SET - I

ENGLISH

1. The practice of marrying more than one husband at a time is: ____.

a) polygamy b) bigamy

c) polyandry d) polychotomy

2. ____World War II affected the contemporary society adversely.

a) A b) An

c) The d) None

3. So you are working very hard, _____ ?

a) aren't you? b) are you?

c) do you? d) don't you?

4. The principal and secretary _____ highly impressed with overall progress of the students.

a) were b) was

c) are d) is

5. I had bought an old house and got some men _____ it.

a) renovate b) renovated

c) to renovate d) none

6. She would certainly come to see me if weather_____.

a) remains fine b) remained fine

c) would be fine d) wouldn't be fine

7. It's high time that Nepali government ___ more in health sectors.

a) invest b) should invest

c) will invest d) invested

8. The passive of the sentence, "He will not speak a word." is:

a) A word will not be spoken by him.

b) No word will be spoken by him.

c) A word will never be spoken by him.

d) All of the above

9. He is sitting _____ an armchair and I am sitting _____ the chair.

a) in, on
b) on, at
c) in, in
d) with, by

10. Don't get off the bus until it is _____.

a) station
b) stationery
c) stationary
d) None

PHYSICS

11. Which of the following is correct unit of gravitational constant?

a) $m^3 kg^{-1}s^{-2}$
b) $m^3 kg^{-2}s^{-1}$
c) $m^{-3} kg^{-1}s^2$
d) $m^{-3} kg^2s^{-1}$

12. A stone is dropped from the top of tower of height h. If it reaches the ground in 5 seconds, find the height of tower. (Take g = 10 ms^{-2})

a) 125 m
b) 12.5 m
c) 1.25 m
d) 25 m

13. Which of the following statements is incorrect?

a) Work done may be positive, negative and zero.
b) Kinetic energy and potential energy are mechanical energy.
c) Rate of doing work is power.
d) Work, energy and power are vector quantities.

14. As we go from the equator to the poles, the value of g

a) Remains the same
b) Decreases
c) Increases
d) Decreases up to latitude of 45^o

15. Density of brick is 2.5 gcm^{-3} and its mass is 1kg. How much water does it displace when it is wholly immersed in water?

a) 200 cm^3
b) 300 cm^3
c) 400 cm^3
d) 500 cm^3

16. 40°C is equivalent to the Fahrenheit scale is

a) 40°F
b) 72°F
c) 102°F
d) 104°F

17. A 5 kg mass requires 80J heat to raise its temperature by 10°C. Its specific heat capacity in $JKg^{-1}°C^{-1}$ is

a) 8 b) 1.6
c) 40 d) 3.2

18. A person cannot see the distant objects clearly. What type of lens is used to remove this defect?

a) Convex lens b) Concave lens
c) Coverging meniscus lens d) None of the above

19. What type of combination is done in domestic wiring?

a) Parallel combination b) Series combination
c) Closed combination d) Mixed combination

20. Velocity of sound in vacuum is

a) 332 ms^{-1} b) 3×10^8 ms^{-1}
c) 0 ms^{-1} d) 100 ms^{-1}

CHEMISTRY

21. Which of the following radical is not monovalent?

a) Iodide c) Cyanide
c) Bicarbonate d) Sulphite

22. Acid base reaction is basically

a) Single displacement reaction b) Addition reaction
c) Decomposition reaction d) Double displacement reaction

23. The immiscible liquids can be separated by:

a) Filtration b) Sublimation
c) Distillation d) Separating funnel

24. Which of the following gas is acidic in nature?

a) Hydrogen b) Nitrogen
c) Carbondioxide d) Ammonia

25. The least percentage of carbon is in:

a) Cast iron b) Wrought iron
c) Steel d) Stainless steel

26. Which of the following is not an example of organic compound:

a) $CHCl_3$ b) CCl_4

b) CH_3COOH d) H_2CO_3

27. Which of the following polymer material is used in the production of thermocol?

a) Teflon b) Bakelite

c) Polystyrene d) Polythene

28. Water is:

a) Polar solvent b) Non-polar solvent

c) Universal solvent d) both (a) and (c)

29. Example of Lewis acid is

a) NH_3 b) CN^-

c) $SnCl_4$ d) OH^-

30. Which of the following is used in alcoholic drink?

a) Isopropyl alcohol b) Methyl alcohol

b) Ethyl alcohol c) all of above

MATHEMATICS

31. Let N_a = {an : n is a natural number}, then $N_6 \cap N_8$ is equal to

a) N_2 b) N_{48}

c) N_8 d) N_{24}

32. If a, b, c are in A.P, then $\frac{a-b}{c-b}$ equals

a) –1 b) $\frac{a}{b}$

c) $\frac{a}{c}$ d) 1

33. If the line $2x - y + \alpha = 0$ is a diameter of the circle $x^2 + y^2 + 6x - 6y + 5 = 0$ then the value of α is

a) 0 b) 3

c) 9 d) –9

34. If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then A^4 is

a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ b) $\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$

c) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ d) none of these

35. In a final step of the calculation, a student accidentally divided by 100 instead of multiplying by 100. What should he do to correct his answer?

a) Multiply by 100 b) Multiply by 10^4

c) Divide by 100 d) Multiply by 10^3

36. If $\sin\theta + \text{Cosec}\theta = 2$ then $\sin^2\theta + \text{Cosec}^2\theta$ is equal to

a) 1 b) 4

c) 2 d) 9

37. For a fixed sum of money for 10 years, which one of the following scheme provides the maximum amount of interest during 10 years?

a) simple interest at the rate of 10% p.a.

b) compound interest at the rate of 10% p.a. compounded annually.

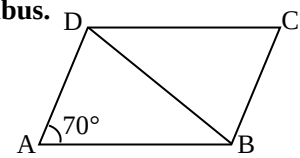
c) compound interest at the rate of 10% p.a. compounded half yearly.

d) compound interest at the rate of 10% p.a. compounded quarterly.

38. In the adjoining figure, ABCD is a rhombus. If $\angle A = 70°$ then $\angle CDB =$

a) 65° b) 55°

c) 35° d) 45°



39. A polynomial $f(x)$ of degree m is divided a polynomial of degree n such that $n < m$, then degree of the quotient is

a) m / n b) $m - n$

c) $m + n$ d) $n - m$

40. If $\frac{P}{Q} = 7$ then $\frac{P+Q}{P-Q} =$

a) $\frac{7}{8}$ b) $\frac{4}{3}$

c) $\frac{3}{4}$ d) None of these

BIOLOGY

41. Father of Ecosystem is ----

a) A.G. Tansley b) EP Odum
c) Hackel d) Reiter

42. Separation of Homologous chromosomes occurs in-

a) Anaphase-II b) Anaphase-I
c) Prophase-I d) Prophase-II

43. An example of alleles is

a) AB and Tt b) TT and Tt
c) T and t d) X and Y

44. The edible part of Cauliflower is-

a) Inflorescence b) Head
c) Thalamus d) Kernel

45. Transport of water and mineral in higher plants take place through

a) Tracheids b) Transfusion tissue
c) Companion cells d) Sieve elements

46. Aerial mode of adaptation is called

a. Volant b. aquatic
c. Arboreal d. Cursorial

47. The presence of pneumatic bone in birds….

a. To support body b. To make body light
c. To move d. To store oxygen

48. The coronary arteries carry blood to the:

a. Brian tissue b. Heart muscles
c. Liver cells d. Walls of alveolus

49. Which is water born disease?

a. Small Pox b. Malaria
c. Tuberculosis d. Cholera

50. Animals becoming active during twilight hours are called as

a. Crepuscular b. Diurnal
c. Nocturnal d. Gregarious

Answer with Hints and Solutions

SET – I

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

|| PHYSICS ||

11. a) According to Newton's law of gravitation

$$F = \frac{GM_1M_2}{r^2}$$

or, $kg \times m \times s^{-2} = \frac{G \times kg \times kg}{m^2}$

$\therefore \quad G = m^3 kg^{-1}s^{-2}$

12. a) $\mathbf{h = \frac{1}{2} gt^2 == \frac{1}{2} \times 10 \times 25 = 125m}$

13. d) They are scalar quantities.

14. c) $g = \frac{GM}{R^2}$ i.e $g \alpha \frac{1}{R^2}$, R is greater for equator and less in pole, so g increases.

15. c) For wholly immersed case,

Volume of displaced water = Volume of brick

$$= \frac{\text{mass}}{\text{density}} = \frac{1000}{2.5} = 400 \text{ cm}^3$$

16. d) Here, C = 40°C

$$\frac{C}{100} = \frac{F - 32}{180}$$

or, $\frac{40}{100} = \frac{F - 32}{180}$

or, $F = 104°F$

17. b) $Q = ms\Delta\theta$

$80 = 5 \times s \times 10$

$\therefore \quad s = 1.6$

18. b) Concave lens, myopia

19. a) Parallel combination

In parallel combination each appliances can be put on and off independently.

20. c) Sound wave is longitudinal wave. It can propagate through any type of medium and in vacuum it becomes zero.

|| CHEMISTRY ||

21. d) Sulphite : Valency of sulphite (SO_3^{--}) is 2 .

22. d) Double displacement reaction : Most of the neutralization reactions are also double displacement reaction.

23. d) Separating funnel: Separating funnel is used to separate the mixture of two liquids which are immiscible. For example Oil and Water can be separated by separating funnel.

24. c) Carbondioxide : Generally oxides of non metals are acidic in nature. CO_2 gives acid when dissolved in water and reacts with base or alkali to give salt and water.

25. b) Wrought iron: it contains only 0.12 to 0.25% of carbon.

26. d) H_2CO_3

27. c) Polystyrene

28. d) both (a) and (c) : Water is universal solvent because it can dissolve most of the solute and is also polar solvent.

29. c) $SnCl_4$: Lewis acid are the chemical species which has tendency to accept loan pair of electron. $SnCl_4$ can accept loan pair from other so it is lewis acid.

30. b) Ethyl alcohol

|| MATHEMATICS ||

31. d) N_6 contains all multiples of 6 and N_8 contains all multiples of 8. So, $N_6 \cap N_8 = N_{24}$ which contains the common multiples of 6 and 8.

32. a) $b - a = c - b \Rightarrow \frac{a-b}{c-b} = -1$

33. b) The given line is a diameter of the given circle only if center $(-3, 3)$ lies on the line. So, $2(-3) - 3 + \alpha = 0$ i.e. $\alpha = 9$.

34. a) $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = I$ (identity matrix)

$A^4 = (A)^2 \times (A)^2 = (I \times I) \times (I \times I) = I$.

35. b) obvious

36. c) $(\text{Sin}\,\theta + \text{Cosec}\,\theta)^2 = 4$

$\text{Sin}^2\theta + \text{Cosec}^2\theta + 2 = 4$

$\text{Sin}^2\theta + \text{Cosec}^2\theta = 2$

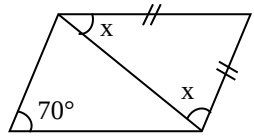
37. d) compounded quarterly gives the highest amount of interest as interest is converted to the principal quickly in comparison to the other schemes.

38. b) $x + x + 70° = 180°$

$2x = 180° - 70°$

$2x = 110°$

$x = 55°$



39. b) obvious of laws of indices

40. b) $\frac{P+Q}{P-Q} = \frac{\frac{P}{Q}+1}{\frac{P}{Q}-1} = \frac{7+1}{7-1} = \frac{4}{3}$

|| BIOLOGY ||

41. a)
- A.G Tansley coined the term “Ecosystem”.
- Hackel gave the correct definition of Ecology.
- Reiter coined the term ecology in the form of ooikiolous.

42. b)
- Prophase-I consists of 5 sub stages:
- Leptotene : Also called thin threaded or bouquet stage.
- Zygotene: Pairing of homologous chromosomes occurs.
- Pachytene: Crossing over takes place.
- Diplotene: Chiasmata formation occurs.
- Diakinesis: Terminalization of chiasmata occurs.
- Seperation of homologous chromes occurs in Anaphase-I.
- Centromere of each chromosome seperates in Anaphase-II.

43. b)
- **Allele** – contrasting pair of characters. Eg tall and dwarf

44. a)
- Cauliflower is the largest inflorescence.

45. a)
- Tracheids helps in transportation of water and minerals
- **companion cell** helps in transport of carbohydrates from outside the **cells** into the **sieve tube** elements.
- The main **function** of the **sieve tube** is transport of carbohydrates, primarily sucrose, in the plant

46. a)
- Aquatic is living in water
- Arboreal means spending the majority of lives in trees.
- Cursorial is adapted specially to run.

47. b)
- Pneumatic bones are marrowless bones that make the body light

48. b)
- Coronary is always related to heart.

49. d)
- Small pox is viral disease cause by droplet infection.
- Malaria is protozonal disease transmitted by mosquito bite.
- Tuberculosis is bacterial disease transmitted by droplet infection.
- Cholera is bacterial disease transmitted by contaminated water.

50. a)
- Diurnal is active in day time.
- Nocturnal is active in night.
- Gregarious is living in flocks or loosely organized communities.