

OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

STD : 10 6 SETS MODEL QN PAPERS SUB: SCIENCE 2020-21

RESOURCE CREATION TEAM

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OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

MODEL QUESTION PAPER – 1 2020-21

SUB : SCIENCE SUB. CODE : 83E**TIME : 3.15 HOUR****MAX MARKS : 80****PART : A PHYSICS**

I. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 3x1=3

1. An important difference between alternative generators and direct generators is :
 - a) The alternative generator has an electromagnet but the direct generator has a permanent magnet.
 - b) Direct generators have high potential difference.
 - c) Alternative generators have high potential difference.
 - d) Alternative generators have split rings and direct generators have commutators.
2. A person wants to burn a paper without using matchbox and lighter. Which type of lens can be used for this purpose ?
 - a) biconvex lens b) convex lens c) concave lens d) all the above
3. The S.I. unit of resistance is :
 - a) Ohm-meter b) Ampere c) Ohm d) Volt

II. Answer the following questions:

2x1=2

4. Power of a lens is + 2.0 D. What does it mean ?
5. What is the reason for refraction of light ?

III. Answer the following questions:

3x2=6

6. Draw a ray diagram of image formed when an object is placed at infinity of a convex lens.
7. An electric heater of resistance 8Ω draws 15A current for 2 hours. Calculate the heat developed in the resistor.
8. Why alloys are used rather than pure metals in heating devices ?

IV. Answer the following questions:

3x3=9

9. Write the diagram indicating the field lines of a magnetic field around a straight conducting wire and label the following parts.
 - a) plug key b) battery
10. Explain the relation between these two pair of words with respect to lenses.
 - a) focal length and center of curvature.
 - b) Focal length and power of lens.
 - c) magnification of a lens and height of object and image.

-OR-

- (i) differentiate between real and virtual image.
- (ii) On what factors does refractive index depends.
11. Explain the environmental consequences of the increasing demand for energy. What measures would you suggest to reduce energy consumption?

V. Answer the following questions:**2x4=8**

12. a) Direct current and alternate current - Which of these is most useful? why?
 b) What precautionary measures should be taken to avoid overload caused by home electrical circuits?

-OR-

Write the construction and function of the electric motor.

13. i) Observe the following table. Which of the material can be used for transmission of electricity, heating material and insulator, and why ?

Material	Resistivity (Ωm)
A	1.62×10^{-8}
B	100×10^{-6}
C	1×10^{10}

- ii) How does the resistance of a conductor vary with its length ?

PART : B CHEMISTRY

VI. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet.

3x1=3

14. The functional group present in propanone is :
 a) alcohol b) aldehyde c) ketone d) carboxylic acid
15. Use of this on Bee stung area gives relief from pain and irritation :
 a) vinegar b) baking soda c) sour milk d) lemon juice
16. Metallic property as we move from left to right in the periodic table:
 a) Increases b) decreases c) no Change d) None of these

VII. Answer the following questions:**3x1=3**

17. Ionic compounds conduct electricity in molten state. Give reason.
 18. Define catenation.
 19. Electronic configurations of 'X' and 'Y' elements are 2,8,8,1 and 2,8,7 respectively. Which type of bond forms between 'X' and 'Y'?

VIII. Answer the following questions:**3x2=6**

20. Why do HCl, HNO₃ etc., show acidic characters in aqueous solution, while solutions of compounds like alcohol and glucose do not show acidic characters though they contain hydrogen ?
 21. Describe the formation of Nitrogen molecule (N₂) with the help of electron dot structure.

-OR-

Describe the formation of Oxygen molecule (O₂) with the help of electron dot structure.

22. Draw a diagram showing acid solution in water conducts electricity and label battery.

IX. Answer the following questions:

23. Draw a diagram showing action of steam on metals and label
(a) metal sample (b) hydrogen gas
24. What are structural isomers? Write the structural isomers of butane.
25. How could the Modern Periodic Table remove various anomalies of Mendeleev's Periodic Table ?

-OR-

The following table represents the position of A, B, C, D, and E elements. Answer the following question by using this table.

Column \rightarrow	1	2	3-12	13	14	15	16	17	18
Period \downarrow									
2	A	-	-	B	-	C	-	-	D
3	-	-	-	-	E	-	-	-	F

- i) Mention the elements which forms only covalent compounds.
- ii) Which two elements belongs to same group?
- iii) Which element is having maximum atomic size in B & C, why?

X. Answer the following questions:**1x4=4**

26. a) Define amphoteric oxides. Give two examples.
b) Name the liquid metal at room temperature.
c) How are acidic oxides formed ?

PART : C BIOLOGY**XI. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet.****2x1=2**

27. One of the following group consists of Biodegradable substances :
- a) grass, plastic, wood b) fruits, bread, glass, pomegranate juice
c) glass, clothes, tree d) skin, flowers, vegetables
28. The scientific method to conserve soil and water is :
- a) construction of dams b) watershed management
c) afforestation d) rainwater harvesting

XII. Answer the following questions:**3x1=3**

29. Give two examples for non-renewable resources.
30. What is the reason for the depletion of ozone layer ?
31. Why the Government of Karnataka has banned the use of polythene bags ?

XIII. Answer the following questions :**2x2=4**

32. How do auxins promote the growth of a tendril around a support ?

-OR-

Mention the response of plant towards gravity.

- (i) Movement of shoot (ii) Movement of root

33. Draw the diagram showing the vertical section of a flower and label the following. (a) anther (b) ovary

XIV. Answer the following questions:**3x3=9**

34. (a) How is the process of pollination different from fertilization?
(b) Mention the function of seminal vesicle.

-OR-

What are the changes seen in girls at the time of puberty ?

35. How Mendel's experiments show that traits are inherited independently ?

-OR-

Explain how differences in sexual reproduction are more efficient than the differences in asexual reproduction.

36. a) Differentiate between homologous and analogous organs.
b) Write the phenotypic ratio of di-hybridization in F_2 generation.

XV. Answer the following questions.**1x4=4**

37. Draw a diagram of longitudinal section of Human Brain and label the following parts. a) cerebrum b) cerebellum

XVI. Answer the following questions :**1x5=5**

38. (a) What is double circulation ?
(b) What is the importance of double circulation ?
(c) Write two differences between arteries and veins.

OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

MODEL QUESTION PAPER – 2 2020-21

SUB : SCIENCE

SUB. CODE : 83E

TIME : 3.15 HOUR

MAX MARKS : 80

PART : A PHYSICS

- I. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 3x1=3**
- The device used to measure the current is
 - galvanometer
 - ammeter
 - voltmeter
 - rheostat
 - Which of the following is not a characteristic of magnetic lines of force?
 - emerge from North pole
 - intersect each other
 - merge in South pole
 - do not intersect each other
 - Which type of lens you prefer to use in reading small words in newspaper?
 - concave lens with focal length 50 cm
 - convex lens with focal length 50 cm
 - concave lens with focal length 5cm
 - convex lens with focal length 5 cm
- II. Answer the following questions: 2x1=2**
- Power of a lens is 2 diopter. What does it mean?
 - In which point of a lens the light ray do not bend?
- III. Answer the following questions: 3x2=6**
- On what factors did the resistance of a conductor depends?
 - Draw a ray diagram of image formed when an object is placed beyond $2F_1$ in front of a concave lens
 - Compare the power used in in each of the following;
 - 6-volt battery in series with 1 ohm and 2-ohm resistors
 - 4-volt battery in parallel with 12 ohm and 2-ohm resistors
- IV. Answer the following questions: 3x3=9**
- Draw a neat diagram of electric motor and label carbon brushes and split rings.
 - Explain an experiment to show convex lens converges light rays.
- OR
- Refractive index of a benzene is 1.50. What does it mean?
 - In which direction the light bends when it moves from air into benzene solution?
- What is solar cell? List out the uses of solar cell and its limitations.
- V. Answer the following questions: 2x4=8**
- How fuse is helpful in domestic electric circuits
 - Why does the cord of an electric heater not glow while the heating element does?
 - Name the rule used to find direction of induced current in generator and define it.
 - How can we increase electric current in generator ?
- OR
- Write the construction and working of a generator.

PART : B CHEMISTRY

- VI. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 3x1=3**
14. If hydrocarbon burns with a clear blue flame in presence of excess oxygen then the products formed are :
- carbon monoxide and water vapour
 - carbon particles and carbon monoxide
 - carbon dioxide and carbon monoxide
 - carbon dioxide and water vapour
15. Which of these does not release $H^+_{(aq)}$ ions when added to water?
- HCl
 - HCOOH
 - CH₃COOH
 - CH₃OH
16. The type of bond that formed between chlorine and potassium is :
- Covalent bond
 - Ionic Bond
 - Metallic bond
 - Hydrogen bond
- VII. Answer the following questions: 3x1=3**
17. The metals towards the top of the activity series cannot be obtained from their compounds by heating with carbon why?
18. Name the two important air pollutants released during combustion of coal and petroleum
19. The atomic number of element 'X' is 7. Then the element 'X' belongs to which period in the Modern periodic table?
- VIII. Answer the following questions: 3x2=6**
20. What is combustion? Write the balanced chemical equation of combustion of methane.
- OR
- Draw the structures for the following compounds.
- Propanone
 - Propyne
21. Give scientific reasons :
- When acid rain flows into the rivers, the survival of aquatic life becomes difficult.
 - Toothpastes are used for cleaning the teeth.
22. Draw a diagram showing acid solution in water conducts electricity and label bulb.
- IX. Answer the following questions: 3x3=9**
23. The atomic numbers of the 5 elements A, B, C, D and E are 6, 8, 3, 7 and 9 respectively. The metallic property of which of these elements is less and why? What is your conclusion on the relationship between metallic property and electronegativity?
- OR
- What were the criteria used by Mendeleev in creating his Periodic Table ?
 - What are the achievements of Mendeleev's Periodic Table ?
24. Differentiate between saturated and unsaturated hydrocarbons.
25. Draw a diagram to show testing the conductivity of a salt solution and label the following parts. a) graphite rod b) salt solution under test

- X. Answer the following questions: 1x4=4**
26. a) Name any two soft metals. b) How are basic oxides formed ?
 c) Define galvanization. d) How do alkalis are formed?

PART : C BIOLOGY

- XI. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 2x1=2**
27. Ozone is composed of how many atoms of oxygen ?
 a)2 b)3 c)4 d)5
28. Which is the non-biodegradable substance?
 a) sewage water. b) cow dung c) plastic d) dry leaves
- XII. Answer the following questions: 3x1=3**
29. Why Government has advised companies to manufacture refrigerators free from CFC?
30. What type of problems are faced while constructing dam?
31. Mention any two eco-friendly measures to conserve natural resources.
- XIII. Answer the following questions: 2x2=4**
32. Draw a diagram of longitudinal section of a flower and label style and anther.
33. Name the hormone;
 a) controls the level of glucose in blood
 b) promote cell division in plants
- OR
- Mention any two differences between tropic movement and nastic movement
- XIV. Answer the following questions: 3x3=9**
34. Write the functions of ovary, fallopian tube (oviduct) and uterus of Human-female reproductive system.
- OR
- What are the functions performed by the testis in human beings? What is the role of the seminal vesicles and the prostate gland ?
35. Write the checker board of Mendel's di-hybridization experiment.
- OR
- How does the genetic drift and natural selections help in the formation of new species?
36. a) What are fossils how are they formed list the methods of determining their age
 b) How are reptiles and birds interrelated to each other ?
- XV. Answer the following questions. 1x4=4**
37. Draw a diagram of brain and label
 i) cerebrum ii) medulla
- XVI. Answer the following questions : 1x5=5 .**
38. Explain the transport of water and food in plants. Why plants have low energy needs and can use relatively slow transport system?

OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

MODEL QUESTION PAPER – 3 2020-21

SUB : SCIENCE

SUB. CODE : 83E

TIME : 3.15 HOUR

MAX MARKS : 80

PART : A PHYSICS

- I. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. $3 \times 1 = 3$**
- The surface of the lens used by watch mechanic is :
 - Plane
 - Thicker at the middle
 - Thin at the middle
 - Thicker at the edge
 - To increase the magnetic field around a circular coil :
 - increase the radius of the coil
 - convert coil into straight conductor
 - decrease the radius of the coil
 - decrease the current through the coil
 - A wire of resistance R is melted and recast into half of its original length, the new resistance will be,
 - R
 - 2R
 - R/2
 - R/4
- II. Answer the following questions: $2 \times 1 = 2$**
- What are the disadvantages of connecting devices in series?
 - A bulb is marked 220 V and 40 W. Calculate the current flowing through the bulb and its resistance.
- III. Answer the following questions: $3 \times 2 = 6$**
- Draw a ray diagram to show an image formation when the object is placed between the principal focus and the optical curve.
 - How does the resistance of a wire vary with its length and area of cross section?
 - A bulb is marked 220 V and 40 W. Calculate the current flowing through the bulb and its resistance.
- IV. Answer the following questions: $3 \times 3 = 9$**
- Explain the working of biogas plant.
 - The principal focus of a convex lens is 15cm. At what distance should the object from the lens be placed so that it forms an image at 10 cm from the lens. Also find the magnification produced by the lens.
- OR
- A 2 cm tall object placed perpendicular to the principal axis of convex lens having the principal focus of 10 cm. Object is 15 cm from the lens. Then find the nature, position and size of an image. Also find the magnification.
- Draw a diagram of generator and label split rings and armature.
- V. Answer the following questions: $2 \times 4 = 8$**
- A) on which principle does the electric motor works and define motor rule.
B) differentiate between alternate current and direct current.
- OR
- Explain an activity to show a current carrying conductor in a magnetic field experiences a force.
Define the rule which explains the force acting on the conductor.
- a) Calculate the monthly bill for a heater of resistance 30Ω used on 220 V mains when it is used daily for one hour at the cost of 5 rupees per kilowatt hour.
b) Define electric circuit.

PART : B CHEMISTRY

VI. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 3x1=3

14. The unsaturated carbon compound among the following is :
a) C_2H_6 b) C_3H_8 c) C_4H_{10} d) C_5H_{10}
15. The pH of fresh milk is 6.8. When it changes to curd its pH value becomes:
a) More than 6.8 b) neutral
c) Less than 6.8 d) pH value does not change
16. The scientist who proposed the modern periodic table
a) Newland b) Henri Mosley c) Döbereiner d) Mendeleev

VII. Answer the following questions: 3x1=3

17. Differentiate between roasting and calcination ?
18. Which element is having larger atomic radius in Na, Mg, K and Ca elements?
19. What is the hydrogenation of oils?

VIII. Answer the following questions: 3x2=6

20. Identify the functional group present in the given compounds.

- A) Propanal B) Propanol

OR

Write the structural arrangement of the following compounds.

- A) Propanone B) Cyclohexane

21. Arrange the following solutions in order of decreasing $H^+_{(aq)}$ ion concentration.

- a) ammonium hydroxide b) gastric juice
c) vinegar d) sodium hydroxide

22. Draw a diagram showing acid solution in water conducts electricity and label dil. HCl solution.

IX. Answer the following questions: 3x3=9

23. a) What are detergents ?
b) They remain effective in hard water. How ?
c) What are the products made by using detergents ?
24. Draw a diagram showing electrolytic refining of copper and label copper sulphate solution and anode mud.
25. The element 'X' belongs to the 3rd period and 2nd group. Write the electronic configuration of X. Is 'X' a metal or non-metal? Give reason?
The electronic configurations of elements Y and Z are 2,6 and 2,8,7 respectively.
Write the molecular formula of the compounds, when X reacts with Y and Z.

OR

Briefly explain the limitations of Mendeleev's Classification.

X. Answer the following questions: 1x4=4

26. A) Write any four characteristics of ionic compounds.
B) Name two metals that occur in free state in the earth's crust.
C) Name two metals that are poor conductors of heat.

PART : C BIOLOGY

XI. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 2x1=2

27. Ozone layer is formed due to the following reaction :

- A) $O + O_2 \rightarrow O_3$ B) $O + O \rightarrow O_2$
 C) $O_2 + O_2 \rightarrow O_4$ D) $O + O_3 \rightarrow O_4$

28. A woman who fought for the protection of the *khejri* trees :

- A) Medha Patkar B) Amrita Devi Bishnoi
 C) Saalumarada Thimmakka D) Sridevi

XII. Answer the following questions: 3x1=3

29. Name the two non - biodegradable materials.

30. Give two examples for fossil fuels.

31. Mention the two conservative methods for the groundwater.

XIII. Answer the following questions : 2x2=4

32. List the functions of testosterone and oestrogen.

OR

What is reflex action? Which is the centre of reflex action ?

33. Draw a diagram showing the structure of flower and label stigma and ovary.

XIV. Answer the following questions: 3x3=9

34. Name the first member of human species ? How the genetic foot prints are traced back to our ancestors ?

OR

How do you determine the age of fossils ? explain.

35. Describe how anatomical studies are helpful in detecting evolutionary relationships.

36. What are the changes seen in girls at the time of puberty?

OR

Why does menstruation occur ?

XV. Answer the following questions. 1x4=4

37. Draw the longitudinal section of human brain and label the following parts.

- a) pons b) cerebellum

XVI. Answer the following questions : 1x5=5

38. Explain the structure and function of nephron.

Name the nitrogenous wastes produced in it.

Mention the components selectively reabsorbed in nephron.

OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

MODEL QUESTION PAPER – 4 2020-21

SUB : SCIENCE

SUB. CODE : 83E

TIME : 3.15 HOUR

MAX MARKS : 80

PART : A PHYSICS

I Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 4 x 1 = 4

- The direction induced current changes when a rectangular copper coil rotates in magnetic field.
a) for every two rounds b) for every round
c) for every half round d) for quarter round
- Most of the sources of energy we use represents stored solar energy. Which of the following is not ultimately derived from the Sun's energy?
a) geothermal energy b) wind energy c) fossil fuel d) biomass
- The equation form of Ohm's law is
a) $V = \frac{I}{R}$ b) $R = V I$ c) $V = R I$ d) $I = V R^2$
- The resistance of a wire of length "2l" is "R". If the length of the wire is decreased to "l" then the resistance of the wire is
a) R/2 b) 2R c) 2/R d) R

II Answer the following questions: 2 x 1 = 2

- State Snell's law of refraction.
- When a conductor placed in a magnetic field experiences maximum mechanical force?

III Answer the following questions: 2 x 2 = 4

- Draw the diagram of the electric circuit used to study Ohm's law and label voltmeter.
- State any two major hazards associated with a nuclear power plant?

IV Answer the following questions: 3 x 3 = 9

- Draw a ray diagram and write the position, relative size and nature of image when object is placed at principal focus of a convex lens.
- What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series.
- Several electric bulbs designed to be used on a 220V electric supply line, are rated 10W. How many lamps can be connected in parallel with each others across the two wires of 220V line if the maximum available current is 5A?

OR

An electric lamp where resistance is 20Ω and a conductor of 4Ω resistance are connected in series to a 6V battery calculate.

- The total resistance of the circuit
- The current through the circuit and
- The potential difference across the electric lamp and conductor.

V Answer the following questions: 1 x 4 = 4

- Define refraction of light. How the light should propagate to reflect. Give suitable reason for your answer. Refractive index of water is 1.33 What does it mean?

OR

- i) The distance between principal focus and optical center of a of lens is 10 cm what is the focal length of a lens.
ii) When a light passes through water and glass separately in which medium does light it bends more and why?
iii) Name the type of lens which always forms virtual images

VI Answer the following question :

1 x 5 = 5

13. a) Earthing is necessary for metal surfaced electrical instruments. Why?
b) How does overload occur in a circuit?
c) What is the significance of fuse in a circuit?

PART B : CHEMISTRY

I Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 2 x 1 = 2

14. The correct pair of the metals that do not react with water is
a) lead, copper b) copper, iron c) gold, silver d) silver, calcium
15. The alkene having four hydrogen atoms is :
a) ethene b) propene c) butene d) pentene

II Answer the following questions:

4 x 1 = 4

16. What are miscelles?
17. Define modern periodic table.
18. Lithium, sodium and potassium are Dobereiner triads. Find the atomic mass of sodium if atomic masses of lithium and potassium are 7 and 39.
19. How is the concentration of hydronium (H_3O^+) affected when a solution of an acid is diluted?

III Answer the following questions:

3 x 2 = 6

20. Write the electron dot structure of carbon dioxide (CO_2) molecule.
21. How does the electronic configuration determine the position of an element in modern periodic table. Explain with example.
22. A magician was showing magic in a school. He took egg cell and fluoride solution over it. As a result, effervescence seen. When he took a burning candle over it, it went off.
a) Identify the solution poured and the substance present in egg cell.
b) What is the reason behind effervescence?

OR

In a test tube containing 4 ml of NaOH solution. Two drops of phenolphthalein and then HCl is added drop by drop. State your observations and state the kind of reaction taking place.

IV Answer the following questions:

3 x 3 = 9

23. Draw a neat diagram showing the reaction for the action of steam on a metal and label
i) hydrogen gas ii) metal sample.
24. Define soap. Briefly describe the mechanism of cleaning by soap.

OR

- a) If the bottom of cooking vessels getting blackened, what does it mean ?

- b) Why is the conversion of ethanol to ethanoic acid an oxidation reaction ?
c) What is substitution reaction ? Give an example.

25. Draw a diagram showing the reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning and label the following parts.
a) hydrogen gas bubbles b) dil.sulphuric acid

- V Answer the following questions:** **1 x 4 = 4**
26. Explain the formation of sodium chloride with electron transfer and electron dot structure.

PART C : BIOLOGY

- I Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet.** **2 x 1 = 2**

27. The plant hormone among the following :
a) Gibberlin b) adrenalin c) insulin d) thyroxin
28. Expansion of CFC is
a) Chloro floro hydrocarbon b) Chloro floro carbons
c) Carbon floro carbons d) carboxy floro carbons

- II Answer the following questions:** **2 x 1 = 2**
29. Which disease is commonly caused to human beings for depletion of ozone layer?
30. What are 5 R's to save the environment ?

- III Answer the following questions:** **3 x 2 = 6**
31. Mention any four methods used by plants for their excretion.

OR

Mention any two main functions of kidney.

32. Draw a labeled diagram of the longitudinal section of flower.
33. List the advantages while building the dams.

- IV Answer the following questions:** **3 x 3 = 9**

34. Draw a neat diagram showing the structure of human heart and label the following parts.
i) pulmonary veins. ii) Vena cava from lower body.

35. What are the different methods of contraception. Explain.

OR

What are the advantages of sexual reproduction over asexual reproduction?

36. How does octopus and dinosaurs differ in one character? Explain.

OR

How can we show that the biosynthetic relationships different?

- V Answer the following questions:** **2 x 4 = 8**

37. Name the tropic movement of the following :
a) movement of plant towards light.
b) movement of plant towards water.
c) movement of plant towards chemicals
d) movement of plant in response to gravity.

38. Draw and explain with the help of checker board the independent inheritance of two separate traits shape and color of seeds.

OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

MODEL QUESTION PAPER – 5 2020-21

SUB : SCIENCE

SUB. CODE : 83E

TIME : 3.15 HOUR

MAX MARKS : 80

PART : A PHYSICS

- I. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. $4 \times 1 = 4$**
- Magnetic field inside the solenoid is :
 - zero
 - decreases as we move towards the ends
 - uniform in all points
 - Increases as we move towards the ends
 - The main constituent of bio-gas is :
 - methane
 - ethane
 - butane
 - Propane
 - The work done in moving a charge of 2C across two points having a potential difference 12V is :
 - 24 J
 - 6 J
 - 14 J
 - 10 J
 - A piece of wire of resistance R is cut into two equal parts. The new resistance of the pieces is :
 - 2R
 - 2/R
 - R/2
 - R²
- II. Answer the following questions: $2 \times 1 = 2$**
- What is the frequency and voltage of alternative current in domestic electric circuit?
 - Define refractive index?
- III. Answer the following questions: $2 \times 2 = 4$**
- What are the properties of a good source of energy?
 - Draw the circuit diagram showing the combination of resistors R₁, R₂, R₃ in series, including voltmeter, plug key and battery.
- IV. Answer the following questions: $3 \times 3 = 9$**
- Draw a ray diagram of image formation when an object is placed between infinity and optical centre.
 - Define electric current.
 - How can we brought potential difference in an electrical circuit?
 - Define the S.I. unit of potential difference.
 - The current drawn by an electric heater coil is 2A from 220V source. Calculate its resistance. If it draws 1A current find the potential difference of the circuit.
- OR
- An electric iron consumes energy at a rate of 840w when heating is at the maximum rate and 360w when the heating is at the minimum. The voltage is 220V what are the current and the resistance in each case.
- V. Answer the following questions: $1 \times 4 = 4$**
- Define power of lens. Power of a lens is +1.0D. What does it mean? Which type of lens it is?
- OR-
- The refractive index of A, B and C is 1.44, 1.54 and 1.36 respectively.
- Which is optically denser medium
 - To which side the light bends when it travels from medium C to medium A
 - To which side, the light bends when it travels from medium A to medium B

VI. Answer the following questions:**1x5=5**

13. a) Define the following : i) armature ii) commutator
b) What is electric motor? Explain the working of electric motor.

PART : B CHEMISTRY**VII. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 2x1=2**

14. The correct sequence of the given metals according to the descending order of their reactivity is :
a) Cu > Fe > Al > K b) Fe > K > Al > Cu c) K > Al > Cu > Fe d) K > Al > Fe > Cu
15. C₆H₆ is the molecular formula of :
a) butane b) hexane c) cyclohexane d) benzene

VIII. Answer the following questions:**4x1=4**

16. Write the industrial applications of detergent?
17. The atomic number of element 'X' is 7. The element belongs to which period in periodic table?
18. Why should curd and sour substances not be kept in brass and copper vessels?
19. When we move down a group what happens to the electro negativity?

IX. Answer the following questions:**3x2=6**

20. List the properties of covalent compounds.
21. When few drops of orange juice is added to pure water, how does the pH value vary for water? If few drops of lemon juice is also added, will there be any more change in the pH value?

OR

- Two solutions P and Q are tested with universal indicator. The solution P turns red, whereas solution Q turns orange. Which solution (i) is more acidic? (ii) has more pH?
22. The positions of the A, B, C, D elements in the modern periodic table are given in the table below. Look at the table and answer the following questions.

	Group-1	Group-2
Period-3	A	B
Period-4	C	D

- i) Which element is having maximum size of atomic radius? Why?
ii) Which element is having lowest metallic property? Why?

X. Answer the following questions:**3x3=9**

23. Draw a diagram showing electrolytic refining of copper and label the following parts.
a) cathode b) anode mud
24. What are the two ends present in a soap molecule? Which of these ends are hydrophobic and hydrophilic? Why soaps cannot clean in hard water?
-OR-
a) Briefly explain the two factors of versatile nature of carbon.
b) What is the reason for the formation of strong bonds by carbon atom ?
25. The atomic numbers of the 5 elements A, B, C, D and E are 6,8,3,7 and 9 respectively. The metallic property of which of these elements is less and why? What is your conclusion on the relationship between metallic property and electro negativity?

XI. Answer the following questions: 1x4=4

26. Explain the extraction of the metals in the middle of the activity series, with help of roasting and calcination of zinc ore.

PART : C BIOLOGY**XII. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 2x1=2**

27. The element essential for making the Harmon thyroxin is
 a) Carbon b) Iodine c) Sodium d)Potassium
28. Which of the following is not an environment friendly practice,
 a) using own vehicle instead of public transport b) carrying cloth bags to shop
 c) rain water harvest d) switching of unnecessary lights and fans

XIII. Answer the following questions: 2x1=2

29. What is the main reason for the depletion of ozone?
 30. What is rain water harvesting ?

XIV. Answer the following questions : 3x2=6

31. Draw a labelled diagram of longitudinal section of flower.
 32. Why blood moves only once for one circulation through the heart in fishes ?

OR

What is double circulation? Why mammals and birds have four chambered heart?

33. At your home, to reduce the consumption of electricity, what measures you will take?

XV. Answer the following questions: 3x3=9

34. What is speciation? List the reasons for speciation?

OR

“Kale is evolved from wild cabbage” Explain.

35. How does reproduction help in providing stability to population of a species?

OR

What could be the reason for adopting contraceptive methods.

36. Draw a diagram showing the structure of Nephron and label the following parts.
 a) Bowman’s capsule b) collecting duct

XVI. Answer the following questions. 2x4=8

37. i) Describe the sex determination in human beings.
 ii) Give an example where sex is not genetically determined.
38. What is reflex arc?. Explain reflex action with an example.

OFFICE OF THE DDPI, KOLAR DISTRICT, KOLAR

MODEL QUESTION PAPER – 6 2020-21

SUB : SCIENCE

SUB. CODE : 83E

TIME : 3.15 HOUR MAX MARKS : 80

PART : A PHYSICS

- I. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 4x1=4**
1. The phenomenon of a electromagnetic induction is
 - a. Process of charging a thing.
 - b. The process of producing a magnetic field by passing current through a coil.
 - c. Induction of electric current in a circuit by relative motion between magnet and coil.
 - d. Rotation of a coil in electric motor.
 2. Fuel used in thermal power plant is
 - a. Water b. Coal c. Uranium d. Wind.
 3. The rate at which electrical energy is consumed is
 - a. potential difference b. electric power c. electric current d. electric charge
 4. The resistance of a wire of length "l" is "R". If the length of the wire is increased to "2 l", then the resistance of the wire is
 - a. R/2 b. 2R c. 2/R d. R
- II. Answer the following questions: 2x1=2**
5. What is 1 diopter?
 6. What is a magnetic field?
- III. Answer the following questions: 2x2=4**
7. What are the limitations of establishment of wind energy farms?
 8. Draw the circuit diagram showing the combination of resistors R_1 , R_2 , R_3 in parallel including voltmeter, plug key and battery.
- IV. Answer the following questions: 3x3=9**
9. Draw a ray diagram of an image, when object is placed between F_1 and $2F_2$ of a concave lens. Write the position relative size and nature of the image.
 10. a) Mention the application of heating effect of electric current in an electric bulb and the fuse used in an electric circuit.
b) What is the SI unit of Power?
 11. Resistance of a metal wire of length 2m is 30 ohms at temperature 250C. If diameter of the wire is 0.6mm, calculate the resistance of the metal at that temperature.
- (or)
- An electric heater of 500W operates 12 hour per day. What is the cost of the energy to operate it for 30days at 4 rupees per kWh.
- V. Answer the following questions: 1x4=4**
12. Why the lenses are called converging and diverging lenses? What is the relation between power of lens and focal length ?
- OR
- i) How concave lens is different from convex lens ?
 - ii) Which type of lens always produce virtual image ?

VI. Answer the following questions:**1x5=5**

13. A. Write the characteristics of magnetic lines of force.
 B. Which rule is used to find magnetic field around a straight conductor carrying current.
 C. Explain the working of a generator.

PART : B CHEMISTRY**VII. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet.****2x1=2**

14. The hardest natural material is
 a. Iron b. Sodium c. Diamond d. Copper.
 15. The functional group present in CH_3COOH is
 a. Aldehyde b. Carboxylic acid c. Ketone d. Alcohol.

VIII. Answer the following questions:**4x1=4**

16. Why do acids not show acidic behavior in the absence of water?
 17. What is addition reaction?
 18. The atomic numbers of Nitrogen and Phosphorous are 7 and 15 respectively. Which element is having more electro-negativity and why?
 19. What is electro-negativity ?

IX. Answer the following questions:**3x2=6**

20. Under what soil condition do you think a farmer would treat the soil of his field with quick lime (CaO) or $[\text{Ca}(\text{OH})_2]$ or chalk (CaCO_3) and why?

-OR-

A person is suffering from indigestion due to the intake of hot spicy food. What remedy will you prescribe to the patient ? Give the name of a chemical that can give relief to him.

21. Define substitution reaction of carbon compounds and write a suitable chemical equation.
 22. What are electropositive elements? What happens electro positivity if we move down the group in modern periodic table?

X. Answer the following questions:**3x3=9**

23. Draw a diagram showing the reaction of Zn with $\text{dil.H}_2\text{SO}_4$ and testing Hydrogen gas by burning and label the following parts:
 a) Zinc granules b) Soap solution.
 24. Draw a diagram to show testing the conductivity of a salt solution and label the following parts.
 a) beaker b) battery
 25. What are covalent compounds? Carbon can form only covalent compounds but not ionic compounds. Why?

-OR-

Define oxidation of carbon compounds and write a suitable chemical equation. Give two examples for oxidizing agents.

XI. Answer the following questions:**4x1=4**

26. a. Write the balanced equation for the following:
 i) Reaction of Sodium with water.
 ii) Reaction of Magnesium with hydrochloric acid.
 b. Why metals do not release hydrogen gas on reaction with nitric acid?

- c. Metal A reacts with salt solution of metal B and results in the formation of salt solution of metal A and metal B.
- Why salt solution of metal A is formed in this reaction?
 - Arrange metal A and B in the decreasing order of their reactivity.

PART : C BIOLOGY

XII. Four alternatives are given for each of the following questions. Choose the correct alternative and write the complete answer along with its letter of alphabet. 2x1=2

27. The part of the nerve cell which contains nucleus
- | | | | |
|---------|-------------|----------|--------------|
| a. Axon | b. Dendrite | c. Cyton | d. Nerve end |
|---------|-------------|----------|--------------|
28. The scientific method to conserve soil and water is
- | | |
|--------------------------|--------------------------|
| a. Construction of dams. | b. Water shed management |
| c. Rain water harvesting | d. Afforestation |

XIII. Answer the following questions: 2x1=2

29. Abhay Raj is advised to design and develop an engine with high efficiency. What is the main intention behind this project?
30. What are natural resources? Give an example.

XIV. Answer the following questions : 3x2=6

31. Write the function of the renal artery and renal vein.
(or)
Name the filtration units of kidney and why is it called so? Give reason.
32. Draw the diagram of flower showing the germination of pollen on stigma and label the following parts.
- | | |
|----------------|----------|
| a) pollen tube | b) ovary |
|----------------|----------|

33. Write two advantages and disadvantages in building a dam.

XV. Answer the following questions: 3x3=9

34. Draw a neat diagram showing the structure of excretory system in human being and label the following parts:
- | | |
|--------------------|----------------------|
| i) Left renal vein | ii) Urinary bladder. |
|--------------------|----------------------|
35. Evolution should not be equated with progress. Why?
(or)

"Individual experiences cannot passed on to its progeny". Why?

36. What is the importance of DNA copying in reproduction?
(or)

How does embryo get nourished inside the mother's body?

XVI. Answer the following questions. 2x4=8

37. Write the functions of the following hormones:
- | | |
|------------------|--|
| a. Auxin | |
| b. Gibberellin | |
| c. Cytokinin | |
| d. Abscisic Acid | |
38. Explain with an example showing the variations in internal tendency of organisms.