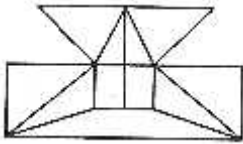


I.Q**Section - I****Straight Objective Type**

This section contains 30 multiple choice questions numbered 1 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1.



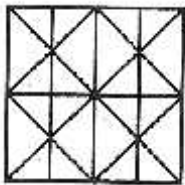
(A) 16

(B) 17

(C) 18

(D) 19

2.



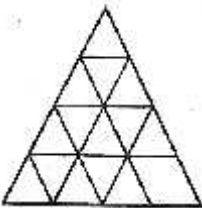
(A) 11

(B) 14

(C) 16

(D) 17

3.



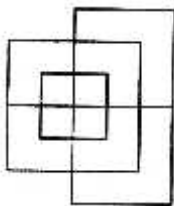
(A) 9

(B) 11

(C) 15

(D) 16

4.



(A) 13

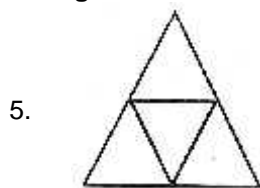
(B) 15

(C) 17

(D) 19

Space for rough work

Directions (Question 5): In each of the following questions, find the number of triangles in the given figure.



(A) 4

(B) 5

(C) 6

(D) 7

6. Which is the third number to the left of the number which is exactly in the middle of the following sequence of numbers?

1 2 3 4 5 6 7 8 9 2 4 6 8 9 7 5 3 1 9 8 7 6 5 4 3 2 1

(A) 3

(B) 4

(C) 5

(D) 6

7. How many 5s are there in the following number sequence which are immediately preceded by 7 and immediately followed by 6?

7 5 5 9 4 5 7 6 4 5 9 8 7 5 6 7 6 4 3 2 5 6 7 8

(A) One

(B) Two

(C) Three

(D) Four

8. How many 6s are there in the following number series, each of which is immediately preceded by 1 or 5 and immediately followed by 3 or 9?

2 6 3 7 5 6 4 2 9 6 1 3 4 1 6 3 9 1 5 6 9 2 3 1 6 5 4 3 2 1 9 6 7 1 6 3

(A) None

(B) One

(C) Two

(D) Three

9. How many 7s immediately preceded by 6 but not immediately followed by 4 are there in the following series?

7 4 2 7 6 4 3 6 7 5 3 5 7 8 4 3 7 6 7 2 4 0 6 7 4 3

(A) One

(B) Two

(C) Four

(D) Six

10. In the series given below, count the number of 9s, each of which is not immediately preceded by 5 but is immediately followed by either 2 or 3. How many such 9s are there?

1 9 2 6 5 9 3 8 3 9 3 2 5 9 2 9 3 4 8 2 6 9 8

(A) One

(B) Three

(C) Five

(D) Six

Space for rough work

Directions (Questions 11 – 13): Read the following information to answer the given questions:

Seven children A, B, C, D, E, F and G are standing in a line. G is to the right of D and to the left of B. A is on the right of C. A and D have one child between them. E and B have two children between them. D and F have two children between them.

11. Who is on the extreme right?
(A) B (B) E (C) F (D) G
12. Who is exactly in the middle?
(A) A (B) C (C) D (D) E
13. Who is on the extreme left?
(A) A (B) B (C) C (D) D

Directions (Questions 14 to 17): Read the following information carefully and answer the questions given below:

- (i) Jayant, Kamal, Namita, Asha and Tanmay are five members of a family.
- (ii) They have their birth dates from January to May, each member in one of these months.
- (iii) Each one likes one particular item for his/ her birthday out of Bengali sweets, Chocolates, Pastries, Ice-cream and Dry fruits.
- (iv) The one who likes Pastries is born in the month which is exactly middle in the months given
- (v) Asha does not like Ice-cream but brings Chocolates for Jayant in February.
- (vi) Tanmay who is fond of Bengali sweets is born in the next month immediately after Namita.
- (vii) Namita does not like Dry fruits or Ice-cream.

14. What is the choice of Asha?
(A) Pastries (B) Dry fruits
(C) Bengali sweets (D) cannot be determined
15. Which combination of month and item is true for Jayant?
(A) March – Pastries (B) February – Pastries
(C) February – Ice cream (D) None of these
16. What is the choice of Kamal?
(A) Ice – cream (B) Bengali sweets
(C) Dry fruits (D) cannot be determined
17. In which month was Kamal born?
(A) January (B) May (C) January or May (D) Data inadequate

Space for rough work

Directions (Questions 18 to 21): Study the following information carefully and answer the questions given below:

Three ladies and four men are a group of friends i.e. P, K, R, Q, J, V and X. Each one has a different profession i.e. Lawyer, Travel Agent, Air-hostess, Doctor, Professor, Consultant and Jeweller and each one owns a different car i.e. Alto, Corolla, Santro, Lancer, Ikon, Scorpio and Esteem, not necessarily in that order. None of the ladies is a Consultant or a Lawyer. R is an Air-hostess and she owns an Ikon car. P owns a Scorpio. K is not a Doctor. J is a Jeweller and he owns Corolla. V is a Lawyer and does not own Alto. X is a Consultant and owns Santro. The Doctor owns Esteem car whereas the Professor owns Scorpio. The Travel Agent owns an Alto. None of the ladies owns a Scorpio.

18. Who are the three ladies in the group?
 (A) V, R, K (B) R, P, J (C) R, K, Q (D) Data inadequate
19. What car does Q own?
 (A) Esteem (B) Lancer (C) Alto (D) Santro
20. Who owns the car Lancer?
 (A) V (B) X (C) K (D) Data inadequate
21. What is the profession of K?
 (A) Doctor (B) Professor (C) Travel Agent (D) Data inadequate
22. Choose the alternative which is closely resembles the mirror image of the given combination.

REASONING

(1) REASONING (2) REASONING
 (3) REASONING (4) REASONING

- (A) 1 (B) 2 (C) 3 (D) 4

23. Choose the alternative which is closely resembles the mirror image of the given combination.

QUALITY

(1) QUALITY (2) QUALITY
 (3) QUALITY (4) QUALITY

- (A) 1 (B) 2 (C) 3 (D) 4

24. Choose the alternative which is closely resembles the water-image of the given combination.

ACOUSTIC

(1) ACOUSTIC (2) ACOUSTIC
 (3) ACOUSTIC (4) ACOUSTIC

- (A) 1 (B) 2 (C) 3 (D) 4

Space for rough work

25. Choose the alternative which is closely resembles the water-image of the given combination.

monday

- (1) yadnom (2) yabnom
(3) laquow (4) wouqsl

(A) 1 (B) 2 (C) 3 (D) 4

26. Choose the alternative which is closely resembles the mirror image of the given combination.

Nu56p7uR

- (1) Nu56p7uR (2) Rn7q82nH
(3) Rn7q82nH (4) Rn7q82nH

(A) 1 (B) 2 (C) 3 (D) 4

Directions (Questions 27 to 29): Select a figure from amongst the Answer Figures which will continue the same series as established by the Problem Figures.

27. **Problem Figures** **Answer Figures**
-
- (A) 1 (B) 2 (C) 4 (D) 5

28. **Problem Figures** **Answer Figures**
-
- (A) 1 (B) 2 (C) 3 (D) 5

29. **Problem Figures** **Answer Figures**
-
- (A) 1 (B) 2 (C) 3 (D) 5

Directions (Question 30): Select a figure from amongst the Answer Figures which will continue the same series as established by the Problem Figures.

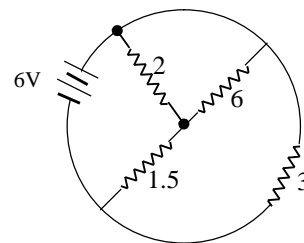
30. **Problem Figures** **Answer Figures**
-
- (A) 1 (B) 2 (C) 3 (D) 5

Space for rough work

Physics**Section - II****Straight Objective Type**

Physics contains 15 multiple choice questions numbered 1 to 15. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- A bulb of (220 V, 60 W) is operated on 110 V supply then power developed in it is
(A) 15 W (B) 30 W (C) 65 W (D) 60 W
- A uniform conductor of resistance R is cut into 20 equal pieces. Half of them are joined in series and the remaining half of them are connected in parallel. If the two combinations are joined in series, then the effective resistance of all the pieces is
(A) R (B) $\frac{R}{2}$ (C) $\frac{101R}{200}$ (D) $\frac{201R}{200}$
- Determine the potential difference between ends of wire of resistance 5Ω if 720 C charge passes through it per minute.
(A) 10 V (B) 20 V (C) 30 V (D) 60 V
- The total current supplied to the circuit by the battery is
(A) 1 A
(B) 2 A
(C) 4 A
(D) 6 A
- The equivalent resistance of network of three 2Ω resistors cannot be
(A) 0.67 (B) 2Ω (C) 3Ω (D) 6Ω
- A current through a horizontal power line flows from North to South. What is the direction of the magnetic field at a point directly above it?
(A) upward (B) downward (C) East (D) West
- A positively-charged particle projected towards west is deflected upward by a magnetic field. What is the direction of the magnetic field?
(A) upward (B) downward (C) North (D) none of these



Space for rough work

8. In an electric motor, the energy transformation is from
(A) electrical to chemical (B) chemical to light
(C) mechanical to electrical (D) electrical to mechanical
9. The force on a current-carrying conductor placed in a magnetic field increases with increase in
(A) the current in the conductor (B) the magnetic field
(C) the length of the conductor (D) all of these
10. The magnetic field inside a long straight solenoid carrying current
(A) is zero (B) decreases as we move towards its end
(C) increases as we move towards its end (D) is same at all points
11. Just as electricity is supplied at 220 V for domestic use in India, it is supplied at 110 V in USA. If a resistance of 60 W bulb for use in India is R , that of 60 W bulb for use in USA will be
(A) $\frac{R}{4}$ (B) $\frac{R}{2}$ (C) R (D) $2R$
12. Geothermal energy is feasible in regions that
(A) are near the sea (B) have coalmines
(C) have thermal plants (D) area over hotspots in the crust
13. Which of the following is non-renewable source of energy?
(A) Coal (B) Wind energy (C) Solar energy (D) Tidal energy
14. 1 Joule equals
(A) 10^5 ergs (B) 10^6 ergs (C) 10^7 ergs (D) 10^{-7} ergs
15. Which one of the following is different from the others?
(A) Joule (B) Kilowatt hour (C) Erg (D) Watt

Space for rough work

Chemistry

Straight Objective Type

Chemistry contains 15 multiple choice questions numbered 16 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

16. When dilute HCl is added to zinc granules in a test tube
(A) Small bubbles of a colorless gas appear on the surface of zinc granules
(B) A pungent smelling gas is liberated
(C) Temperature in the reaction mixture decreases suddenly
(D) No change takes place.
17. Chemically rust is
(A) Ferrous hydroxide
(B) Hydrated ferrous oxide
(C) Hydrated ferric oxide
(D) Only ferrous oxide (anhydrous)
18. Plaster of paris is formed by heating
(A) Gypsum
(B) Slaked lime
(C) Lime stone
(D) Calcium phosphate
19. The gas evolved on heating Na_2CO_3 and CaCO_3 respectively is
(A) CO_2 , CO_2
(B) CO , CO_2
(C) O_2 , CO_2
(D) No gas is evolved with Na_2CO_3 , CO_2 is evolved from CaCO_3
20. Which of the following element exists as liquid at room temperature?
(A) Sodium (Na)
(B) Bromine (Br_2)
(C) Iodine (I_2)
(D) Phosphorus (P_4)
21. Which of the following is best conductor of electricity?
(A) Copper (Cu)
(B) Iron (Fe)
(C) Silver (Ag)
(D) Lead (Pb)
22. What is the percentage of lead (Pb) in 'Lead Pencil'?
(A) 0%
(B) 10%
(C) 25%
(D) 100%
-

Space for rough work

23. Which of the following will turn red litmus blue?
(A) Pepsi (soft drink)
(B) Lemon juice
(C) Vinegar
(D) Baking soda solution
24. Calcium phosphate present in tooth enamel is
(A) Acidic (B) Basic (C) Neutral (D) Amphoteric
25. A reaction between acid and base is
(A) Endothermic (B) Exothermic
(C) Photochemical (D) Oxidation
26. Which of the following oxides are basic in nature?
(A) Carbon dioxide (CO_2) (B) Water (H_2O)
(C) Calcium oxide (CaO) (D) Zinc oxide (ZnO)
27. Which of the following is slaked lime?
(A) Sodium hydroxide (B) Magnesium hydroxide
(C) Calcium hydroxide (D) Manganese hydroxide
28. Which of the following process/reactions are exothermic?
(A) Electrolysis of water (B) Respiration
(C) Decomposition of AgBr (D) Boiling of water
29. Which of the following metals is used in Galvanisation?
(A) Iron (B) Gold (C) Silver (D) Zinc
30. Bronze is an alloy of
(A) Zn and Ni (B) Cu and Zn (C) Fe and Cu (D) Cu and Sn

Space for rough work

Mathematics

Straight Objective Type

Mathematics contains 15 multiple choice questions numbered 31 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

31. Solve for x and y: $3(2x + y) = 7xy$; $3(x + 3y) = 11xy$

- (A) (0, 1) (B) $\left(\frac{3}{2}, 0\right)$ (C) $\left(1, \frac{3}{2}\right)$ (D) $\left(\frac{3}{2}, 1\right)$

32. A fraction is such that if the numerator is multiplied by 3 and the denominator is reduced by 3, we get $\frac{18}{11}$, but if the numerator is increased by 8 and the denominator is doubled, we get $\frac{2}{5}$. Find the fraction

- (A) $\frac{8}{20}$ (B) $\frac{36}{22}$ (C) $\frac{9}{5}$ (D) $\frac{12}{25}$

33. Eight men and twelve boys can finish a piece of work in 10 days while six men and eight boys can finish the same work in 14 days. Find the number of days taken by one man alone to complete the work and also by one boy alone to complete the work

- (A) man – 180 days, boy – 140 days (B) man – 240 days, boy – 180 days
(C) man – 140 days, boys – 180 days (D) man – 140 days, boy – 280 days

34. If the graph of quadratic polynomial $ax^2 + bx + c$ cuts negative direction of y – axis, then what is the sign of c ?

- (A) $c=0$ (B) negative (C) positive (D) None of these

35. If the system of equations $2x+3y = 5$, $4x+ky=10$ has infinitely many solutions, Then $k =$ _____

- (A) 1 (B) $\frac{1}{2}$ (C) 6 (D) 3

36. In a School, there are as many children in each room as the number of rooms in the school. If total number of students in the school is 1600, then the number of children in each room of the school is

- (A) 24. (B) 40 (C) 50 (D) 60

37. A contractor estimates that 3 persons could rewire Jasminder's house in 4 days. If he uses 4 persons instead of 3, how long should they take to complete the job?

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

Space for rough work

38. The base of a triangle is 4 cm longer than its altitude. If the area of the triangle is 48 sq.cm, find the base of the triangle.
(A) 8 cm (B) 14 cm (C) 12 cm (D) 10 cm
39. A jeep finishes a journey in 8 hours at a speed of 56 km per hour. With what new speed it should travel to cover the same distance in 5 hours?
(A) 89.6 km/hr (B) 89.4 km/hr (C) 88.6 km/hr (D) 88.4 km/hr
40. In a hostel of 50 boys, there are food provisions for 40 days. If 30 more boys join the hostel, how long will these provisions last? (in days)
(A) 24 (B) 25 (C) 32 (D) 20
41. If product of the zeroes of the quadratic polynomial $f(x) = x^2 - 8x + k$ is 14. Find k
(A) 6 (B) 8 (C) 14 (D) 12
42. Which of the following is equivalent to $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1}$
(A) $1 + \sin \theta$ (B) $\cos \theta$ (C) $\frac{\cos \theta}{1 + \sin \theta}$ (D) $\frac{1 + \sin \theta}{\cos \theta}$
43. If $(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = k + \tan^2 \theta + \cot^2 \theta$, find the value of k
(A) 1 (B) 0 (C) 3 (D) 7
44. If $\tan \theta + \sin \theta = m$, $\tan \theta - \sin \theta = n$ and $m \neq n$, then $m^2 - n^2 =$
(A) $4\sqrt{m}$ (B) $4\sqrt{mn}$ (C) \sqrt{mn} (D) $4\sqrt{n}$
45. If $\tan^2 \alpha = \cos^2 \beta - \sin^2 \beta$, then $\cos^2 \alpha - \sin^2 \alpha =$
(A) $\tan^2 \beta$ (B) $\tan \beta$ (C) $\tan^2 \alpha$ (D) $\tan \alpha$

Space for rough work

Biology**Section - III****Straight Objective Type**

Biology contains 45 multiple choice questions numbered 1 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. The human small intestine is long because
(A) bacteria in food can be killed gradually (B) it provides more surface for food storage
(C) it increases surface area for absorption of food (D) none of these
2. Lymph
(A) Transports O_2 to brain (B) Transport CO_2 to lungs
(C) Returns interstitial fluid to blood (D) Returns RBCs to lymph vessels
3. Typical 'lub' sound of heart is due to
(A) Closing of bicuspid and tricuspid valves (B) Closing of semilunar valves
(C) Blood flowing under pressure through aorta (D) None of these
4. The heart chamber having the thickest muscular wall is named
(A) Left atrium (B) Left ventricle (C) Right atrium (D) Right ventricle
5. The component of blood that checks the clotting in the intact blood vessels is
(A) Plasma (B) Thrombin (C) Heparin (D) Haemoglobin
6. Deficiency of Vitamin a results in
(A) Beri beri (B) Rickets (C) Scurvy (D) Nyctalopia
7. Veins have valves to
(A) Prevent back flow of blood (B) Prevent the collapse of the vein
(C) Maintain its position in the body (D) None of these
8. The only reptile having 4- chambered heart is:
(A) Snake (B) Turtle (C) Lizard (D) Crocodile
9. The normal duration of menstrual cycle in human females is
(A) one day (B) 14 days (C) 28 days (D) 7-8 days
10. First step in photosynthesis is
(A) Excitation of chlorophyll molecules (B) Photolysis of water
(C) PGAL formation (D) Hexose formation
11. Enterokinase takes part in the conversion of
(A) Pepsinogen to pepsin (B) Trypsinogen to trypsin
(C) Protein into polypeptides (D) Caseinogen to casein

Space for rough work

12. How does carbon monoxide, a poisonous gas emitted by automobiles, prevent transport of oxygen into the body tissues?
(A) By changing O_2 and CO_2 (B) By destroying the haemoglobin
(C) By forming a stable compound with haemoglobin (D) None of these
13. Arrest of reproductive capacity in woman in the age of 45-55 years is known as
(A) menopause (B) Puberty (C) menarche (D) gestation
14. A bisexual flower contains
(A) Stamens only (B) Carpels only
(C) Either stamens or carpels (D) Both stamens and carpels
15. Respiration is a
(A) Catabolic process that uses CO_2 , produces O_2 and converts the released energy into ATP
(B) Anabolic process that uses O_2 and CO_2 to form ATP
(C) Anabolic process that uses O_2 , produces CO_2 and converts the released energy into ATP
(D) Amphibolic process as it involves both anabolism and catabolism.
16. Which one among the following chemicals is used for causing defoliation of forest trees?
(A) 2, 4-Dichlorophenoxy acetic acid (B) GA1
(C) Zeatin (D) Malic acid
17. Abscissic acid is involved in
(A) Closing of stomata (B) Root elongation
(C) Parthenocarp (D) Increased cell division
18. The hormone involved in the process of bolting is
(A) Auxin (B) Gibberellin (C) cytokinin (D) ABA
19. Senescence is inhibited by
(A) Ethylene (B) Gibberellic acid (C) Abscissic acid (D) Cytokinin
20. Cell elongation internodal regions of the green plants takes place due to
(A) Cytokinins (B) Gibberellins (C) Ethylene (D) Indole acetic acid
21. Node of Ranvier is a region in a neuron where?
(A) Myelin sheath is discontinuous (B) Axon is absent
(C) Axolemma is absent (D) None of these
22. Nissl's granules are found in
(A) Neuron (B) Sperm (C) Ovary (D) Muscles

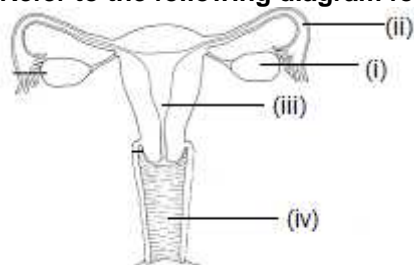
Space for rough work

23. Somatostatin is secreted by
(A) Pituitary (B) Thyroid (C) Pineal (D) Hypothalamus
24. Insulin is
(A) Vitamin (B) Proteinaceous hormone
(C) Enzyme (D) Steroid hormone
25. Addison's disease results from
(A) Hyposecretion of adrenal (B) Hyposecretion of gonads
(C) Hyposecretion of Leydig's cells (D) None of these
26. The role of rennin is
(A) Reduction in blood pressure (B) Vasodilation
(C) coagulation and curdling of milk (D) Stimulation of corpus luteum
27. Hypothalamus is/has
(A) Helpful in sleep (B) centres for thirst and hunger
(C) Controls body temperature (D) All the above
28. Ovulation is stimulated by
(A) LH (B) MSH (C) Androgen (D) None of these
29. Glucagon produced by α -cells of Islets of Langerhans.
(A) Convert glucose to glycogen (B) Convert glycogen to glucose
(C) Decrease concentration of glucose in blood (D) None of these
30. Cholecystokinin and secretin are secreted by
(A) Stomach (B) Liver (C) Duodenum (D) Ileum
31. In monocots, male gametophyte is
(A) Microspore (B) Megaspore (C) Tetrad (D) Nucleus
32. When pollen tube enters through micropyle, then the process is called
(A) Porogamy (B) Chalazogamy (C) Pseudogamy (D) Mesogamy
33. How many chambers does a frog's heart have?
(A) 1 (B) 2 (C) 3 (D) 4
34. Which one is female gametophyte?
(A) Embryo (B) Embryo sac (C) Endosperm (D) Synergid
35. Reproductive organs of an angiospermic plant is present in its
(A) Fruit (B) Flower (C) leaf (D) Thorn

Space for rough work

36. When pollen of a flower is transferred to the stigma of another flower of same plant the pollination is
 (A) Xenogamy (B) Geitonogamy (C) Autogamy (D) Allogamy
37. A bisexual flower which never opens up in its life span is known as ----- flower
 (A) Chasmogamous (B) Allogamous (C) Homogamous (D) Cleistogamous
38. The chief pollinators of our agri-horticulture crops are
 (A) bees (B) mosquitoes (C) bed bugs (D) all of these
39. Identify the incorrect statement:
 (A) Menstruation only occurs if the released ovum is not fertilized
 (B) Lack of menstruation may be indicative of pregnancy
 (C) During pregnancy, there is menstruation & events of menstrual cycle continue
 (D) In the absence of fertilization, corpus luteum degenerates
40. On fertilization, the urine of the would be mother contains
 (A) GH (B) hCG (C) Androgen (D) MSH
41. Ovulation in human female, occurs
 (A) On the 14th day of the menstrual cycle (B) When progesterone level increases
 (C) When LH surge occurs (D) Both (A) and (C)

Refer to the following diagram for Q. 42 to 44



42. Ovary is denoted by
 (A) (i) (B) (ii) (C) (iii) (D) (iv)
43. The cervix in the diagram is indicated by
 (A) (i) (B) (ii) (C) (iii) (D) (iv)
44. The part of the female reproductive tract represented by (ii)
 (A) Uterus (B) Fallopian tube (C) Fimbriae (D) Vagina
45. Budding is seen in
 (A) Virus (B) Plasmodium (C) Bacteria (D) Yeast

Space for rough work