) 33.6×10^{23}

32. Among the following, the correct statements is

(1) pH decreases when solid ammonium chloride is added to a dilute aqueous solution of NH_3

(2) pH decreases when solid sodium acetate is added to a dilute aqueous solution of acetic acid.

(3) pH decreases when solid NaCl is added to a dilute aqueous solution of NaOH

(4) pH decreases when solid sodium oxalate is added to a dilute aqueous solution of oxalic acid

33. The solubility of $BaSO_4$ in pure water (in $g\,L^{-1}$) is closest to

[Given: K_{sp} for $BaSO_4$ is 1.0×10^{-10} at 25 °C. Molecular weight of $BaSO_4$ is $233\,g\,mol^{-1}$]

(1) 1.0×10^{-5} (2) 1.0×10^{-3}

(3) 2.3×10^{-5} (4) 2.3×10^{-3}

34. Among the following, the INCORRECT statement is

(1) No two electrons in an atom can have the same set of four quantum numbers.

(2) The maximum number of electron in the shell with principal quantum number, n, is equal to $n^2 + 2$

(3) Electrons in an orbital must have opposite spin.

(4) In the ground state, atomic orbitals are filled in the order of their increasing energies.

35. A container of volume 2.24 L can withstand a maximum pressure of 2 atm at 298 K before exploding. The maximum amount of nitrogen (in g) that can be safely put in this container at this temperature is closest to
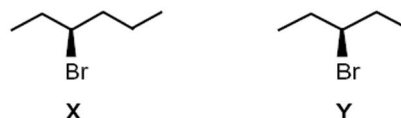
(1) 2.8   (2) 5.6

(3) 1.4   (4) 4.2

36. The compound shown below
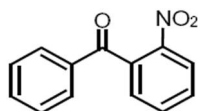
can be readily prepared by Friedel-Crafts reaction between

(1) benzene and 2-nitrobenzoyl chloride

(2) benzyl chloride and nitrobenzene

(3) nitrobenzene and benzoyl chloride
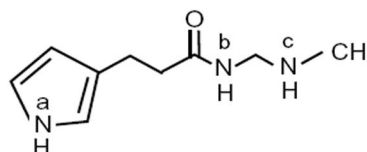
(4) benzene and 2-nitrobenzyl chloride

37. The correct statement about the following compounds

is

(1) both are chiral

(2) Both are achiral

(3) X is chiral and Y is achiral

(4) X is achiral and Y is chiral

38. The most acidic proton and the strongest nucleophilic nitrogen in the following compound

respectively, are

(1) $N^a–H; N^b$ (2) $N^b–H; N^c$

(3) $N^a–H; N^c$ (4) $N^c–H; N^a$

39. The chlorine atom of the following compound
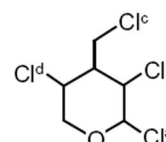
that reacts most readily with $AgNO_3$ to give a precipitate is

(1) Cl^a (2) Cl^b

(3) Cl^c (4) Cl^d

40. Among the following sets, the most stable ionic species are

41. The correct order of energy of 2s orbitals in H, Li, Na and K, is
(1) K < Na < Li < H
(2) Na < Li < K < H
(3) Na < K < H < Li
(4) H < Na < Li < K

42. The hybridisation of xenon atom in XeF_4 is
(1) sp^3 (2) dsp^2
(3) sp^3d^2 (4) d^2sp^3

43. The formal oxidation number of Cr and Cl in the ions $Cr_2O_7^{2-}$ and ClO_3^-, respectively, are
(1) +6 and +7   (2) +7 and +5
(3) +6 and +5   (4) +8 and +7

44. A filter paper soaked in salt X turns brown when exposed to HNO_3 vapor. The salt X is
(1) KCl   (2) KBr
(3) KI   (4) K_2SO_4

45. The role of haemoglobin is to
(1) store oxygen in muscles
(2) transport oxygen to different parts of the body
(3) convert CO to CO_2
(4) convert CO_2 into carbonic acid

BIOLOGY

46. Which ONE of the following molecules is a secondary metabolite?
(1) Ethanol   (2) Lactate
(3) Penicillin   (4) Citric Acid

47. Lecithin is a ?
(1) Carbohydrate   (2) Phpspholipid
(3) Nucleoside   (4) Protein

48. The water potential (ΨP) of pure water at standard temperature and atmospheric pressure is?
(1) 0   (2) 0.5
(3) 1.0   (4) 2.0

49. Action potential in neurons is generated by a rapid influx of ?
(1) Chloride ions   (2) Potassium ions
(3) calcium ions   (4) sodium ions

50. Erythropoietin is produced by ?
(1) Heart   (2) Kidney
(3) Bone marrow   (4) Adrenal gland

51. Tendrils are modifications of ?
(1) Stem or leaf   (2) Stem only
(3) Leaf only   (4) Aerial roots only

52. Which one of the following combinations of biomolecules is present in the ribosomes ?
(1) RNA, DNA and protein
(2) RNA lipids and DNA
(3) RNA and protein
(4) RNA and DNA

53. Which one of the following proteins does not play a role in skeletal muscle contraction?
(1) Actin   (2) Myosin
(3) Troponin   (4) Microtubule

54. Which one of the following reactions is catalyzed by high-energy ultraviolet radiation in the stratosphere?
(1) $O_2 + O \rightarrow O_3$ (2) $O_2 \rightarrow O + O$
(3) $O_3 + O_3 \rightarrow 3O_2$ (4) $O + O \rightarrow O_2$

55. Which ONE of the following statements is True about trypsinogen ?
(1) It is activated by enterokinase
(2) It is activated by renin
(3) It is activated by pepsin
(4) It does not need activation

56. Which ONE of the following organisms respire through the skin?
(1) Blue whale   (2) Salamander
(3) platypus   (4) Peacock

57. Which ONE of the following human cells lacks a nucleus?
(1) Neutrophil   (2) neuron
(3) Mature erythrocyte   (4) Keratinocyte

58. The first enzyme that the food encounters in human digestive system is?
(1) Pepsin   (2) Trypsin
(3) Chymotrypsin   (4) Amylase

Space For Rough Work

59. Glycoproteins are formed in which ONE of the following organelles?

(1) Peroxisome

(2) Lysosome

(3) Golgi apparatus

(4) Mitochondria

60. An example of nastic movement (external stimulus-dependent movement) in plants is

(1) Folding up of the leaves of mimosa pudica

(2) Climbing of tendrils

(3) Growth of roots from seeds

(4) Growth of pollen tube towards the ovule

PART-II
Two Mark Questions

MATHEMATICS

**61.** What is the sum of all natural numbers n such that the product of the digits of n (in base 10) is equal to $n^2 - 10n - 36$?

(A) 12

(B) 13

(C) 124

(D) 2612

62. Let m (respectively, n) be the number of 5-digit integers obtained by using the digits 1,2,3,4,5 with repetitions (respectively, without repetitions) such that the sum of any two adjacent digits is odd. Then $\dfrac{m}{n}$ is equal to

(A) 9

(B) 12

(C) 15

(D) 18

63. The number of solid cones with integer radius and integer height each having its volume numerically equal to its total surface area is

(A) 0

(B) 1

(C) 2

(D) infinite

64. Let ABCD be a square. An arc of a circle with A as center and AB as radius is drawn inside the square joining the points B and D. Points P on AB, S on AD, Q and R on are BD are taken such that PQRS is a square. Further suppose that PQ and RS are parallel to AC. Then $\dfrac{\text{area PQRS}}{\text{area ABCD}}$ is

(A) $\dfrac{1}{8}$

(B) $\dfrac{1}{5}$

(C) $\dfrac{1}{4}$

(D) $\dfrac{2}{5}$

65. Suppose ABCD is a trapezium whose sides and height are integers and AB is parallel to CD. If the area of ABCD is 12 and the sides are distinct, then |AB-CD|

(A) 2

(B) 4

(C) 8

(D) cannot be determined from the data

PHYSICS

66. A coffee maker makes coffee by passing steam through a mixture of coffee powder, milk and water. If the steam is mixed at the rate of 50 g per minute in a mug containing 500 g of mixture, then it takes about t_0 seconds to make coffee at 70°C when the initial temperature of the mixture is 25°C. The value of t_0 is close to (ratio of latent heat of evaporation to specific heat of water is 540°C) and specific heat of the mixture can taken to be the same as that of water)

(1) 30   (2) 45

(3) 60   (4) 90

67. A person in front of a mountain is beating a drum at the rate of 40 per minute and hears no distinct echo. If the person moves 90 m closer to the mountain, he has to beat the drum at 60 per minute to not hear any distinct echo. The speed of sound is

(1) 320 ms^{-1} (2) 340 ms^{-1}

(3) 360 ms^{-1} (4) 380 ms^{-1}

68. A glass beaker is filled with water up to 5 cm. It is kept on top of a 2 cm thick glass slab. When a coin at the bottom of the glass slab is viewed at the normal incidence from above the beaker, its apparent depth from the water surface is d cm. Value of d is close (the refractive indices of water and glass are 1.33 and 1.50,respectively)

(1) 2.5   (2) 5.1

(3) 3.7   (4) 6.0

69. A proton of mass m and charge e is projected from a very large distance towards an α particle with velocity v. Intially, α particle is at rest, but it is free to move. If gravity is neglected, then the minimum separation along the straight lline of their motion will be

(1) $e^2/4\pi \varepsilon_0 mv^2$ (2) $5e^2/4\pi \varepsilon_0 mv^2$

(3) $2e^2/4\pi \varepsilon_0 mv^2$ (4) $4e^2/4\pi \varepsilon_0 mv^2$

70. A potential is given by $V(x) = k(x + a)^2/2$ for x < 0 and $V(x) = k (x - a)^2/2$ for x >0. The schematic varitation of oscillation period (T) for a performating periodic motion in this potential as a function of its energy E is:

(1)

(2)

(3)

(4)

Space For Rough Work
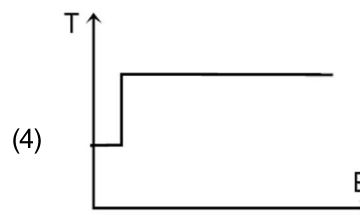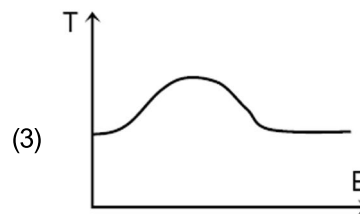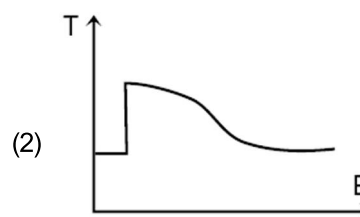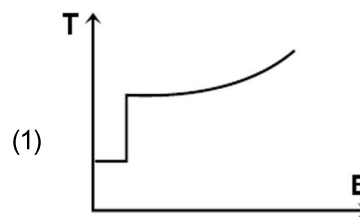
CHEMISTRY

71. Among the followig, the species with identical bond order are

(1) CO and O_2^{2-} (2) O_2^- and CO

(3) O_2^{2-} and B_2 (4) CO and N_2^+

72. The quantity of heat (in J) required to raise the temperature of 1.0 kg of ethanol from 293.45 K to the boilig point and then change the liquid to vapor at that temperature is closest to

[Given: Boiling point of ethanol 351.45K]

Specific heat capacity of liquid ethanol 2.44 J g^{-1} K^{-1}

Latent heat of vaporization of ethanol 855 J g^{-1}]

(1) 1.42×10^2 (2) 9.97×10^2

(3) 1.42×10^5 (4) 9.97×10^5

73. A solution of 20.2 g of 1,2-dibromopropane in MeOH upon heating with excess Zn produces 3.58 g of an unsaturated X. The yield (%) is closest to

[Atomic weight of Br is 80]

(1) 18   (2) 85

(3) 89   (4) 30

74. The lowest stability of ehthyl anion compared to methyl anion and the higher stability of ethyl radical compared to methyl radical, respectively, are due to

(1) +I effect of the methyl group in ethyl anion and $\sigma \to$ p-orbital conjugation in ethyl radical.

(2) –I effect of the methyl group in ethyl anion and $\sigma \to \sigma^*$ conjugation in ethyl radical.

(3) +I effect of the methyl group in both cases

(4) +I effect of the methyl group in ethyl anion and $\sigma \to \sigma^*$ conjugation in ethyl radical.

75. The F–Br–F bond angles in BrF_5 and Cl–P–Cl bond angles in PCl_5, respectively, are

(1) identical in BrF_5 but non-identical in PCl_5

(2) identical in BrF_5 and identical in PCl_5

(3) non-identical in BrF_5 but identical in PCl_5

(4) non-identical in BrF_5 and non-identical in PCl_5

BIOLOGY

76. If the genotypes determining the blood groups of a couple are $I^A I^B$ and $I^A I^B$, then the probability of their first child having type O blood is

(1) 0   (2) 0.25

(3) 0.50   (4) 0.75

77. A Cross was carried out between two individuals heterozygous for two pairs genes was carried out. Assuming segregation and independent assortment the number of different genotype and phenotypes obtained respectively would be ?

(1) 4 and 9

(2) 6 and 3

(3) 9 and 4

(4) 11 and 4

78. If the H^+ concentration of aqueous solutions is 0.001M, then the pOH of the solution would be?

(1) 0.001

(2) 0.999

(3) 3

(4) 11

79. Consider the following vision defects listed in Column-I & II and the corrective measures in Column III. Choose the correct combination?

Column-I	Column-II	Column-III
P.Hypermetropia	i. near-sightedness	a. convex lens
Q.Myopia	ii. far-sightedness	b. concave lens

(1) P-ii-b

(2) Q-i-b

(3) P-i-a

(4) Q-i-a

80. Which ONE of the following properties causes the plant tendrils to coil around a bomboo stick?

(1) Tendril has spines

(2) The base of tendril grows faster than the tip

(3) Part of the tendril in contact with the bamboo stick grows at a slower rate than the part away from it

(4) The tip of the tendril grows faster than the base

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ANSWERS
KVPY-SA-2018

1.	(4)	14.	(1)	27.	(2)	40.	(4)	53.	(4)	66.	(2)	79.	(2)
2.	(2)	15.	(1)	28.	(3)	41.	(1)	54.	(2)	67.	(3)	80.	(3)
3.	(3)	16.	(1)	29.	(4)	42.	(3)	55.	(1)	68.	(2)		
4.	(2)	17.	(3)	30.	(1)	43.	(3)	56.	(2)	69.	(2)		
5.	(1)	18.	(4)	31.	(1)	44.	(3)	57.	(3)	70.	(2)		
6.	(2)	19.	(3)	32.	(1)	45.	(2)	58.	(4)	71.	(3)		
7.	(3)	20.	(4)	33.	(4)	46.	(3)	59.	(3)	72.	(4)		
8.	(3)	21.	(1)	34.	(2)	47.	(2)	60.	(1)	73.	(2)		
9.	(3)	22.	(2)	35.	(4)	48.	(1)	61.	(2)	74.	(1)		
10.	(1)	23.	(4)	36.	(1)	49.	(4)	62.	(3)	75.	(4)		
11.	(3)	24.	(1)	37.	(3)	50.	(2)	63.	(2)	76.	(1)		
12.	(4)	25.	(4)	38.	(3)	51.	(1)	64.	(4)	77.	(3)		
13.	(2)	26.	(2)	39.	(1)	52.	(3)	65.	(2)	78.	(4)		