



# TEST PAPER

## CLASS - 12

Time Allowed : *Two Hours*

Maximum Marks : 400

### INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. **Please note that it is the candidate's responsibility to encode and fill in the Roll Number carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/ discrepancy will render the Answer Sheet liable for rejection.**
3. You have to enter your Roll Number on the Test Booklet in the Box  provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. This Test Booklet contains **100** items (questions). **Part I - Mathematics, Science** and **Part II - General Awareness, English**. Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See directions in the Answer Sheet.
6. **Each** item carry **four (4)** marks.
7. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the invigilator **only the Answer Sheet**. You are permitted to take away with you the Test Booklet.
9. Sheets for rough work are appended in the Test Booklet at the end.
10. **Penalty for wrong answers :**  
**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one (1)** mark assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
  - (iii) If a question is left blank i.e., no answer is given by the candidate, there will be **no penalty** for that question.

**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO**

/; ku na%vups'kka dk fglnh : i klrj bl i qLrdk dsfi Nys i'B ij Nik gA

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"SHAPATH" 105/244, Tagore Town, Near Colonelganj Inter College, Allahabad-211002 [U.P.]

## PART - I

## MATHEMATICS

1. If the function  $f : (1, \infty) \rightarrow (1, \infty)$  is defined by  $f(x) = 2^{x(x-1)}$  then  $f^{-1}(x)$  equals:
- (a)  $\left(\frac{1}{2}\right)^{x(x-1)}$  (b)  $\frac{1}{2}\left[1 + \sqrt{4\log_2 x + 1}\right]$
- (c)  $\frac{1}{2}\left[1 - \sqrt{4\log_2 x + 1}\right]$  (d) None of these
2. Let  $W$  denotes the words in the English dictionary. Define the relation  $R$  by:  
 $R = \{(x, y) \in W \times W : \text{the words } x \text{ and } y \text{ have at least one letter in common}\}$ . Then  $R$  is
- (a) reflexive, symmetric and not transitive  
 (b) reflexive, symmetric and transitive  
 (c) reflexive, transitive but not symmetric  
 (d) not reflexive, symmetric and transitive
3. If  $\cot \theta + \cot\left(\frac{\pi}{4} + \theta\right) = 2$ . Then the general value of  $\theta$  is:
- (a)  $2n\pi \pm \frac{\pi}{6}$  (b)  $2n\pi \pm \frac{\pi}{3}$
- (c)  $n\pi \pm \frac{\pi}{3}$  (d)  $n\pi \pm \frac{\pi}{6}$
4. The system of equation passes a non-trivial solution over the set of rationals  
 $x + ky + 3z = 0$ ,  $3x + ky - 2z = 0$ ,  
 $2x + 3y - 4z = 0$ , then value of  $k$  is:
- (a)  $\frac{7}{2}$  (b)  $\frac{11}{2}$
- (c)  $\frac{33}{2}$  (d)  $\frac{21}{2}$
5. If  $A$  is skew symmetric and  $B = (I - A)^{-1} (I + A)$  then  $B$  is:
- (a) Singular (b) Symmetric  
 (c) Skew symmetric (d) Orthogonal
6. The root of the equation  
 $\tan^{-1}\left(\frac{x-1}{x+1}\right) + \tan^{-1}\left(\frac{2x-1}{2x+1}\right) = \tan^{-1}\left(\frac{23}{36}\right)$  is:
- (a)  $-3/8$  (b)  $-1/2$   
 (c)  $3/4$  (d)  $4/3$
1. ; fn Qyu  $f : (1, \infty) \rightarrow (1, \infty)$ ,  $f(x) = 2^{x(x-1)}$  }kjk ifjHkkf"kr g\$ rks  $f^{-1}(x)$  dk eku cjkcj g%
- (a)  $\left(\frac{1}{2}\right)^{x(x-1)}$  (b)  $\frac{1}{2}\left[1 + \sqrt{4\log_2 x + 1}\right]$
- (c)  $\frac{1}{2}\left[1 - \sqrt{4\log_2 x + 1}\right]$  (d) buea l s dkbz ugha
2. ; fn W vpxst h 'kCndks k ea 'kKfey 'kCnka dks 0; Dr djrs gkars l Ecl/k R g%  
 $R = \{(x, y) \in W \times W : \text{'kCn } x \text{ rFkk } y \text{ ea de l s de , d v\{kj , d l eku g$, rc R gksck\%}$
- (a) Lory; ] l efer ijUrql Øed ugha  
 (b) Lory; ] l efer rFkk l Øed  
 (c) Lory; ] l Øed ijUrql efer ugha  
 (d) Lory; ugha ij l efer rFkk l Øed
3. ; fn  $\cot \theta + \cot\left(\frac{\pi}{4} + \theta\right) = 2$  rks  $\theta$  dk l keld; eku g%
- (a)  $2n\pi \pm \frac{\pi}{6}$  (b)  $2n\pi \pm \frac{\pi}{3}$
- (c)  $n\pi \pm \frac{\pi}{3}$  (d)  $n\pi \pm \frac{\pi}{6}$
4. ; fn ifjes l efp; ka  $x + ky + 3z = 0$ ,  
 $3x + ky - 2z = 0$  rFkk  $2x + 3y - 4z = 0$  ij l ehdj .k dk dkbz gy u gks rks k dk eku g%
- (a)  $\frac{7}{2}$  (b)  $\frac{11}{2}$
- (c)  $\frac{33}{2}$  (d)  $\frac{21}{2}$
5. ; fn  $A$ , d fo"ke l efer gsrFkk  
 $B = (I - A)^{-1} (I + A)$  gks rks B g%
- (a) , dd (b) l efer  
 (c) fo"ke l efer (d) yEcclks kh;
6. l eht  $\tan^{-1}\left(\frac{x-1}{x+1}\right) + \tan^{-1}\left(\frac{2x-1}{2x+1}\right) = \tan^{-1}\left(\frac{23}{36}\right)$  ds eny g%
- (a)  $-3/8$  (b)  $-1/2$   
 (c)  $3/4$  (d)  $4/3$

7. If  $\frac{2x}{2x^2 + 5x + 2} > \frac{1}{x+1}$  then:  
 (a)  $-2 > x > -1$  (b)  $-2 \geq x \geq -1$   
 (c)  $-2 < x < -1$  (d)  $-3 < x < 1$
8. If  $f(x) = \frac{x}{\sqrt{x+1} - \sqrt{x}}$ , be a real valued function then:  
 (a)  $f(x)$  is not continuous at  $x = 0$   
 (b)  $f(x)$  is differentiable at  $x = 0$   
 (c)  $f(x)$  is not differentiable at  $x = 0$   
 (d)  $f(x)$  is continuous but  $f'(0)$  does not exist
9.  $f(x) = 1 + 2 \sin x + 3 \cos^2 x \cdot \left(0 \leq x \leq \frac{2\pi}{3}\right)$  is:  
 (a) Minimum at  $x = 90^\circ$   
 (b) Maximum at  $x = \sin^{-1}\left(\frac{1}{3}\right)$   
 (c) Both (a) and (b)  
 (d) None of these
10. The perimeter of a  $\Delta ABC$  is 6 times the arithmetic mean of the sine of its angles. If the side 'a' is 1. Then angle A is:  
 (a)  $\frac{\pi}{6}$  (b)  $\frac{\pi}{3}$   
 (c)  $\frac{\pi}{2}$  (d)  $\pi$
11. A square is inscribed in the circle  $x^2 + y^2 - 2x + 4y + 3 = 0$ , whose sides are parallel to the coordinate axes then, one vertex of the square is:  
 (a)  $(1 + \sqrt{2}, -2)$  (b)  $(1 - \sqrt{2}, -2)$   
 (c)  $(1, -2 + \sqrt{2})$  (d) None of these
12. If  $\int \frac{dx}{\sin^4 x + \cos^4 x} = \tan^{-1} f(x)$  then:  
 (a)  $f(x) = \tan x - \cot x$  (b)  $f\left(\frac{\pi}{4}\right) = 0$   
 (c) Both (a) and (b) (d) None of these
13. If  $\int_0^{100\pi} \sqrt{1 - \cos 2x} dx = 200K$  then K is equal to:  
 (a)  $2\sqrt{2}$  (b)  $\pi$   
 (c)  $\sqrt{3}$  (d)  $\sqrt{2}$

7. ;fn  $\frac{2x}{2x^2 + 5x + 2} > \frac{1}{x+1}$  rk%  
 (a)  $-2 > x > -1$  (b)  $-2 \geq x \geq -1$   
 (c)  $-2 < x < -1$  (d)  $-3 < x < 1$
8. ;fn  $f(x) = \frac{x}{\sqrt{x+1} - \sqrt{x}}$ , d okLrfod eku Qyu gksrk%  
 (a)  $f(x)$   $x = 0$  ij l rr-ugha gS  
 (b)  $f(x)$   $x = 0$  ij vodyuh; gS  
 (c)  $f(x)$   $x = 0$  ij vodyuh; ugha gS  
 (d)  $f(x)$  l rr-gS ij  $f'(0)$  dk vflrRo ugha
9.  $f(x) = 1 + 2 \sin x + 3 \cos^2 x \cdot \left(0 \leq x \leq \frac{2\pi}{3}\right)$   
 (a)  $x = 90^\circ$  ij U; wure gS  
 (b)  $x = \sin^{-1}\left(\frac{1}{3}\right)$  ij vf/kdre gS  
 (c) nksika (a) rFkk (b)  
 (d) buea l s dkkbZ ugha
10. ;fn fd l h = Hkqt  $\Delta ABC$  dk ifjeki] muds dks kka ds sine ds l ekUrj ek/; dk 6 xqik gS ;fn ml ds Hkqt 'a' dk eku 1 gS rks dksk A gS  
 (a)  $\frac{\pi}{6}$  (b)  $\frac{\pi}{3}$   
 (c)  $\frac{\pi}{2}$  (d)  $\pi$
11. orRr  $x^2 + y^2 - 2x + 4y + 3 = 0$  ea, d oxZ cuk; k x; k gS ft l dh Hkqt k, j funB kka dks l ekUrj gS rks oxZ dk , d 'kh"Kz gS  
 (a)  $(1 + \sqrt{2}, -2)$  (b)  $(1 - \sqrt{2}, -2)$   
 (c)  $(1, -2 + \sqrt{2})$  (d) buea l s dkkbZ ugha
12. ;fn  $\int \frac{dx}{\sin^4 x + \cos^4 x} = \tan^{-1} f(x)$  rc%  
 (a)  $f(x) = \tan x - \cot x$  (b)  $f\left(\frac{\pi}{4}\right) = 0$   
 (c) (a) vSj (b) nksika (d) buea l s dkkbZ ugha
13. ;fn  $\int_0^{100\pi} \sqrt{1 - \cos 2x} dx = 200K$  rc K cjkcj gS  
 (a)  $2\sqrt{2}$  (b)  $\pi$   
 (c)  $\sqrt{3}$  (d)  $\sqrt{2}$

14.  $\int_{-\pi}^{\pi} \frac{\cos^2 x}{1+a^x} dx$ ,  $a > 0$  is equal to:  
 (a)  $\pi$  (b)  $a\pi$   
 (c)  $\pi/2$  (d) 0
15. If the sum of roots of the equation  $ax^2 + bx + c = 0$  equal to the sum of the reciprocals of their squares then  $bc^2, ca^2, ab^2$ , will be in:  
 (a) Arithmetic Progression  
 (b) Geometric Progression  
 (c) Harmonic Progression  
 (d) None of these
16. In a certain test  $S_i$  students gave wrong answer to at least  $i$  questions where  $i = 1, 2, 3, \dots, K$ . No student gave more than  $K$  wrong answers, the total numbers of wrong answers given is:  
 (a)  $S_1 + 2S_2 + 3S_3 + \dots + KS_K$   
 (b)  $S_1 + S_2 + S_3 + \dots + S_K$   
 (c) zero  
 (d) None of these
17. The image of point  $P(1, -1, 0)$  on the line  $\frac{x+1}{1} = \frac{y+z}{2} = \frac{z-1}{2}$  is:  
 (a)  $\left(\frac{5}{9}, -\frac{19}{9}, \frac{26}{9}\right)$  (b)  $\left(-\frac{23}{9}, -\frac{19}{9}, \frac{26}{9}\right)$   
 (c)  $\left(\frac{23}{7}, \frac{19}{7}, \frac{26}{7}\right)$  (d) None of these
18. If  $\vec{a} = 2\hat{i} - \hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} + 2\hat{j} - 3\hat{k}$ ,  $\vec{c} = 3\hat{i} + \lambda\hat{j} + 5\hat{k}$  are coplanar then:  
 (a)  $\lambda = -4$  (b)  $\lambda = 2$   
 (c)  $\lambda = 4$  (d) None of these
19. The component vector of  $\hat{i} - 2\hat{j} + \hat{k}$  along  $4\hat{i} - 4\hat{j} + 7\hat{k}$  is:  
 (a)  $4\hat{i} - 4\hat{j} + \hat{k}$  (b)  $\frac{7}{9}(4\hat{i} - 4\hat{j} + 7\hat{k})$   
 (c)  $\frac{19}{81}(4\hat{i} - 4\hat{j} + 7\hat{k})$  (d) None of these

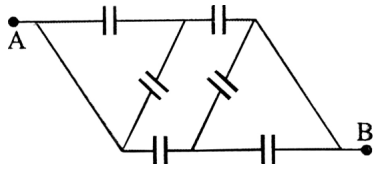
14.  $\int_{-\pi}^{\pi} \frac{\cos^2 x}{1+a^x} dx$ ,  $a > 0$   
 (a)  $\pi$  (b)  $a\pi$   
 (c)  $\pi/2$  (d) 0
15. ; fn  $ax^2 + bx + c = 0$  ds  $bc^2, ca^2, ab^2$  ;  
 muds  $bc^2, ca^2, ab^2$  ds ;  
 (a) I ekrj Jsh ea  
 (b) xqkrj Jsh ea  
 (c) gjkred Jsh ea  
 (d) buea l s dkbz ugh
16. fdl h  $S_i$  ea  $N_i =$  de l s de i  $\hat{c}'$  uk ds xyr mRrj nrsgstgk  $i = 1, 2, 3, \dots, K$ . dkbz Hh  $N_i = K$  l s T; knk xyr mRrj ugha nrk gS rks dgy xyr mRrjka dh l ; k g%  
 (a)  $S_1 + 2S_2 + 3S_3 + \dots + KS_K$   
 (b)  $S_1 + S_2 + S_3 + \dots + S_K$   
 (c) '0';  
 (d) buea l s dkbz ugha
17. jk  $\frac{x+1}{1} = \frac{y+z}{2} = \frac{z-1}{2}$  ij fclnq  $P(1, -1, 0)$  dk cfrfcEc g%  
 (a)  $\left(\frac{5}{9}, -\frac{19}{9}, \frac{26}{9}\right)$  (b)  $\left(-\frac{23}{9}, -\frac{19}{9}, \frac{26}{9}\right)$   
 (c)  $\left(\frac{23}{7}, \frac{19}{7}, \frac{26}{7}\right)$  (d) buea l s dkbz ugha
18. ; fn  $\vec{a} = 2\hat{i} - \hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} + 2\hat{j} - 3\hat{k}$ ,  $\vec{c} = 3\hat{i} + \lambda\hat{j} + 5\hat{k}$  l eryh; gkark%  
 (a)  $\lambda = -4$  (b)  $\lambda = 2$   
 (c)  $\lambda = 4$  (d) buea l s dkbz ugha
19.  $\hat{i} - 2\hat{j} + \hat{k}$  dk  $4\hat{i} - 4\hat{j} + 7\hat{k}$  ds vutfn'k ?  
 (a)  $4\hat{i} - 4\hat{j} + \hat{k}$  (b)  $\frac{7}{9}(4\hat{i} - 4\hat{j} + 7\hat{k})$   
 (c)  $\frac{19}{81}(4\hat{i} - 4\hat{j} + 7\hat{k})$  (d) buea l s dkbz ugha

20. Two lines are:  $L_1 = \frac{x+1}{-3} = \frac{y-3}{2} = \frac{z+2}{1}$  and  $L_2 = \frac{x}{1} = \frac{y-7}{-3} = \frac{z+7}{1}$ , then the lines  $L_1$  and  $L_2$  are:  
 (a) Perpendicular (b) Coplanar  
 (c) Parallel (d) None of these
21. A fair dice is rolled. The probability that the first time 1 occurs at the even throw, is:  
 (a) 1/6 (b) 5/11  
 (c) 6/11 (d) 5/36
22. The mean and variance of a binomial distribution are 4 and 3 respectively, then the probability of getting exactly six successes in this distribution is:  
 (a)  ${}^{16}C_6 \left(\frac{1}{4}\right)^{10} \left(\frac{3}{4}\right)^6$  (b)  ${}^{16}C_6 \left(\frac{1}{4}\right)^6 \left(\frac{3}{4}\right)^{10}$   
 (c)  ${}^{12}C_6 \left(\frac{1}{4}\right)^{10} \left(\frac{3}{4}\right)^6$  (d) None of these
23. The differential equation of all circles which passed through the origin and whose centre lies on y-axis is:  
 (a)  $(x^2 - y^2) \frac{dy}{dx} - 2xy = 0$   
 (b)  $(x^2 - y^2) \frac{dy}{dx} + 2xy = 0$   
 (c)  $(x^2 - y^2) \frac{dy}{dx} - xy = 0$   
 (d)  $(x^2 - y^2) \frac{dy}{dx} + xy = 0$
24. The area of the region bounded by the pair of lines  $y = |x - 1|$  and  $y = 3 - |x|$  is:  
 (a) 3 (b) 4  
 (c) 6 (d) 2
25. If  $f(x) = x^3 + 4x^2 + \lambda x + 1$  is a monotonically decreasing function of  $x$  in the largest possible interval  $(-2, -2/3)$  then:  
 (a)  $\lambda = 4$  (b)  $\lambda = 2$   
 (c)  $\lambda = -1$  (d)  $\lambda \notin \mathbb{R}$

20. Two lines are:  $L_1 = \frac{x+1}{-3} = \frac{y-3}{2} = \frac{z+2}{1}$  and  $L_2 = \frac{x}{1} = \frac{y-7}{-3} = \frac{z+7}{1}$ , then the lines  $L_1$  and  $L_2$  are:  
 (a) Perpendicular (b) Coplanar  
 (c) Parallel (d) None of these
21. A fair dice is rolled. The probability that the first time 1 occurs at the even throw, is:  
 (a) 1/6 (b) 5/11  
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 (c)  ${}^{12}C_6 \left(\frac{1}{4}\right)^{10} \left(\frac{3}{4}\right)^6$  (d) None of these
23. The differential equation of all circles which passed through the origin and whose centre lies on y-axis is:  
 (a)  $(x^2 - y^2) \frac{dy}{dx} - 2xy = 0$   
 (b)  $(x^2 - y^2) \frac{dy}{dx} + 2xy = 0$   
 (c)  $(x^2 - y^2) \frac{dy}{dx} - xy = 0$   
 (d)  $(x^2 - y^2) \frac{dy}{dx} + xy = 0$
24. The area of the region bounded by the pair of lines  $y = |x - 1|$  and  $y = 3 - |x|$  is:  
 (a) 3 (b) 4  
 (c) 6 (d) 2
25. If  $f(x) = x^3 + 4x^2 + \lambda x + 1$  is a monotonically decreasing function of  $x$  in the largest possible interval  $(-2, -2/3)$  then:  
 (a)  $\lambda = 4$  (b)  $\lambda = 2$   
 (c)  $\lambda = -1$  (d)  $\lambda \notin \mathbb{R}$

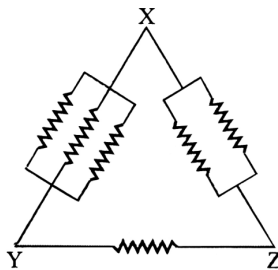
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26. A network of six identical capacitors, each of value  $C$ , is made as shown in the figure. Equivalent capacitance between points A and B is:



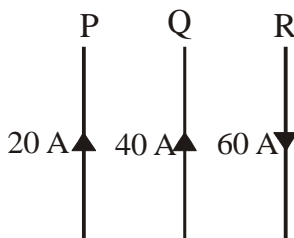
- (a)  $\frac{C}{4}$
- (b)  $\frac{3C}{4}$
- (c)  $\frac{4C}{3}$
- (d)  $3C$

27. In the circuit shown, all the resistors have the same value. The maximum equivalent resistance is found:



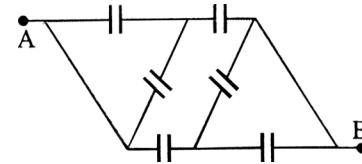
- (a) between X and Y
- (b) between Y and Z
- (c) between Z and X
- (d) to be the same between any pair of points

28. P, Q and R are long straight wires in air, carrying currents as shown. The force on Q is directed:



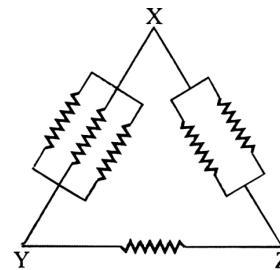
- (a) to the left
- (b) to the right
- (c) perpendicular to the plane of the diagram.
- (d) along the current in Q

26. N%, d l eku l akkfj=ka dsu/vod/ dksuhpsfp=kuq kj çnf'kz fd; k x; k gsf t l ea çR; d l dk eku C gA fclnqA rFkk B dse/; rç; /kkfjrk fdruh gksxt%



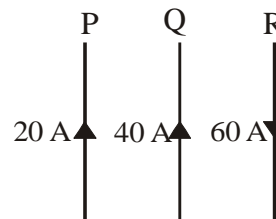
- (a)  $\frac{C}{4}$
- (b)  $\frac{3C}{4}$
- (c)  $\frac{4C}{3}$
- (d)  $3C$

27. uhpsfn; sx; sifji Fk ea l Hkh çfrjk/kka dk eku , d l eku gA vf/kdre rç; çfrjk/kk ik; k tk, xk%



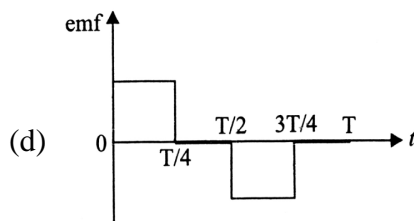
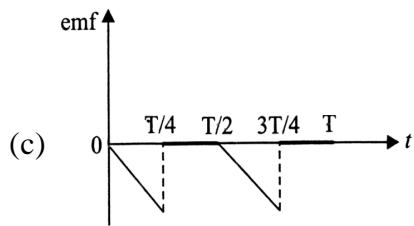
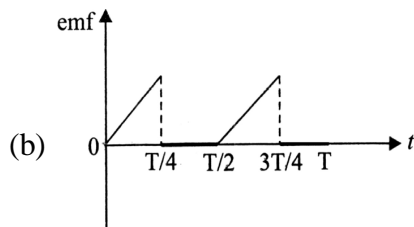
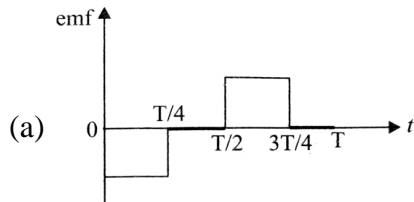
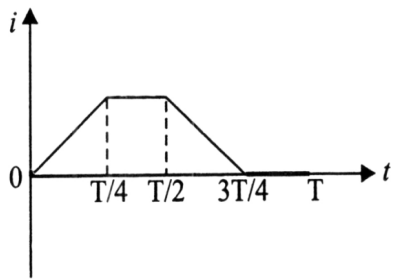
- (a) X vç Y dse/;
- (b) Y vç Z dse/;
- (c) Z vç X dse/;
- (d) fdl h Hkh fclnq; çe dse/; l eku gkks

28. P, Q, R ok; gearhu yEcs l h/ksrkj gsf tueafp=kuq kj /kkjk, j çokfgr gksjgh gA Q ij cy dh fn'kk gksxt%



- (a) çk; ha vçj
- (b) nk; ha vçj
- (c) ry ds yEcor
- (d) Q ea çokfgr /kkjk ds vuqfn'k gksxk

29. The current ( $i$ ) in a coil varies with time as shown in the figure. The variation of induced emf with time would be:



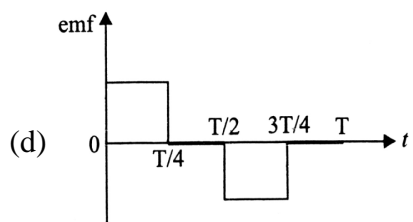
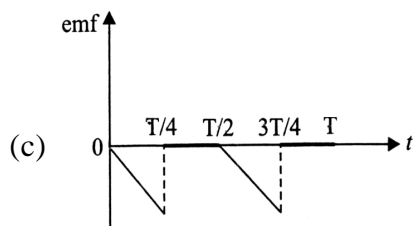
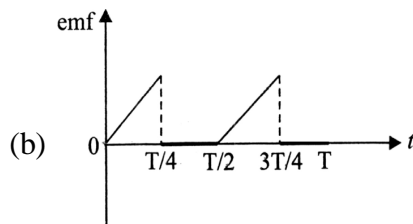
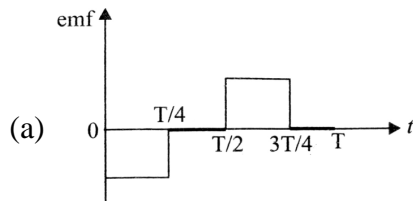
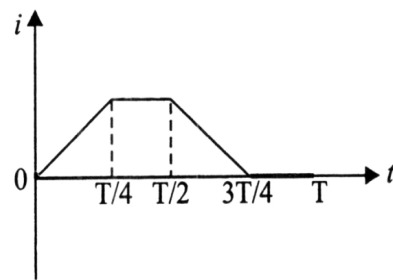
30. The instantaneous magnitudes of the electric field ( $E$ ) and the magnetic field ( $B$ ) vectors in an electromagnetic wave propagating in vacuum are related as:

- (a)  $E = B/c$                       (b)  $E = cB$   
 (c)  $E = B/c^2$                     (d)  $E = c^2B$

31. Intensity of wave A is  $9I$ , while of wave B is  $I$ . What is maximum and minimum intensity in "Young double slit experiment"?

- (a)  $82I, 80I$                       (b)  $8I, 10I$   
 (c)  $16I, 4I$                         (d)  $4I, I$

29. ,d dqMyh ea /kkj k ( $i$ ) l e; ds l kfk cnyrh gS tS k fd fp= eaçnf'kr fd; k x; k gA çfjr fo | r dgd cy ea l e; dsl ki ş fdl çdkj l sifjorü gskk



30. fo | r pçcdh; rjækdsl pj.k dsnkku rkr{kf.kd oS | r {k= (E) , oapçcdh; {k= (B) ea l Ecl/k gskk%

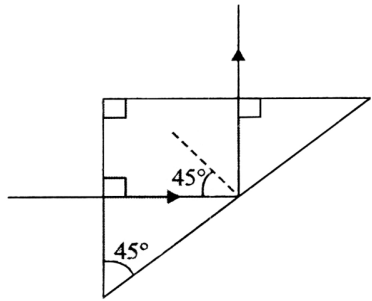
- (a)  $E = B/c$                       (b)  $E = cB$   
 (c)  $E = B/c^2$                     (d)  $E = c^2B$

31. ,d rjæ A dh rhork 9I gS tçfd rjæ B dh rhork I gA ^; æ dsf}d fNnzç; kx\*\* ea vf/kdre , oall; wire rhork fdruh gskk\

- (a)  $82I, 80I$                       (b)  $8I, 10I$   
 (c)  $16I, 4I$                         (d)  $4I, I$



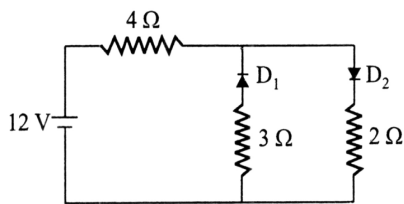
32. A light ray is incident perpendicularly to one face of a 90° prism and is totally internally reflected at the glass-air interface. If the angle of reflection is 45°, we conclude that the refractive index n of glass is:



- (a)  $n < \frac{1}{\sqrt{2}}$                       (b)  $n > \sqrt{2}$   
 (c)  $n > \frac{1}{\sqrt{2}}$                       (d)  $n < \sqrt{2}$

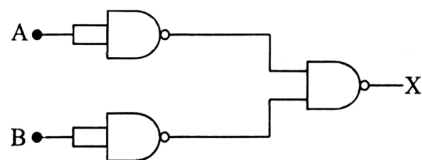
33. The number of beta particles emitted by a radioactive substance is twice the number of alpha particles emitted by it. The resulting daughter is an:  
 (a) isotope of parent              (b) isobar of parent  
 (c) isomer of parent              (d) isotone of parent

34. The circuit has two oppositely connected ideal diodes in parallel. What is the current flowing in the circuit?



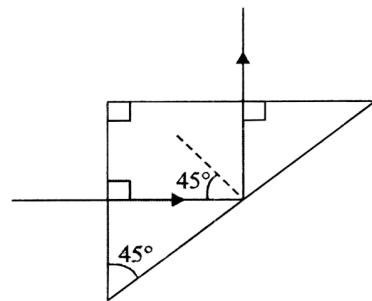
- (a) 2.31 A                      (b) 1.33 A  
 (c) 1.71 A                      (d) 2.00 A

35. The combination of gates shown below yields:



- (a) NAND gate                      (b) OR gate  
 (c) NOT gate                      (d) XOR gate

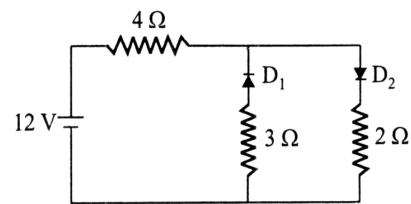
32. Çdk'k dh fdj.k , d 90° dksk okysfçTe ds , d i"B ij yEcor~: i lsvkifrr gSrfkk bl dk dko ok; qvUr% "B ij iwz vkrfjd ijkorU gksrk gA ; fn ijkoFr dksk 45° gksrks dko dk viorUkd n g%



- (a)  $n < \frac{1}{\sqrt{2}}$                       (b)  $n > \sqrt{2}$   
 (c)  $n > \frac{1}{\sqrt{2}}$                       (d)  $n < \sqrt{2}$

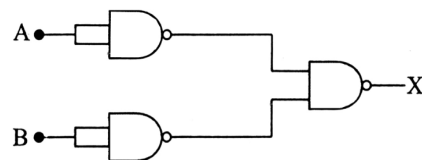
33. , d jfM; kskhZ i nkFZ }kjk mRI ftR chVk d. kka dh l d; k ml ds }kjk mRI ftR vYQk d. kka dh rgyuk eanks xqih gA ifj. kkeh rRo gksck\ (a) i k j f E H k d rRo dk l e l F k k f u d (b) i k j f E H k d rRo dk l e H k k f j d (c) i k j f E H k d rRo dk v o ; ; (d) i k j f E H k d rRo dk l e U ; W k f u d

34. uhpçnf' kr ifji Fk eafoijhr fn' kvka eanks vkn' kZ Mk; kM l ekUrj Øe ea tkMs x; s gA ifji Fk ea çokfgr /kjk dk eku g%



- (a) 2.31 A                      (b) 1.33 A  
 (c) 1.71 A                      (d) 2.00 A

35. uhpçnf' kr l a kstu fdl xV/ ds vuq i g%



- (a) NAND xV/                      (b) OR xV/  
 (c) NOT xV/                      (d) XOR xV/



36. Consider the following in respect of nuclear forces:  
 1. Nuclear forces are charge independent  
 2. Nuclear forces are always attractive.  
 Which of the statements given above is/are correct?  
 (a) Only 1 (b) Only 2  
 (c) Both 1 and 2 (d) Neither 1 nor 2
37. A compound X on heating gives a colourless gas. The residue was treated with water and filtered. The filtrate was a solution of Y. Excess CO<sub>2</sub> is bubbled through aqueous solution of Y, Z is formed. Z on gently heating gives back X. The compound X is :  
 (a) CaCO<sub>3</sub> (b) Na<sub>2</sub>CO<sub>3</sub>  
 (c) Ca(HCO<sub>3</sub>)<sub>2</sub> (d) K<sub>2</sub>CO<sub>3</sub>
38. Ionic compounds are more soluble in H<sub>2</sub>O than in D<sub>2</sub>O. This is because:  
 (a) D<sub>2</sub>O has a lower dielectric constant than H<sub>2</sub>O  
 (b) Molecular weight of D<sub>2</sub>O is more than that of H<sub>2</sub>O  
 (c) Chemical reactivity of D<sub>2</sub>O is less than that of H<sub>2</sub>O  
 (d) None of the above
39. Sulphur dioxide functions both as an oxidising and as a reducing agent. In which one of the following reactions it is an oxidising agent?  
 (a)  $PbO_2 + SO_2 \xrightarrow{\text{heat}} PbSO_4$   
 (b)  $SO_2 + H_2O \xrightarrow{\text{heat}} H_2SO_3$   
 (c)  $3Fe + SO_2 \rightarrow 2FeO + FeS$   
 (d)  $2NaOH + SO_2 \rightarrow Na_2SO_3 + H_2O$
40. Match **List-I** with **List-II** and select the correct answer using the codes given below the Lists:
- |                   |                            |
|-------------------|----------------------------|
| <b>List-I</b>     | <b>List-II</b>             |
| <b>(Polymer)</b>  | <b>(Constituents)</b>      |
| A. Buna-S         | 1. Isoprene                |
| B. Bakelite       | 2. Butadiene and Styrene   |
| C. Nylon-6        | 3. Phenol and formaldehyde |
| D. Natural Rubber | 4. Caprolactam             |

**Codes :**

- |                |                |
|----------------|----------------|
| <b>A B C D</b> | <b>A B C D</b> |
| (a) 2 1 4 3    | (b) 2 3 4 1    |
| (c) 4 1 3 2    | (d) 3 4 1 2    |

36.  $ukfkhkdh; cyka ds | ECU/k ea fuEufyf[kr dFkuka ij fopkj dja$   
 1.  $ukfkhkdh; cy vkosk ij fuHkj ughadjra$   
 2.  $ukfkhkdh; cy | nb vkd'lk k oknh gkrs ga$   
 mijkDr dFkuka eal s dku | k@ | s dFku | gh g@g ga  
 (a) doy 1 (b) doy 2  
 (c) 1 rFkk 2 nksuka (d) u rks 1 vlg u 2
37. , d ; ksd x xel djustij , d jaxghu x\$ mri ftz djrk ga ml ds vo'k\$ dks ty | s mipkjr dj Nku fy; k tkrk ga ; g fQYV/ wuL; n/2 Y dk , d foy; u ga vrfjDr CO<sub>2</sub> x\$ dks Y ds tyh; foy; u eal sxtkjk tkrk g\$ rksZ dh mri rRr gkrh ga Z dks ef) e : i | s xel djustij i q% X dh i kflr gkrh ga ; ksd x x g\$  
 (a) CaCO<sub>3</sub> (b) Na<sub>2</sub>CO<sub>3</sub>  
 (c) Ca(HCO<sub>3</sub>)<sub>2</sub> (d) K<sub>2</sub>CO<sub>3</sub>
38. vk; fud ; ksd D<sub>2</sub>O ds ctk, H<sub>2</sub>O ea vf/kd ?kyu'khy ga , d k bl fy, D; ksd%  
 (a) D<sub>2</sub>O dk H<sub>2</sub>O dh vi \$kk fuEu ij kos| rkd fLFkjkd gkrk ga  
 (b) D<sub>2</sub>O dk vkf.od Hkj H<sub>2</sub>O | svf/kd gkrk ga  
 (c) D<sub>2</sub>O dh jkl k; fud fO; k'khyrkj H<sub>2</sub>O dh vi \$kk de gkrh ga  
 (d) buea | s dkbz ugha
39. I YQj MkbzvkdI kbM , d vkDI hdkjd rFkk vi p; d , t\$V dh Hkkr dk; Zdjrk ga fuEufyf[kr vfhkF; kvka eal sfdl vfhkF; k ea og , d vkDI hdkjd , t\$V dh Hkkr 0; ogkj djrk ga  
 (a)  $PbO_2 + SO_2 \xrightarrow{rki} PbSO_4$   
 (b)  $SO_2 + H_2O \xrightarrow{rki} H_2SO_3$   
 (c)  $3Fe + SO_2 \rightarrow 2FeO + FeS$   
 (d)  $2NaOH + SO_2 \rightarrow Na_2SO_3 + H_2O$
40. I **ph-I** dks I **ph-II** ds | kFk | e\$yr dja rFkk uhp\$ fn, x, dW/kadh enn | s | gh mRrj dk p; u dja  

<b>I ph-I</b>	<b>I ph-II</b>
<b>1/gyd 1/2</b>	<b>1/i?Wd 1/2</b>
A. cuK&S	1. vkbl ki hu
B. cdsykbV	2. C; w/kMkbu rFkk LV/kbjhu
C. uk; yku-6	3. fQuky rFkk QkefYMgkblM
D. i kNfrd jcyj	4. d\$ jksyDVe

**dW%**

- |                |                |
|----------------|----------------|
| <b>A B C D</b> | <b>A B C D</b> |
| (a) 2 1 4 3    | (b) 2 3 4 1    |
| (c) 4 1 3 2    | (d) 3 4 1 2    |

41. Match **List-I** with **List-II** and select the correct answer using the codes given below the lists:

<b>List-I</b> (Process)	<b>List-II</b> (Organelle)
A. Photosynthesis	1. Plasma membrane
B. Mineral uptake	2. Chloroplast
C. Respiration	3. Mitochondria
D. Protein synthesis	4. Ribosomes

**Codes:**

A B C D	A B C D
(a) 2 1 3 4	(b) 1 3 4 2
(c) 3 4 2 1	(d) 4 2 1 3

42. Match **List-I** with **List-II** select the correct answer using the codes given below the lists:

<b>List-I</b> (Bacteria)	<b>List-II</b> (Example)
A. Nitrosomonas	1. Rod-shaped bacteria
B. Spirulina	2. Comma-shaped bacteria
C. Vibrio cholerae	3. Spira Cyanobacteria
D. Escherichia coli	4. Nitrifying bacteria

**Codes:**

A B C D	A B C D
(a) 1 4 3 2	(b) 2 1 4 3
(c) 3 2 1 4	(d) 4 3 2 1

43. Which one of the following parts of human brain is the regulating centre for swallowing and vomiting?

- (a) Cerebellum (b) Cerebrum  
(c) Medulla oblongata (d) Pones

44. Consider the following statements:

1. Term hormone was given by Starling.
2. First hormone secretin discovered by Bayliss and Starling.
3. Pancreas is mixed gland, has both exocrine and endocrine parts.

Which of the statements given above are correct?

- (a) 1, 2 and 3 (b) 2 and 3  
(c) 1 and 2 (d) None of these

41. **I ph-I** dks **I ph-II** l s l e syr dja rFkk uhps fn; x; s dWla dh l gk; rk l s l gh mRrj dk p; u dj%

<b>I ph-I</b> ¼iØ; k½	<b>I ph-II</b> ¼dk'kdk vxd½
A. çdk'k l áyšk.k	1. lykTek f>Yyh
B. [kfut inkfKZ	2. Dykj ksykLV
C. 'ol u	3. ekbVksckf.Mª, k
D. çk/hu l áyšk.k	4. jkbckl ke

**dW%**

A B C D	A B C D
(a) 2 1 3 4	(b) 1 3 4 2
(c) 3 4 2 1	(d) 4 2 1 3

42. **I ph-I** dks **I ph-II** ds l kFk l e syr dja rFkk uhps fn, x, dWla dh l gk; rk l s l gh mRrj dk p; u dj%

<b>I ph-I</b> ¼o"kk. k½	<b>I ph-II</b> ¼nnkj. k½
A. ukbVkd kekukl	1. jkM ds vdkj okyk thok.kq
B. Likb#fyuk	2. dkek&¼/;/; fojke ds vdkj okyk thok.kq
C. fofcz ks dkjyh	3. Likbjk dk; uks thok.kq
D., Ldfjfp; k dkyh	4. ukbVhdkj d thok.kq

**dW%**

A B C D	A B C D
(a) 1 4 3 2	(b) 2 1 4 3
(c) 3 2 1 4	(d) 4 3 2 1

43. ekuo eflr"d dk dk& l k Hkkx fuxyus rFkk mYVh dJus okyk fu; U=.k dñnz gS

- (a) l jhcye (b) l jhcæ  
(c) eM; nyk vkCykVk (d) i kd

44. fuEufyf[kr dFkua ij fopkj dj%

1. gkek& 'kcn dh mRi fYk LVkjfyax us dhA
2. çFke gkjeku l ØSVu dh [kkt cfyl rFkk LVkjfyax us dhA
3. vXuk'k; ,d fefJr xFk gS ftl ea cfgL=koh rFkk vr%=koh Hkkx gkrs gA

fn; sx; smijkdR dFkuaea l s dks& l k dFku l gh gS

- (a) l] 2 vj 3 (b) 2 vj 3  
(c) 1 vj 2 (d) buea l s dkbZ ugha

45. Match **List-I** with **List-II** select the correct answer using the codes given below the lists:

<b>List-I</b> (Reaction)	<b>List-II</b> (Example)
A. Dark reaction	1. Grana of chloroplast
B. Light reaction	2. Stroma of chloroplast
C. Glycolysis	3. Cytoplasm
D. Krebs's cycle	4. Mitochondrial matrix

**Codes:**

A	B	C	D	A	B	C	D
(a) 2	1	3	4	(b) 1	3	4	2
(c) 3	4	2	1	(d) 4	2	1	3

46. Match **List-I** with **List-II** and select the correct answer using the codes given below the lists:

<b>List-I</b> (Genus)	<b>List-II</b> (Parasite)
A. Rafflesia	1. Total stem parasite
B. Cuscuta	2. Total root parasite
C. Viscum	3. Partial stem parasite
D. Santalum	4. Partial root parasite

**Codes:**

A	B	C	D	A	B	C	D
(a) 1	3	4	2	(b) 2	1	3	4
(c) 3	4	2	1	(d) 4	2	1	3

47. Consider the following statements:

- The sugar present in DNA is deoxyribose.
- Circular DNA occurs in bacteria, mitochondria and chloroplast.
- The bond present between two strands of DNA is hydrogen bond.

Which of the statements given above are true about DNA?

- 1 and 2
- 2 and 3
- 1, 2 and 3
- None of these

45. **List-I** dks **List-II** ds | kfk | efsyr dja rFkk uhaps fn, x, dWka dh | gk; rk | s | gh mYkj dk p; u djA

<b>List-I</b> ¼/fHkØ; k½	<b>List-II</b> ¼nnlgj. k½
A. MkdZ vfHkØ; k	1. DykjktykLV dk xtuk
B. ykbV vfHkØ; k	2. DykjktykLV dk LVtek
C. Xykbdkykbfl	3. dks' kdk nð
D. Øs pØ	4. ekbVkdM. Mª, k dh tkyh

**Codes:**

A	B	C	D	A	B	C	D
(a) 2	1	3	4	(b) 1	3	4	2
(c) 3	4	2	1	(d) 4	2	1	3

46. **List-I** dks **List-II** ds | kfk | efsyr dja rFkk uhaps fn, x, dWka dh | gk; rk | s | gh mYkj dk p; u djA

<b>List-I</b> ¼zk½	<b>List-II</b> ¼jtth½
A. jQyfl ; k	1. iwZ : i   srusdk ij thoh
B. dLdWk	2. iwZ : isk tM+ij thoh
C. foLde	3. vK'kd : i   srusdk ij thoh
D.   SVkye	4. vK'kd : i   stM+dk ij thoh

**Codes:**

A	B	C	D	A	B	C	D
(a) 1	3	4	2	(b) 2	1	3	4
(c) 3	4	2	1	(d) 4	2	1	3

47. fuEufyf[kr dFkuka ij fopkj djA

- Mh, u-, - eafo | eku 'kdjk MhvkØ | hj kbckst gA
- oRrkdjk Mh, u-, -] thok. kj ekbVkdM. Mª, k rFkk gfjryod ea i k; s tkrsgA
- Mh, u-, - ds nksuka yfM+ka ds e/; gkbMkst u cU/k gkrsgA

mi jkØr dFkuka ea | s dks | s dFku Mh, u-, - ds | Ecu/k ea | R; gA

- 1 vks 2
- 2 vks 3
- 1, 2 vks 3
- buea | s dkbZ ugha

48. Consider the following statements
1. The sickle cell anaemia is a genetic disease common in tropical and sub-tropical countries.
  2. The sickle-cell anaemia is due to mutation in  $\beta$  – globulin gene.
  3. Due to the sickle-shaped anaemia, oxygen carrying capacity of the haemoglobin decreases.

Which of the statement(s) given above is/are correct?

- (a) Only 1 (b) 1, 2 and 3  
(c) 2 and 3 (d) Only 3

49. Match **List-I** with **List-II** and select the correct answer using the codes given below the lists:

<b>List-I</b> (Stem)	<b>List-II</b> (Type)
A. Onion	1. Rhizome
B. Banana	2. Bulb
C. Gladiolus	3. Corm
D. Potato	4. Tuber

**Codes:**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
(a) 4	1	2	3	(b) 1	2	4	3
(c) 4	1	3	2	(d) 2	1	3	4

50. Consider the following statements about Alzheimer's disease:

1. It is a slowly progressive disease of the brain that is disease of the brain that is characterized by impairment of memory.
2. It results from accumulation of a specific steroid in the brain.

Which of the statement/s given above is/are correct?

- (a) Only 1  
(b) Only 2  
(c) Both 1 and 2  
(d) Neither 1 nor 2

48. fuEufyf[kr dFkuka ij fopkj dj%

1. gfl ; k dks' kdk vufre; k , d çdkj dk vuoplá' kd jksx gs tks m".k rFkk mi kš.k dFvçdkh; ns kka ea l kekl; rls ij çpfyr gA
2. gfl ; k dks' kdk , uufe; k  $\beta$  – Xylk; fryu thu ea mRi fforZ ds dkj .k gksrk gA
3. gfl ; k ds vkdkj okys , uufe; k jksx ds dkj .k gheXylkscu dh vkDI ltu ys tkus dh {kerk ?kV tkrh gA

fn; sx; smi jkDr dFkuka ea l s dks l k@l s dFku l R; g@gA

- (a) dõy 1 (b) 1, 2 rFkk 3  
(c) 2 rFkk 3 (d) dõy 3

49. **I ph-I** dks **I ph-II** ds l kFk l efsyr dja rFkk uhpS fn, x, dV/dh l gk; rk l sl gh mYk dk p; u dja

<b>I ph-I</b>	<b>I ph-II</b>
<b>¼ruk½</b>	<b>¼ djk ½</b>
A. l; kt	1. jkbtke
B. dYk	2. cYc
C. XySM; kyl	3. dkeZ
D. vkyW	4. V;Wj

**dV%**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
(a) 4	1	2	3	(b) 1	2	4	3
(c) 4	1	3	2	(d) 2	1	3	4

50. vytkbej jksx ds l EclWk ea fn; sx; s fuEufyf[kr dFkuka ij fopkj dj%

1. ; g eflr"d dh , d /kheh xfr l sQSyusokyk jksx gSftl ea; knnk' r dh fo'kSk rls ij {kfr gksh gA
2. ; g eflr"d ea, d fo'kSk LVhjk; M ds, d= gkus ds dkj .k mRi lUu gksrk gA

fn; sx; smi jkDr dFkuka ea l s dks l k@l s dFku l gh gA

- (a) dõy 1  
(b) dõy 2  
(c) 1 rFkk 2 nksuka  
(d) u rks 1 vls u gh 2

**PART - II**

**GENERAL AWARENESS**

51. Consider the following statements about Shreemant Peshwa Bajirao-I

- 1. Bajirao was a great general of the Maratha Empire.
- 2. In his military career, he never lost a battle.
- 3. He died on 1740.

Which of the statements given above is/ are correct?

- (a) Only 1
- (b) Only 2 and 3
- (c) Only 1 and 3
- (d) All are correct

52. Which area in the given map was under British occupation in 1765?



- (a) 1
- (b) 2
- (c) 3
- (d) 4

53. Which one of the following movements has contributed to a split in the Indian National Congress resulting in the emergence of 'moderates' and 'extremists'?

- (a) Swadeshi Movement
- (b) Quit India Movement
- (c) Non-Cooperation Movement
- (d) Civil Disobedience Movement

51. Jher i s'kok cktjhko&I ds l Ecu/k ea fuEufyf[kr dFkuka ij fopkj dj%

- 1. cktjhko ejkBk l kekT; dsegku l s'ki fr FkA
- 2. vius l 8; thou ea; s'ckbz; q' ughagjA
- 3. budh eR; q'1740 bz ea ghpA

s mi jkDr dFkuka eal s'ckk l k@l s'Fku l R; g'gA

- (a) d'oy 1
- (b) d'oy 2 rFkk 3
- (c) d'oy 1 rFkk 3
- (d) l Hkh l R; gA

52. uhps fn; s x; s ekufp= ea d'k l k {k= 1765 ea f'cV'k v'f/ki R; ea Fkk\



- (a) 1
- (b) 2
- (c) 3
- (d) 4

53. bu eal s'fdl v'kUnksyu ds dkj.k Hkkjr h; jk'Vh; d'kx' ea QW i Mh ft l l s nks v'yx&v'yx x'q/k' m'nkjoknh rFkk m'x'oknh dk mn; g'p/k\

- (a) Lon's'kh v'kUnksyu
- (b) Hkkjr N'k'k/s v'kUnksyu
- (c) v'l g; k's v'kUnksyu
- (d) l fou; voKk v'kUnksyu



54. Which of the following are the features of Indian Constitution?
1. Partly Rigid and Partly Flexible
  2. A Democratic Republic
  3. Secular State
  4. Dual Citizenship
  5. Independent Judiciary
- (a) Only 1, 2, 3, 4                      (b) Only 1, 3, 4, 5  
(c) Only 1, 2, 3, 5                      (d) Only 2, 3, 4, 5

55. Which of the following statements about democracy are correct?
1. Democracy is a government of the people, for the people and by the people.
  2. Democracy is a rule of majority.
  3. Democracy provides an opportunity to the people to voice their grievances in a peaceful manner.
  4. Democracy always leads to disintegration of the society.
- Select the correct answer using the code given below:

**Codes:**

- (a) 1, 2, 3 and 4                      (b) Only 2, 3 and 4  
(c) Only 1 and 4                      (d) Only 1, 2 and 3
56. Which one of the following sequences of dignitaries is in correct order as per the protocol of India?
- (a) Prime Minister > Former President > Chief Justice of India
  - (b) Prime Minister > Chief Justice of India > Former President
  - (c) Chief Justice of India > Prime Minister > Former President
  - (d) Former President > Prime Minister > Chief Justice of India
57. Identify the correct sequence of passing a budget in the parliament?
- (a) Vote on Account-Finance Bill-Appropriation Bill-Discussion on Budget
  - (b) Finance Bill-Appropriation Bill-Discussion on Budget-Vote on Account
  - (c) Discussion on Budget-Vote on Account-Finance Bill-Appropriation Bill
  - (d) Discussion on Budget-Appropriation Bill-Finance Bill-Vote on Account

54. buel s dks Hkkjrh; l fo/kku dh fo'ksrk g%  
1. vkr'kd : i l svuE; vkr'kd : i l suE;  
2. çtkrkul=d x.krU=  
5. /kefujis{k jkT;  
6. nkgjh ukxfjdrk  
7. LorU= U; k; i kfydk  
(a) doy 1, 2, 3, 4                      (b) doy 1, 3, 4, 5  
(c) doy 1, 2, 3, 5                      (d) doy 2, 3, 4, 5

55. ykdrU= ds l Ecl/k ea uhps fn; s x; s dFkuka ea l s dks l s dFku l R; g%  
1. ykdrU=] ns k ds ykkska dh ykkska grqrFkk turk }kjk pwh l jdkj dks dgrs g%  
2. ykdrU= cgd ; d 'kkl u dk i; k; g%  
3. ykdrU= ukxfjdrk dks viuh l eL; k/kadks'kkfir i wZ < x l smtkxj djus dk vol j nrk g%  
4. ykdra= l nb l ekt ds fo?kVu dks tle nrk g%  
uhps fn; s x; s dW/ka ea l s l gh mRrj dk p; u dj%  
dW%

- (a) 1, 2, 3 vkr' 4                      (b) doy 2, 3 vkr' 4  
(c) doy 1 vkr' 4                      (d) doy 1, 2 vkr' 3

56. Hkkjrh; çk/kdkU ds vuq kj fuEufyf[kr inkf/kdkfj; ka dk l gh vuqE D; k g%  
(a) ç/kkuU=h > Hkri wZ jk"Vfr > Hkkjrh ds eq; U; k; /kh'k  
(b) ç/kkuU=h > Hkkjrh ds eq; U; k; /kh'k > Hkri wZ jk"Vfr  
(c) Hkkjrh ds eq; U; k; /kh'k > ç/kkuU=h > Hkri wZ jk"Vfr  
(d) Hkri wZ jk"Vfr > ç/kkuU=h > Hkkjrh ds eq; U; k; /kh'k

57. l dn eactV ikl djus d l gh Øe dks bfxr dj%  
(a) ys[kkuqku&foRrh; fo/ks d &fofu; ks fo/ks d &ctV ij pplZ  
(b) foRr fo/ks d&fofu; ks fo/ks d&ctV ij ppl& ys[kkuqku  
(c) ctV ij ppl&ys[kkuqku&foRr fo/ks d&fofu; ks fo/ks d  
(d) ctV ij ppl&fofu; ks fo/ks d&foRr fo/ks d&ys[kkuqku

58. Which of the following is/are constitutional body in India?  
 1. Niti Ayog  
 2. Election Commission  
 3. Reserve Bank of India  
 4. University Grant Commission  
 5. Central Information Commission  
 Select the correct answer using the code given below:

- (a) Only 2 and 3                      (b) Only 3 and 4  
 (c) Only 4 and 5                      (d) None of these

59. Match **List-I** with **List-II** and select the correct answer using the code given below the lists:

<b>List-I</b> <b>(Ideology)</b>	<b>List-II</b> <b>(Person)</b>
A. Fascism	1. Hitler
B. Democracy	2. Wilson
C. Nazism	3. Lenin
D. Socialism	4. Mussolini

Codes:

A	B	C	D	A	B	C	D
(a) 1	2	3	4	(b) 4	2	1	3
(c) 3	2	1	4	(d) 4	1	3	2

60. The country marked as 'X' in the above map is



- (a) Uzbekistan                      (b) Tajikistan  
 (c) Kyrgyzstan                      (d) Turkmenistan

61. Under the Indus water treaty of 1960 between India and Pakistan the waters of which rivers are allocated to India and Pakistan respectively?

(To India)                      (To Pakistan)

- (a) Jhelum, Sutlej, Yamuna -Indus, Chenab, Beas  
 (b) Ravi, Sutlej, Beas - Indus, Chenab, Jhelum  
 (c) Sutlej, Beas, Chenab - Jhelum, Ravi, Indus  
 (d) Indus, Sutlej, Yamuna -Jhelum, Chenab, Ravi

58. fuEufyf[kr ea l s dkw l k@l s Hkkjr ea l d\$kkfud fudk; g\$

1. uhfr vk; ksx  
 2. fuokpu vk; ksx  
 3. Hkkjrh; fjt ol cdl  
 4. fo'ofolky; vuqku vk; ksx  
 5. dlnh; l puk vk; ksx

- uhpsfn; sx; sdw dk c; ksx dj l gh mRrj pfu; %  
 (a) doy 2 vksj 3                      (b) doy 3 vksj 4  
 (c) doy 4 vksj 5                      (d) buel s dkbz ugha

59. I ph-I dks I ph-II l s l esyr dja rFkk uhpsfn, x, dW/kach enn l s l gh mRrj dk p; u dja

<b>I ph-I</b> <b>(fl ) kUr)</b>	<b>I ph-II</b> <b>(0; fDr)</b>
A. Qkfl LVokn	1. fgVyj
B. iztkra-	2. foyl u
C. ukthokn	3. yfsuu
D. l ektokn	4. eq kfyuh

dW%

A	B	C	D	A	B	C	D
(a) 1	2	3	4	(b) 4	2	1	3
(c) 3	2	1	4	(d) 4	1	3	2

60. ekufp= ea baxr 'X' v{kj fdl n\$ k dks inf'kr djrk g\$



- (a) mtefdLrku                      (b) rtkfdLrku  
 (c) fdjfxLrku                      (d) rplzfuLrku

61. fl U/kq ty l fu/kj 1960 dsrgr fn; sx; sufnn; ka ea fdu ufn; ka ds ty dk vko'u Øe'k% Hkkjr rFkk i kfdLrku dks l fu' pr fd; k x; k g\$

Hkkjr dks                      i kfdLrku dks

- (a) >ye] l ryt] ; epk & fl U/kq psuk] 0; kl  
 (b) jkoh] l ryt] 0; kl & fl U/kq psuk] >ye  
 (c) l ryt] 0; kl ] psuk & >ye] jkoh] fl U/kq  
 (d) fl U/kq l ryt] ; epk & >ye] psuk] jkoh



62. Match **List-I** with **List-II** and select the correct answer using the code given below the lists:

<b>List-I</b> (State/Union Territories)	<b>List-II</b> (Capital)
A. Andaman and Nicobar	1. Silvassa
B. Dadra and Nagar Haveli	2. Kohima
C. Lakshadweep	3. Port Blair
D. Nagaland	4. Kavaratti

Codes:

A	B	C	D	A	B	C	D
(a) 3	1	4	2	(b) 1	3	2	4
(c) 4	1	3	2	(d) 3	4	1	2

63. Which one of the following is **not** a function of Reserve Bank of India?

- (a) Banker to the government
- (b) Keeping foreign exchange reserve
- (c) Issuing of one rupee coin and note
- (d) Regulating credit in the country

64. BSE Sensex is an index to measure ups and downs in the share market. The number of companies covered under the index are:

- (a) 30
- (b) 40
- (c) 55
- (d) 105

65. The green ring in the Olympic flag exhibits which continent?

- (a) Europe
- (b) Asia
- (c) Africa
- (d) Australia

66. Match **List-I** with **List-II** and select the correct answer using the code given below the lists:

<b>List-I</b> (Games)	<b>List-II</b> (Venue)
A. 2018 Commonwealth Games	1. Australia
B. 2018 FIFA World Cup	2. Tokyo
C. 2019 Cricket World Cup	3. Russia
D. 2020 Summer Olympics	4. England

A	B	C	D	A	B	C	D
(a) 1	3	4	2	(b) 2	4	3	1
(c) 4	3	1	2	(d) 1	2	4	3

62. **I ph-I** dks **I ph-II** ds | kFk | efsyr dja rFkk uhrs fn; sx; s dV/dh | gk; rk | s | gh mYkj dk p; u dj%

<b>I ph-I</b>	<b>I ph-II</b>
½jkt; @dhnzWfI r insk½	½jkt/Wkuh½
A. v. Meku , oafudkckj	1. fl yokl k
B. nknjk , oaouxj goyh	2. dkfgek
C. y{k}hi	3. i k/z Cys j
D. ukxkySM	4. dkkokj ðkh

Codes:

A	B	C	D	A	B	C	D
(a) 3	1	4	2	(b) 1	3	2	4
(c) 4	1	3	2	(d) 3	4	1	2

63. buea | sHkjr; fj toZ c d | k dk; Z ughagS

- (a) | j dkj dk vf/kdkfjd c d
- (b) fonsh enk Hk. Mkj dk j [k&j [kko
- (c) , d #i ; s dk fl Dds rFkk uk/ tkjh djuk
- (d) nsk ea \_\_. kka dk fofu; eu djuk

64. ch- | -bz | d | DI 'ks j cktkj ea gkus okys mrkj p<ko dk eki usoky | pdkad gA bl | pdkad ds rgr vkusokyh dā fu; ka dh dty | ; k g%

- (a) 30
- (b) 40
- (c) 55
- (d) 105

65. vksyfei d ds > .Ms ea gjk oy; fdl egk}hi dks n'kkzk gS

- (a) ; jki
- (b) , f'k; k
- (c) vYhdk
- (d) vLVfy; k

66. **I ph-I** dks **I ph-II** ds | kFk | efsyr dja rFkk uhrs fn; sx; s dV/dh | gk; rk | s | gh mYkj dk p; u dj%

<b>I ph-I</b>	<b>I ph-II</b>
½kys½	½Fku½
A. 2018 dkkuoYFk [ky	1. vLVfy; k
B. 2018 QhQk fo'o di	2. V/d; ks
C. 2019 fØdV fo'o di	3. :
D. 2020 xh'e vksyfei d	4. bXySM

A	B	C	D	A	B	C	D
(a) 1	3	4	2	(b) 2	4	3	1
(c) 4	3	1	2	(d) 1	2	4	3

67. How many players from each team play respectively in Kho-Kho, Kabaddi, Volley ball and Basket ball?  
 (a) 7, 9, 5, 6 (b) 8, 6, 7, 9  
 (c) 9, 7, 6, 5 (d) 7, 5, 6, 9

68. Consider the following statements regarding National Defence Academy (NDA) and Naval Academy (NA).  
 1. NDA/NA exam is conducted for the recruitment of the candidates for Army, Navy, Air Force and Coast Guard.  
 2. Only citizens of India and subjects of Nepal can participate in the exam.  
 3. The motto of NDA is 'Service before self'.  
 4. Naval Academy is in Kochhi, Kerala.  
 Which of the following statements given above is/ are correct?  
 (a) Only 1 and 2 (b) Only 3 and 4  
 (c) Only 3 (d) Only 4

69. Match **List-I** with **List-II** and select the correct answer using the code given below the lists:

<b>List-I</b> (Training Establishment)	<b>List-II</b> (Location)
A. Army War College	1. Pune
B. High Altitude Warfare School	2. Mhow
C. College of Military Engineering	3. Chennai
D. Officers Training Academy	4. Gulmarg

Codes:

A	B	C	D	A	B	C	D
(a) 1	4	2	3	(b) 2	3	1	4
(c) 3	2	1	4	(d) 2	4	1	3

70. Which one of the following pairs is **not** correctly matched?  
**Nobel Laureate of 2016 – Discipline**  
 (a) Juan Manuel Santos – Peace  
 (b) Bernard L. Feringa – Physics  
 (c) Bob Dylan – Literature  
 (d) Yoshinori Ohsumi – Physiology

67. [kk& [kk& dcMMh] okyh ckNy rFkk ckLdV/ cky ds çR; d ny l s Øe'k% fdrusf [kykMh Hkkx yrs g&  
 (a) 7, 9, 5, 6 (b) 8, 6, 7, 9  
 (c) 9, 7, 6, 5 (d) 7, 5, 6, 9

68. jk'Vh; j{kk vdkneh vj& ukSl uk vdkneh ds l Ecu/k ea fuEufyf[kr dFkula ij fopkj dj%  
 1. , u-Mh, -@, u, - dh ij h{kk Fky l ukSl uk rFkk ok; q l uk , oa rVj {kdka dh HkrhZ ds fy; s l pkyr dh tkrh g&  
 2. bl ij h{kk ea dcy Hkkjr rFkk us ky ds ukxfjd Hkkx ys l drs g&  
 3. , u-Mh, - dk y{; gS'Lo; ads igys l ok'A  
 4. ukSl uk vdkneh] dkPp] djy ea g& bua l s dks l k@l s dFku l gh g& g&  
 (a) dcy 1 vj& 2 (b) dcy 3 vj& 4  
 (c) dcy 3 (d) dcy 4

69. **I ph-I** dks **I ph-II** ds l kFk l efsyr dja rFkk uhps fn; sx; s dV/dh l gk; rk l s l gh mYkj dk p; u dj%  

<b>I ph-I</b>	<b>I ph-II</b>
¼ f'k'k.k LFky½	¼ Fku½
A. vkehZ okj dkyst	1. i qks
B. gkbZ vYVhV; M okj Qs j Ldny	2. eÅ
C. dkWyst vKd fefyVh bat hfu; fja	3. pthubZ
D. vKQI l ZVku vdkneh	4. xyexZ

dW%

A	B	C	D	A	B	C	D
(a) 1	4	2	3	(b) 2	3	1	4
(c) 3	2	1	4	(d) 2	4	1	3

70. fuEufyf[kr ea l s dks l k t kMk l gh l efsyr ugh g&  
**2016 ds usy fotsk – l afkr fo'k;**  
 (a) t pku espy l SVld – 'kkfUr  
 (b) cukMz , y- Qj huxk – Hkksrd foKku  
 (c) ckM Mk; yku – l kfgR;  
 (d) ; k' kulj h vks keh – 'kj hj fØ; k foKku

71. Consider the following statements regarding new telecom brand 'Jio'.
1. It is a wholly owned subsidiary of Anil Ambani-led Reliance Industries Limited.
  2. Jio has a tie up with Taiwan based mobile handset brand LYF.
- Which of the statement given above is/are correct?
- (a) Only 1 (b) Only 2  
(c) 1 and 2 Both (d) None of these
72. Memory of a computer is usually represented in Kilobytes or Megabytes. One byte is made up of:
- (a) Eight binary digits (b) Two binary digits  
(c) Eight decimal units (d) Two decimal units
73. A computer cannot 'boot' if it does not have the:
- (a) Compiler (b) Loader  
(c) Assembler (d) Operating system
74. Match **List-I** with **List-II** and select the correct answer using the code given below the lists:

List-I	List-II
(Social Networking Sites)	(Founders)
A. Facebook	1. Kevin Systrom
B. Twitter	2. Susan Wojcicki
C. YouTube	3. Mark Zuckerberg
D. Instagram	4. Jack Dorsey

**Codes:**

A B C D	A B C D
(a) 3 2 1 4	(b) 3 4 2 1
(c) 4 3 1 2	(d) 4 2 3 1

75. Consider the following statements regarding the "Surgical Strike" carried out by Indian Army recently?
1. Indian Army conducted the strike on 29 September, 2016.
  2. In this Strike, Indian Army devasstated terror camps in Pak occupied Kashmir.
- Which of the statement given above is/are correct?
- (a) Only 1 (b) Only 2  
(c) 1 and 2 Both (d) None of these

71. u; sVfydke ck.M 'ft; k' ds l Ecu/k eafuEufyf [kr dFkuka ij fopkj dj%
1. ; g vfuy v'ckuh dsurRo okyh f'jyk; Ul m | kx fyfeVM dh i wZ Lokfero okyh l gk; d dEi uh gA
  2. ft; ksdk rkboku vk/kfjr ekckb'zy gMI s/ ck.M LYF l sVkbZvi gA
- mi jkDr dFkuka ea l s dks l s dFku l R; g@gA
- (a) d'oy 1 (b) d'oy 2  
(c) nksuka 1 v'kj 2 (d) buea l s dkbZ ugha
72. dEl; Wj dh eekgh dks fdy'kckbV+ ; k exkckbV+ ea 0; Dr fd; k tkrk gA , d ckbZ curh g%
- (a) vkB ; Med v'cka l s (b) nks ; Med v'cka l s  
(c) vkB n'keyo v'cka l s (d) nks n'keyo bdkb; la l s
73. , d dEl; Wj cW ughadj l drk ; fn ml ea ughag%
- (a) dEi kbyj (b) ykMj  
(c) , l 'cyj (d) l pkyu ç.kkyh
74. l ph-I dks l ph-II ds l kFk l e'syr dja rFkk uhp fn; sx; sdV'ad h l gk; rk l sl gh m'Ykj dk p; u dj%

l ph-I	l ph-II
¼ k'ky u'Vofdk l kbV+ ½	¼ hFki d½
A. Qd cpl	1. d'fou fl LV'ke
B. fV'Vj	2. l q ku okst fl Ldh
C. ; V; c	3. ekdZ t'pjcxZ
D. b'V'kte	4. t'd Mkl h

**dW%**

A B C D	A B C D
(a) 3 2 1 4	(b) 3 4 2 1
(c) 4 3 1 2	(d) 4 2 3 1

75. Hkkj rh; l suk }'kjk gk'W gh ea fd; s x; s 'l ftZy LV'kd\*\* ds l Ecu/k fuEu dFkuka ij fopkj dj%
1. Hkkj rh; l suk us ; s dk; Zkgh 29 fl r'ej] 2016 dks dhA
  2. bl dk; Zkgh ea Hkkj rh; l suk us ikd vf/k'N'r d'ehj ea vkr'adoknh fBdkuka dks u"V fd; kA
- mi jkDr dFkuka ea l s dks l s dFku l R; g@gA
- (a) d'oy 1 (b) d'oy 2  
(c) nksuka 1 v'kj 2 (d) buea l s dkbZ ugha

**ENGLISH****SPOTTING ERRORS**

**Directions:** Each item in this section has a sentence which is divided into parts labelled (a), (b) and (c). Read each sentence to find out whether there is any error in any part and indicate your answer in the Answer Sheet against the corresponding letter i.e., (a), (b) or (c). If you find no error, your response should be indicated as (d).

76. The owner of the horse greedily ask too high a price. No error  
 (a) (b) (c) (d)
77. Food as well as water is necessary for life. No error  
 (a) (b) (c) (d)
78. We must sympathise for others in their troubles. No error  
 (a) (b) (c) (d)
79. I started early for the station lest I should not miss the train. No error  
 (a) (b) (c) (d)

**COMPREHENSION**

**Directions:** In this section, there is one short passage. After the passage, you will find new questions each based on what is stated or implied in the passage. First read the passage and then answer the questions following the passage.

**PASSAGE**

Not only does the lack of education among women make the dissemination of nutrition education difficult. It appears also to be a major obstacle to campaigns for family planning. It is significant that one of the more successful family planning efforts has been in Korea, where literacy is over 80 percent. Thailand, Singapore, Hong Kong and Taiwan have also had more satisfactory results than, for example, Afghanistan, Pakistan, Bangladesh, India or Indonesia, where a large proportion of the female population is illiterate. The education level of women is significant also because it has a direct impact on their chances of employment; and the number of employed women in a country's total labour force has a direct bearing on both the Gross National Product and the disposable income of the individual family.

80. The passage suggests that Korea has been successful in family planning because the Korean women are:  
 (a) well-employed  
 (b) well-educated  
 (c) literate enough to understand its significance  
 (d) exposed to nutrition education
81. The countries where family planning programmes have been satisfactory are  
 (a) Thailand, Singapore, Korea, Hong Kong and India  
 (b) Thailand, Afghanistan, Korea and Pakistan  
 (c) Korea and Indonesia  
 (d) Taiwan, Hong Kong, Korea, Thailand and Singapore

82. According to this passage, a woman's lack of education has a direct bearing on
- (a) the GNP of the country
  - (b) her chances of getting a job
  - (c) the total labour force of the country
  - (d) her knowledge of the nutritional value of food
83. One of the main disadvantages of lack of education among women is that they
- (a) cannot be persuaded to plan their families
  - (b) do not know how to cook nutritious food
  - (c) cannot earn more money
  - (d) cannot communicate well

### SYNONYMS

**Directions:** Each item in this section consists of a sentence with a CAPITAL word, followed by four words. Select the word that is most *similar* in meaning to the capital word.

84. The army RAVAGED a part of the neighbouring country.
- (a) destroyed
  - (b) spoiled
  - (c) conquered
  - (d) robbed
85. The growing use of computers in teaching might one day make teachers REDUNDANT.
- (a) unnecessary
  - (b) uninterested
  - (c) introspective
  - (d) knowledgeable
86. That is not an occasion to make an IMPROMPTU speech.
- (a) without preparation
  - (b) thoughtless
  - (c) improper
  - (d) long and boring
87. For better health we must REFRAIN from smoking.
- (a) dissuade
  - (b) desist
  - (c) prevent
  - (d) curb

### ANTONYMS

**Directions:** Each item in this section consists of a sentence with a CAPITAL word, followed by four words. Select the word that is most nearly *opposite* in meaning to the capital word.

88. His partners felt that it was a VIABLE business proposition.
- (a) enviable
  - (b) unenviable
  - (c) inviolable
  - (d) impracticable
89. There is an OBSCURE cave on the other side of the hill.
- (a) well-known
  - (b) infamous
  - (c) notorious
  - (d) admired
90. The two friends were DISTINCT in everything; dress, manners, hair-style and food-habits.
- (a) opposite
  - (b) different
  - (c) uniform
  - (d) similar
91. The man at the gate had a FORBIDDING appearance.
- (a) handsome
  - (b) lenient
  - (c) filthy
  - (d) mild

**FILL IN THE BLANKS**

**Directions:** Each of the following sentences in this section has a blank space and four words or group of words given after the sentence. Select whichever word or group of words you consider most appropriate for the blank space and indicate your response on the Answer Sheet accordingly.

92. He pretended that he was an Englishman but his accent gave him \_\_\_\_\_ .  
 (a) out (b) up (c) off (d) away
93. The incident \_\_\_\_\_ him repent for his past actions.  
 (a) took (b) help (c) put (d) made
94. Perfect health depends on the \_\_\_\_\_ of a few simple rules to health.  
 (a) observation (b) occurrence (c) observance (d) adaptation
95. The wounded soldiers were \_\_\_\_\_ by their comrades.  
 (a) enervated (b) evacuated (c) appalled (d) excavated

**ORDERING OF SENTENCES**

**Directions:** In the following items, each passage consists of six sentences. The first and sixth sentence are given in the beginning as  $S_1$  and  $S_6$ . The middle four sentences in each have been jumbled up. These are labeled P, Q, R and S. You are required to find out the proper sequence of the four sentences and indicate your answer accordingly on the Answer Sheet.

96.  $S_1$  : Computers are very good at solving various types of numerical problems.  
 $S_6$  : Therefore, they cannot replace the human being who can think.  
 P: They can also multiply four or five-digit figures easily.  
 Q: That is to say, they cannot interpret the information they classify and store.  
 R: For example, they can add hundreds of figures and arrive at a total in no time.  
 S: But they are not good at tasks which required common sense thinking.  
 The proper sequence should be:  
 (a) RPSQ (b) PSRQ (c) SPQR (d) RQSP
97.  $S_1$ : When Newton was a young boy, he went to the neighbourhood school.  
 $S_6$ : By the time he was old, he was considered one of England's greatest scientists.  
 P: His teachers remember him as an average boy.  
 Q: He made several discoveries of lasting importance.  
 R: There he did not distinguish himself as a very bright pupil.  
 S: But when he grew up, he became a great scientist.  
 The proper sequence should be:  
 (a) RPSQ (b) SQRQ (c) RQSP (d) PSRQ

98. S<sub>1</sub>: Two men held a struggling crazed dog down on a table.  
S<sub>6</sub>: The men watched him awe-struck.  
P: Its mouth was smothered with saliva and a bite from its jaws might cause death.  
Q: He put one end of the tube between his lips and lowered the other towards the foam covered jaws.  
R: Beside them stood Louis Pasteur holding a narrow glass-tube in one hand.  
S: As the animal writhed he carefully sucked some of the saliva up the tube.  
The proper sequence should be:  
(a) PRQS                      (b) PQRS                      (c) SRPQ                      (d) RPSQ
99. S<sub>1</sub>: We are told that four-fifths of the globe is covered with water.  
S<sub>6</sub>: We seem to have reached a stage where we have to ration water.  
P: When the world's population was small, there was no need to doubt this.  
Q: This makes us think that we have endless supply of water.  
R: This has led to a tremendous increase in the demand for water.  
S: But the world's population has increased several times in recent centuries.  
The proper sequence should be:  
(a) PSRQ                      (b) QRPS                      (c) QPSR                      (d) RQSP
100. S<sub>1</sub>: At the beginning of this century, Indians were not against the British rule.  
S<sub>6</sub>: This movement for total freedom resulted in the Quit India Movement of 1942.  
P: Under Gandhi's leadership, it became the sole goal of the struggle.  
Q: This led to the rise of the Home Rule Movement.  
R: They only wanted more responsibility to be given to Indians.  
S: It was Gandhi who voiced the demand for total freedom from the British.  
The proper sequence should be:  
(a) PSQR                      (b) RQSP                      (c) PSRQ                      (d) SPRQ



***SPACE FOR ROUGH WORK***

