

- Which metal shows anomalous behavior as water does?
a) invar b) steel **c) antimony** d) copper
- A liquid boils when its vapour pressure is;
a) equal to total external pressure on its surface. b) greater than total external pressure.
c) less than total external pressure. **d) equal to atmospheric pressure.**
- Unit of conductance is
a) Ohm b) Volt / Ampere c) Farad **d) Siemens**
- The resistance of a metal
a) increases with increase in temperature. b) decreases with increase in temperature.
c) independent to change in temperature. d) may increase or decrease with increase in temperature.
- The electric current is due to flow of
a) positive charge only. **b) negative charge only.**
c) both positive and negative charges d) neutral particles only.
- “All planets revolve round the sun.” The theory is forwarded by
a) Newton **b) Galileo** c) Nicholas d) None of them
- The mass of an object is 60 kg on the earth. Its mass on the moon is
a) 60 kg b) 6 kg c) 10 kg d) None of them
- Image formed by a concave lens is:
a) virtual **b) virtual, erect and diminished**
c) virtual, inverted and diminished d) real, erect and magnified
- “Pressure applied to an enclosed fluid is transmitted to all parts of the fluid.” It is
a) Archimedes’ principle b) Pressure principle
c) Principle of floatation **d) none of them**
- The fuse is always connected in
a) neutral wire b) earthing wire **c) phase wire** d) None of them
- What is real depth of a swimming pool which appears 3m deep from the surface, when viewed from air? ($\mu = 4/3$)
a) 4m b) 1m c) 3m d) 5m
- There is no atmosphere on the moon, because
a) It is closer to the earth. b) It revolves round the earth.
c) It gets light from the sun. **d) None of these**
- The intensity of the gravitational field of the earth is maximum at
a) center of the earth. b) equator **c) poles** d) same everywhere.
- The temperature at which Celsius and Fahrenheit scale gives the same reading is
a) 0°C b) -32°C **c) -40°C** d) 40°F
- The value of dip at the place where vertical and horizontal component of the magnetic field of the earth are equal is
a) 0° **b) 45°** c) 60° d) 90°
- Which of the following is not a unit of length?
a) radian b) angstrom c) light year d) micron
- If a particle covers equal distances in equal time intervals, it is said to
a) Be at rest. b) Move with uniform speed)
c) Move with uniform velocity. d) Move with uniform acceleration.
- The numerical ratio of displacement to distance is
a) always less than one b) always equal to one
c) always more than one **d) equal to or less than one**
- If the graph between two quantities is a straight line, the quantities
a) Must be both constants. b) Must be proportional to each other.
c) May be proportional to each other. d) Must be equal.
- An object is projected upwards with a velocity of 100 m/s. It will strike the ground in about
a) 5s b) 10s **c) 20s** d) 15s

CHEMISTRY

1×20=20

- Concentrated solution is
a) that contain large amount of solute b) that contain less amount of solute
c) both d) none
- How much water will be needed to make saturated solution of 90 gm of solute in 45°C temperature? The solubility of solute is 30.
a) 300 gm b) 250 gm c) 350 gm d) 332 gm
- Table salt is
a) NaCl b) KCl c) both d) none
- Which one of the following is not alkali metal?
a) Na b) Cs c) Fr **d) Sr**
- $\text{CaO} + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O}$ is an example of
a) addition reaction **b) acid-base reaction**

- c) decomposition reaction d) none of the above
6. Aqueous solution of phenolphthalein will turn pink by the addition of _____ in water.
a) sodium b) HCl c) NaCl d) NaNO₃
7. In water, compound X and litmus paper are kept. After dissolving X, blue litmus paper turned red. X may be
a) NaCl b) NaOH **c) AlCl₃** d) Na₂CO₃
8. If a metal M forms a compound MHSO₃, it will form a chloride of molecular formula:
a) MCl₃ b) MCl c) MCl₂ d) MCl₄
9. Which one of the following is an ionic compound?
a) H₂CO₃ b) H₂O c) NH₃ **d) K₂SO₄**
10. The molecular formula of sodium peroxide is
a) Na₂O b) NaO c) NaO₂ **d) Na₂O₂**
11. What compound can be used in Clark's process
a) NaOH b) Ca(OH)₂ **c) Mg(OH)₂** d) KOH
12. Aqua - regia is a powerful oxidant due to the liberation of
a) NOCl b) [Cl] c) [O] **d) NO₃⁻**
13. Which one give H₂(g) with alkali
a) Na b) Mg c) Al d) Fe
14. Calculate the pressure at which the volume of given mass of gas doubled at constant temperature, If the initial pressure is 760 mmHg.
a) 760 mmHg b) 340 atm **c) 0.5 atm** d) none of the above
15. Petrol is obtained from the mixture of crude oil by
a) Distillation b) Crystallisation **c) Fractional distillation** d) both a & c
16. A 'saturated solution is:
a) that can dissolve more solute at a particular temperature b) both
c) that cannot dissolve any solute at a particular temperature d) None
17. In 50% aqueous alcohol
a) Alcohol is solute b) H₂O is solute **c) both a & b** d) None of the above
18. The type of bond possible between two elements belonging to group IA & VIIA
a) Covalent b) Coordinate c) Ionic **d) Ionic & covalent**
19. A compound has the empirical formula of C₂H₅. Which is the most possible molecular formula for that compound?
a) CH₄ b) C₄H₁₀ c) C₂H₆ d) C₃H₈
20. Compound X + Water → compound Y + Ammonia.
Compound X and Y are:
a) Mg₃N₂ + Mg(OH)₂ b) Mg₃N₂ + Al(OH)₃ c) AlN₃ + Al(CH)₃ d) Both a & b

BIOLOGY

1×20=20

1. The term cell was given by
a) Robert Brown **b) Robert Hooke** c) Leeuwenhoek d) Schleiden
2. The cell theory was proposed by.....
a) Schleiden b) Robert Hooke c) Janssen **d) Schleiden and Schwann**
3. The word protoplasm was coined by.....
a) Robrt Brown b) Virchow c) Schwann **d) Purkinje**
4. A prokaryotic cell does not have....
a) Nuclear membrane b) DNA c) cell membrane **d) organelles**
5. A plant cell must have which of the following?
a) Mitochondria b) centriole **c) cell wall** d) lysosome
6. Which one is exception to cell theory?
a) Virus b) mycoplasma c) algae d) all the above
7. Kingdom monera includes which of the following organisms?
a) eukaryotes and unicellular **b) prokaryotes**
c) eukaryotes and multicellular d) acellular organisms
8. Study of fossils is called
a) dendrochronology b) gerontology **c) palaentology** d) histology
9. *Spirogyra* is commonly called pond silk because
a) silk is manufactured form it **b) it looks like silk thread**
c) it is slimy to touch d) it is very strong thread
10. Disease caused by *Plasmodium vivax* is called
a) Benign malaria b) cerebral malaria c) fatal malaria d) quartan malaria
11. Which of the following is detritivorous?
a) *Paramecium* **b) earthworm** c) cat d) toad
12. Calciferous cells are found in which part of *Pheretima*?
a) Pharynx b) spermathacae c) typhlosole **d) stomach**
13. Biradial symmetry is common in

14. a) porifera **b) coelenterate** c) echinodermata d) chordate
 Clitellum is significant for
15. a) mucous secretion **b) cocoon formation** c) protection d) respiration
 Which of the following is not the locomotory organ of protozoa?
16. a) Cilia b) Pseudopodia c) Flagella **d) Tentacle**
 The roots developing from any part of plant body other than radical are known as
17. **a) adventitious roots** b) fleshy tap root c) tap roots d) none
Pheretima is placed in the class oligochaeta because
18. **a) setae are comparatively fewer than in other annelids**
 c) setae do not help in locomotion b) setae are absent d) setae are abundant
19. A prokaryotic cell does not have
 a) nuclear membrane b) DNA c) cell membrane **d) organelles**
20. Which one is exception to cell theory?
 a) Mycoplasma c) Algae d) Nerve cell **d) Virus**
 In which component of mitochondria ATP is synthesized?
 a) Cristae b) matrix c) outer membrane **d) oxysomes**

MATHEMATICS

1×20=20

1. Due to an increment of 20% Ram's salary is Rs. 1440, Ram's previous salary was
a) Rs. 1200 b) Rs. 1100 c) Rs. 1150 d) None of these
2. The value of $\sqrt{2 + \sqrt{2 + 2 \cos 4x}}$ is
 a) $2 \sin x$ **b) $2 \cos x$** c) $2 \tan x$ d) $2 \sec x$
3. If the lines $2x + 3ay - 1 = 0$ and $3x + 4y + 1 = 9$ are mutually perpendicular, then the value of a is
a) $-1/2$ b) 3 c) 5 d) None of these
4. If $3^x = 4^y = 12^z$, then $z =$
 a) xy b) $x + y$ **c) $\frac{xy}{x+y}$** d) $4x + 3y$
5. If $x^5 = 1$, then the number of solution of x is
 a) 1 **b) 5** c) 2 d) 10
6. Let A and B are singular matrices. Then $(AB)^{-1} =$
a) $B^{-1} A^{-1}$ b) $A^{-1} B^{-1}$ c) AB^{-1} d) Does not exist
7. If $A = A \cup B$ then $A \cap B =$
 a) A **b) B** c) $A - B$ d) $A \cup B$
8. If the sum of two unit vector is a unit vector then magnitude of their difference is
 a) 0 **b) 1** c) $\sqrt{2}$ d) $\sqrt{3}$
9. If $\sin \theta + \operatorname{Cosec} \theta = 2$, then $\sin^5 \theta + \operatorname{Cosec}^5 \theta$ is
a) 2 b) 4 c) 8 d) 16
10. In a triangle ABC, if $a = 2$, $b = 3$, $\sin A = \frac{2}{3}$, then $\angle B =$
a) 30° b) 45° c) 60° d) 90°
11. If $y = f(x) = \frac{ax - b}{bx - a}$, then $f(y)$ is
 a) 1 b) x c) y **d) None of these**
12. What type of locus is represented by $(\sqrt{a} x + \sqrt{b} y)^2 = 0$
 a) Two separate lines b) Two perpendicular lines
c) Two coincident lines d) None of these
13. If $A = \frac{\pi}{9}$ then $\cos A \cdot \cos 2A \cdot \cos 3A \cdot \cos 4A =$
 a) 16 **b) $1/16$** c) $1/9$ d) $1/12$
14. The increasement of 10% and then decrease of 10% is equal to:
 a) 0% b) 10% c) 20% **d) 1%**
15. Which of the following can not be expressed as the sum of three consecutive integers?
a) 8922 b) 3852 c) 2523 d) 4663
16. If $A = \{x: -3 \leq x < 2\}$ and $B = \{x: -2 \leq x < 3\}$ then $A - B$ is
a) $\{x: -3 \leq x < -2\}$ b) $\{x: -2 \leq x < 2\}$ c) $\{x: -3 \leq x \leq 3\}$ d) None of these
17. How many diagonals are in regular octagon?
 a) 20 **b) 18** c) 22 d) 19
18. If $\sin A + \sin B = x$ and $\cos A + \cos B = y$ then $\cos(A - B)$ is equal to
 a) $x^2 + y^2 - 2$ **b) $(x^2 + y^2 - 2)/2$** c) $(2 - x^2 - y^2)/2$ d) $(x^2 + y^2 + 2)/2$
19. The equation $ax + by + c = 0$ always represent a
a) st. line b) circle c) parabola d) square
20. If A and B are two subsets of U with $n(U) = 43$, $n(A) = 25$, $n(B) = 18$, $n(A \cap B) = 7$. Then the value of $n(\overline{A \cup B})$ is
 a) 36 **b) 7** c) 43 d) 30