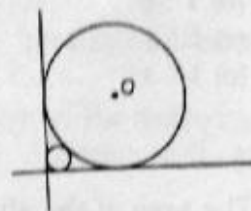


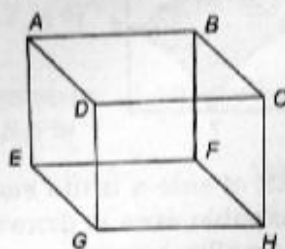
1. A circle placed against a right angled triangle centred at O is the 14 cm radius. What is the radius of the smaller circle placed in the remaining gap?

- (a) $7(\sqrt{2} - 1)$
 (b) $14(\sqrt{2} - 1)$
 (c) $7(\sqrt{2} - 1)^2$
 (d) $14(\sqrt{2} - 1)^2$



2. In the figure show, if $AD = 5$, $DG = 2$ and $GH = 4$. What is the shortest distance between E and C?

- (a) $\sqrt{49}$
 (b) $5 + \sqrt{18}$
 (c) $\sqrt{65}$
 (d) none of these



3. If $\cot \theta = \frac{m}{n}$, then what is the value of $\frac{m \cos \theta - n \sin \theta}{m \cos \theta + n \sin \theta}$?

- (a) $\frac{m^2 + n^2}{m^2 - n^2}$ (b) $\frac{m^2 - n^2}{m^2 + n^2}$ (c) $\frac{m+n}{m-n}$ (d) $\frac{m-n}{m+n}$

4. What is the value of $1 - \cos^2 \alpha - \cos^4 \alpha$, if $\sin \alpha + \sin^2 \alpha = 1$?

- (a) 0 (b) 1 (c) 2 (d) None of these

5. In a biased dice the probability of getting an odd number $\frac{2}{3}$ times the probability of an even number. What is the probability of getting a 5 in that dice?

- (a) $\frac{2}{3}$ (b) $\frac{4}{5}$ (c) $\frac{8}{25}$ (d) None of these

6. If 5 coins are tossed together, what is the probability of getting atleast two heads?

- (a) $\frac{1}{32}$ (b) $\frac{3}{16}$ (c) $\frac{13}{16}$ (d) $\frac{5}{8}$

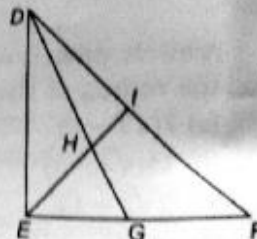
7. When three dice are rolled together, what is the probability of getting atleast two 5?

- (a) $\frac{1}{9}$ (b) $\frac{2}{27}$ (c) $\frac{4}{27}$ (d) None of these

SPACE FOR ROUGH WORK

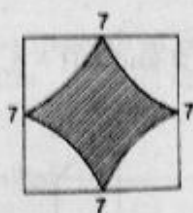
8. In the figure shown, $DH : HG = 3 : 1$, $EG : GF = 1 : 2$, Find $DI : IF$

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



9. The area of the shaded region is

- (a) $49(1 - \pi)$
(b) $49\left(1 - \frac{\pi}{4}\right)$
(c) $49\left(\frac{\pi-1}{4}\right)$
(d) None of these

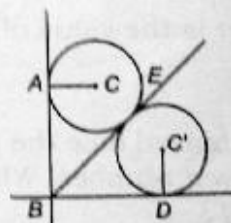


10. A circle is inscribed in a square PQRS of side x units each. In the gap remaining at each corner a square of minimum possible area is drawn. Find the radius of the circle that can be inscribed in each of the smaller squares.

- (a) $x \frac{(\sqrt{2}-1)}{2}$ (b) $x \frac{(\sqrt{2}-1)}{2\sqrt{2}}$ (c) $x \frac{(\sqrt{2}-1)}{4}$ (d) $x \frac{(\sqrt{2}-1)}{4\sqrt{2}}$

11. In the figure shown, two identical circles of radius 12cm each are drawn with centres C and C' with AB and BD being their respective tangents at A and D . If BE is their common tangent and $AB \perp BD$, the length of BD is equal to

- (a) $12(\sqrt{2} - 1)$
(b) $12(\sqrt{2} + 1)$
(c) $12\sqrt{2}$
(d) 24



SPACE FOR ROUGH WORK

12. The value of n for which the expression $x^4 + 4x^3 + nx^2 + 4x + 1$ becomes perfect square
 (a) 3 (b) 4 (c) 5 (d) 6
13. If $49^x - 49^{x-1} = 16464$, then which of the following is equivalent of $(2x)^x$?
 (a) $(5)^{5/2}$ (b) $(7)^{7/2}$ (c) $(3)^{3/2}$ (d) None of these
14. If $2x + 3y = 13$ and $xy = 6$, then $8x^3 + 27y^3$ should be equal to which of the following?
 (a) 790 (b) 793 (c) 783 (d) None to these
15. If the coordinates of the vertices of a ΔPQR are $P(3,1)$, $Q(4,5)$ and $R(13, 9)$, which of the following will be the coordinates of the point S , if RS is a median from R to PQ ?
 (a) $(17, 7)$ (b) $(17, 14)$ (c) $(17/2, 7)$ (d) None of the above
16. The coordinates of the orthocentre of an equilateral triangle formed by the vertices $A(a_1, b_1)$, $B(a_2, b_2)$ and $C(a_3, b_3)$ is
 (a) $\left(\frac{a_1+a_2+a_3}{3}, \frac{b_1+b_2+b_3}{3}\right)$ (b) $\left(\frac{a_1-a_2+a_3}{2}, \frac{b_1-b_2+b_3}{2}\right)$
 (c) $\left(\frac{2a_1a_2a_3}{3}, \frac{2b_1b_2b_3}{3}\right)$ (d) none of the above
17. Kashish has coins only in 2 denominations i.e., 10 paise and 25 paise. If the total number of coins and the total amount she has is ₹ 70 and ₹ 10 respectively, what is the number of 10 paise coins she has?
 (a) 10 (b) 20 (c) 30 (d) 40
18. If the product of the roots of the equation $x^2 - (k+7)x + 2(2k-2) = 0$ is three times the sum of the roots, what is the value of k ?
 (a) 20 (b) 23 (c) 25 (d) 30
19. For what values of n , the roots of the quadratic equation $x^2 + x(14-n) - 14n + 1 = 0$ are equal integers?
 (a) -13, -15 (b) -11, -16 (c) -12, -16 (d) -11, -12

SPACE FOR ROUGH WORK

20. Two pipes can fill a tank in 3 h and 4 h separately and a drain pipe can empty it in 6h, if tank is empty and all pipes are opened simultaneously, then number of hours to fill the whole tank is
 (a) 2 h 12 min (b) 2 h 48 min (c) 2 h 36 min (d) 2 h 24 min

21. Moving at 40% more than his usual speed. Ravi reaches his office 6 min early. Time taken with usual speed is
 (a) 21 min (b) 25 min (c) 18 min (d) 15 min

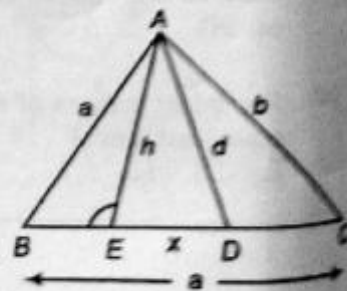
22. Deepak purchased a certain quantity of rice at the rate of ₹ 1200 per quintal. 20% of the rice was spoilt. He mixes the impurities to make it again that much quantity. At what price should he sale the rice to gain 10%
 (a) ₹ 13 per kg (b) ₹ 14 per kg (c) ₹ 13.4 per kg (d) ₹ 13.2 per kg

23. An AP series which has 20 terms has the 1st term and the last term 5 and 158, respectively. What is the sum of its 9th and the 12th term?
 (a) 213 (b) -213 (c) 200 (d) cannot be determined

24. If $x_1, x_2, x_3, \dots, x_n$ are in AP, then the value of $\frac{1}{x_1 x_2} + \frac{1}{x_2 x_3} + \frac{1}{x_3 x_4} + \dots + \frac{1}{x_{n-1} x_n}$ is
 (a) $\frac{n-1}{x_1 x_n}$ (b) $\frac{n-1}{x_2 x_{n-1}}$ (c) $\frac{n}{x_1 x_n}$ (d) None of the above

25. In the figure shown, $AE \perp BC$, D is the mid-point of BC , then x is equal to

- (a) $\frac{a^2 + b^2 + c^2 - d^2}{4}$
 (b) $\frac{b^2 - d^2 - a^2}{4}$
 (c) $\frac{(h+d)^2}{3}$
 (d) $\frac{(c+d-h)^2}{2}$



SPACE FOR ROUGH WORK

REASONING

In the question (Q no 1-2), there are statements followed by four conclusions. You have to take the given statements to be true even, if they seem to be at variance from commonly known facts and then decide, which of the given conclusions logically follows from the given statements.

Statements

- All petals are flowers.
All thorns are flowers.
Some leaves are thorns.
Some stems are flowers.

- (a) None Follows
(c) II and either I or IV follow

Conclusions -

- I. Some petals are leave.
II. All leaves are flowers.
III. Some stems are petals.
IV. No petal is a leaf.

- (b) Only II follows
(d) Either I or IV follows

Statements

- All buses are cars.
Some buses are not motorcycles.
No motorcycle is scooter.
All scooters are tempos.

- (a) Only IV follows (b) II and IV follow

Conclusions -

- I. Some tempos are not cars.
II. Some tempos are not motorcycles.
III. No car is tempo.
IV. Some cars are not motorcycles.

- (c) I and II follow (d) None of the above

3. One statement is given followed by two conclusions I and II. Take the statement to be true and then decide which of the conclusions logically follows.

Statements- Now you don't need on import licence to own a VCR.

Conclusions -

- I. VCRs are now manufactured indigenously.

- II. VCRs are now freely permitted to be imported.

- (a) if only Conclusion I follows
(c) if either Conclusion I or II follows

- (b) if only Conclusion II follows
(d) if neither Conclusion I nor II follows

SPACE FOR ROUGH WORK

4. If $7 \div 2 = 81$, then what is the value of $8 \div 5$?
 (a) 144 (b) 89 (c) 166 (d) 121
5. Seven men A, B, C, D, E, F and G are standing in a queue. Each one is wearing a cap of different colours - Violet, Indigo, Blue, Green, Yellow, Orange and Red. D is able to see in front of him Green and Blue but not Violet. F can see Violet and Yellow but not Red. G can see caps of all the colours other than Orange. If E is wearing an Indigo coloured cap, then the colour of the cap worn by F is
 (a) Blue (b) Violet (c) Red (d) Orange
6. A, B, C, D, E and F are sitting around a round table. A is between E and F, E is opposite to D and C is not either of the neighbouring seats of E. Who is opposite to A?
 (a) F (b) C (c) D (d) None of these
7. On what dates of January 1998 did we have Friday?
 (a) 2, 9, 16, 23 and 30 (b) 4, 11, 18, and 25 (c) 3, 10, 17, 24 and 31 (d) 1, 8, 15, 22, and 29
8. At what time, in minutes, between 3 O'clock and 4 O'clock both the needles will coincide each other?
 (a) $5\frac{1}{11}$ (b) $12\frac{1}{11}$ (c) $13\frac{1}{11}$ (d) $16\frac{1}{11}$

These questions (Q no 9-12) are based on the following diagram in which the circle stands for educated, the square stands for hard working, the triangle stands for urban and the rectangle stands for honest. Different regions in the diagram are numbers form 1 to 12. Study the diagram carefully and answer the each question.



9. Educated hardworking and honest urban people are indicated by
 (a) 1 (b) 2 (c) 3 (d) 4
10. Urban people who are hardworking and educated but not honest are indicated by
 (a) 1 (b) 2 (c) 3 (d) 4
11. Non-urban educated people who are neither hardworking nor honest are indicated by
 (a) 5 (b) 7 (c) 10 (d) 11
12. Urban educated people who are neither honest nor hardworking are indicated by
 (a) 2 (b) 4 (c) 8 (d) 9

SPACE FOR ROUGH WORK

SMTW T/F

81
81
—
0

REASONING

13. In a certain code '283' means 'books are old' '346' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?
 (a) 2 (b) 4 (c) 5 (d) 6
14. In the below question three of the following have similar relationship and hence belong to the group. Find the one which does not belong to the group.
 (a) DISTASTE : AFSATSXI (b) GASWORKS : DXROWSNV
 (c) MARTYRED : JXRYTRIH (d) outhouse : LRUOHTWI
15. In the below question some words are given which are related in some way. The same relationship is obtained among the words in one of the four alternatives given under it. Find the correct alternative.
 Evaporation : Cloud : Rain
 (a) Sneezing : Cough : Cold (b) Accident : injury : Pain
 (c) Tanning : Leather : Purse (d) Bud : Flower : Fragrance
16. If it is possible to make a meaningful word from the eight, sixteenth, seventeenth and twenty second letters from your left in the given series, which will be the first letter of that word? If no such word can be formed, your answer would be 'X' and if more than one such words can be formed answer is P.
 (a) M (b) T (c) X (d) P
17. Find the missing term in the series.
 ACEGI, JLNPR, SUWYA, ?, KMOQS
 (a) LBGHI (b) ADIFH (c) YWXAC (d) BDFHJ
18. In the following number series, how many 5s are there which are immediately preceded by an odd number and immediately followed by an even number?
 2 4 9 7 6 5 4 3 7 9 4 5 8 3 5 6 7 9 8 4 2 5 6 7 5 2
 (a) two (b) three (c) four (d) five
19. In the below question arrange the given words in a meaningful sequence and then choose the most appropriate sequence from the options given below.
 (1) Colonel (2) Major (3) General (4) Captain (5) Lieutenant
 (a) (5), (4), (2), (1), (3) (b) (3), (4), (5), (2), (1) (c) (1), (2), (5), (3), (4) (d) (5), (4), (2), (3), (1)

SPACE FOR ROUGH WORK



$$\begin{array}{r} 81 \\ 25 \overline{) 2025} \\ \underline{200} \\ 25 \\ \underline{25} \\ 0 \end{array}$$

$$\begin{array}{r} 552 \\ 6 \overline{) 3312} \\ \underline{33} \\ 01 \\ \underline{00} \\ 12 \\ \underline{12} \\ 00 \end{array}$$

$$\begin{array}{r} 64 \\ 25 \overline{) 1584} \\ \underline{50} \\ 08 \\ \underline{50} \\ 08 \\ \underline{00} \\ 84 \\ \underline{80} \\ 04 \end{array}$$

Handwritten sequence: A B C D E F
 G H I J K L M N
 O P Q R S T

20. Study the following information carefully to answer this question.
 Adhir Mishra has three children - Urmila, Raghu and Sumit. Sumit married Roma, the eldest daughter of Mr and Mrs Mohan. The Mohan married their youngest daughter to the eldest son of Mr and Mrs Sharma and they had two children Sandeep and Shaifali. Mohan has two more children, Roshan and Bimla, both elder to Sheila. Sohan and Shivendar are sons of Sumit and Roma. Leela is the daughter of Sandeep.

Que. - What is the surname of Sohan?
 (a) Sharma (b) Mohan

(c) Mishra

(d) Raghu

21. If 'South-East' is called 'East', 'North - West' is called 'West', 'South-West' is called 'South' and so on, what will 'North' be called?
 (a) East (b) North - East (c) North - West (d) South - West

22. Six friends A, B, C, D, E and F start climbing a hill together. After some time, it is observed that 'D' has reached the position higher than 'B' but not as high as 'E', 'C' is at a position not higher than 'D' and not lower than 'A', who is not lower than 'F' and not higher than 'B'. Who has climbed to the highest position?
 (a) D (b) E (c) B (d) Cannot be determined

23. Atul's age is 8 year more than thrice the sum of the ages of the two grandsons who are twins. After 8 years, Atul's age will be 10 years more than twice the sum of the ages of his grandsons. What was the age of Atul when his grandsons were born?
 (a) 70 year (b) 72 year (c) 73 year (d) 75 year

24. Divide ₹ 320 among A, B and C, so that A may have ₹ 30 more than B and C may have ₹ 20 more than A.
 (a) ₹ 110, ₹ 80 and ₹ 130 (b) ₹ 110, ₹ 150 and ₹ 70 (c) ₹ 80, ₹ 120 and ₹ 120 (d) ₹ 100, ₹ 100 and ₹ 120

25. Read the below information carefully and answer the question

$\lambda(a, b) = (a - b)^2$, if $a \geq b$; $a + b$ if $b > a$
 What is the value of $\left[\frac{\lambda(-3+2), (-2+3)}{-(2+1)} \right]$?

(a) 1

(b) 0

(c) 2

(d) 3

SPACE FOR ROUGH WORK

$$32 - y = -8$$

$$2x = y - 10$$

$$B = A + 30$$

$$A(10) + 8$$

$$3x + 8 = y$$

$$2x + 10 = y$$

$$A + 30 + B + C + 20 = 320$$

$$A + B + C = 270$$

$$270 - 90$$

$$180$$

$$3$$

$$60$$

E
D
B
C
A
F

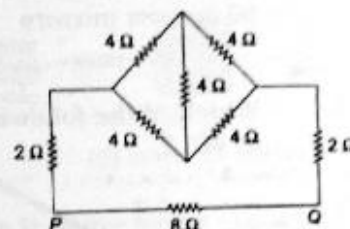
A + 30

x 30

1. A tank of height 50 m is filled with oil fully. If the bottom of the tank appears to be 40 m below its top, the refractive index of the oil should be
 (a) $\frac{4}{5}$ (b) $\frac{1}{5}$ (c) $\frac{1}{4}$ (d) $\frac{5}{4}$

2. The equivalent resistance of network of three $4\ \Omega$ resistors can not be
 (a) $12\ \Omega$ (b) $1.33\ \Omega$ (c) $6\ \Omega$ (d) $4\ \Omega$

3. The resistance of the following circuit between P and Q is



- (a) $8\ \Omega$ (b) $6\ \Omega$ (c) $4\ \Omega$ (d) $2\ \Omega$
4. The resistance will be least in a wire with dimensions:
 (a) $\frac{L}{3}, 3A$ (b) $\frac{L}{2}, 2A$ (c) $3L, A$ (d) L, A
5. An electric fan and a heater are marked as 100 W, 220 V and 1000 W, 220 V respectively. The resistance of heater is
 (a) lesser than that of fan (b) greater than that of fan
 (c) equal to that of fan (d) nothing can be decided
6. An ebonite rod acquires a negative charge of $3.2 \times 10^{-10} C$. The number of excess electrons it has is given by
 (a) 2×10^9 (b) 2×10^{-9} (c) 2×10^{-29} (d) 2×10^{29}
7. The ratio of electric force between two electrons to two protons separated by the same distance in air is
 (a) 10^0 (b) 10^6 (c) 10^4 (d) none of the above

SPACE FOR ROUGH WORK

Handwritten work:

$$x = 6y + 8$$

$$6 + x = 6y + 16 + 10$$

$$A = 30 = B$$

$$A + 20 = 2C$$

$$A = 100$$

$$C = 230$$

$$(3-2), (-2+3)$$

$$-1+1$$

$$(a-b)^2$$

$$(a-b)^2$$

$$(3-2) - (-2+3)$$

$$1-1$$

$$-2$$

$$100$$

$$130$$

$$240$$

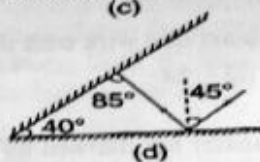
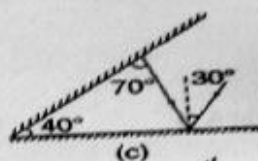
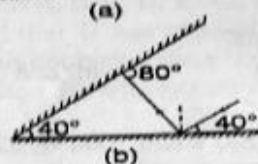
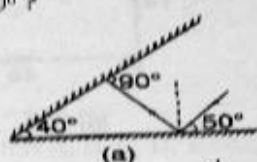
$$320$$

$$240$$

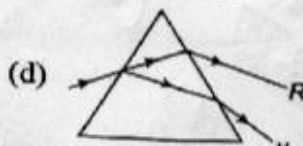
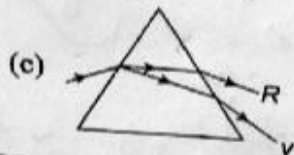
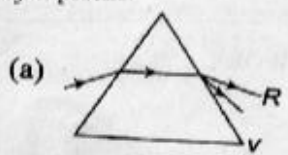
$$80$$

$$(-3+)$$

8. The periodic time of a vibrating body is 0.01 sec. Its frequency will be
 (a) 1.0 c/s (b) 10.0 c/s (c) 100.0 c/s (d) 1000.0 c/s
9. The echo will be heard if the original sound reflected by an obstacle reaches our ear after
 (a) 10 s (b) 5 s (c) 1 s (d) 0.1 s
10. Shaving mirrors are
 (a) convex mirrors (b) concave mirrors (c) plane mirrors (d) none of these
11. Which of the following correctly depicts reflections in case of plane mirrors inclined at 40° ?



12. A concave mirror gives an image three times as large as the object placed at a distance of 20 cm from it. For the image to be real, the focal length should be
 (a) 5 cm (b) 15 cm (c) 20 cm (d) 30 cm
13. A concave mirror of focal length f (in air) is immersed in water ($\mu = 4/3$). The focal length of the mirror in water will be
 (a) $\frac{f}{3}$ (b) $\frac{f}{2}$ (c) $\frac{3f}{4}$ (d) f
14. Which of following figures shows a correct representation of deviation and dispersion of light by a prism?



SPACE FOR ROUGH WORK

$$0 = 4 + a \times 25$$

$$a = -4/25 = -0.16$$

13. A balloon has 2×10^{-3} kg of air. A small hole is pierced into it. The air comes out with a velocity of 4 ms^{-1} . When the ball shrinks completely in 2.5 s, the average force acting on the balloon is

- (a) 0.0032 N (b) 0.008 N (c) 3.2 N (d) 4.4 N

14. The masses of 10 kg and 20 kg respectively are connected by a massless spring. A force of 200 N acts on the 20 kg mass. At the instant shown, the 10 kg mass has an acceleration of 12 ms^{-2} , what is the acceleration of 20 kg mass?



- (a) 12 ms^{-2} (b) 4 ms^{-2} (c) 10 ms^{-2} (d) none of these

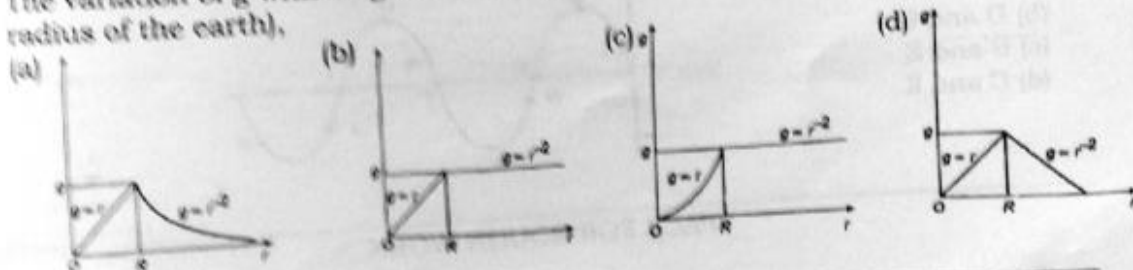
15. A stone is dropped into a well in which the level of water is H metre below the top of the well. If v is velocity of sound in air, the time after which the splash is heard will be given by

- (a) $\frac{2H}{v}$ (b) $\sqrt{\frac{2H}{g} + \frac{H}{v}}$ (c) $\sqrt{\frac{H}{2g} + \frac{2H}{v}}$ (d) $\sqrt{\frac{2H}{v} + \frac{H}{g}}$

16. A car moves for half of its time at 80 km/h and for rest of time at 40 km/h. If total distance covered is 60 km, the average speed of the car is

- (a) 120 km/h (b) 100 km/h (c) 80 km/h (d) 60 km/h

17. The variation of g with height or depth (r) is shown correctly by the graph (where R is radius of the earth),



1.6 SPACE FOR ROUGH WORK

$$\begin{array}{r} 25 \overline{) 401} \\ \underline{25} \\ 150 \\ \underline{150} \\ 0 \end{array}$$

$$4 = 0 + a \times 2.5$$

$$a = \frac{4 \times 10}{2.5 \times 10}$$

$$a = \frac{40}{25}$$

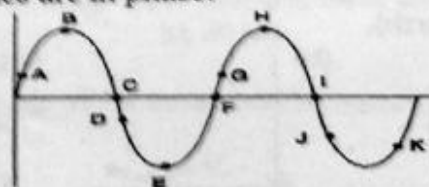
$$F =$$

$$F = 2 \times 10^{-3} \times 1.6$$

$$F = 2000 \times 1.6 \times \frac{3.2 \times 10^{-3}}{10^3}$$

$$F = 32000$$

20. If both the mass and radius of the earth, each decrease by 50%, the acceleration due to gravity would
 (a) increase by 50% (b) decrease by 50% (c) increase by 100% (d) remain the same
21. A ball of mass 200 g falls from a height of 5 m. What is its K.E. when it just reaches the ground, If air resistance is to be considered.
 (a) 9.8 J (b) 98 J (c) 980 J (d) less than 9.8
22. 223 K is equal to
 (a) 40° F (b) -40° F (c) 172° F (d) -172° F
23. 336 g of ice at 0° C is mixed with 336 g of water at 80°C. What is the final temperature of the mixture? $L_f = 80 \text{ cal/gm}$ & $S_w = 1 \text{ Cal/g/}^\circ\text{C}$
 (a) 0° C (b) 40° C (c) 80° C (d) 85° C
24. The speed of sound wave in a given medium is
 (a) directly proportional to its frequency
 (b) inversely proportional to its frequency
 (c) directly proportional to the square of its frequency
 (d) independent of its frequency
25. Figure shows that the shape of a part of a long string in which transverse waves are produced. Which pair of particles are in phase?
 (a) A and G
 (b) D and G
 (c) B and E
 (d) C and K



SPACE FOR ROUGH WORK

$$F = \frac{1}{2} M V^2$$

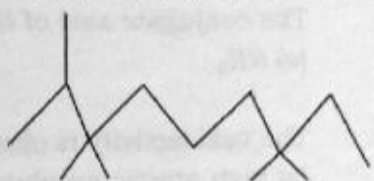
$$W = F \times d = \frac{1}{2} \times 200$$

$$= Mgh$$

$$= 200 \times 9.8 \times 5$$

$$= 9800 \times 5$$

CHEMISTRY

1. An example of halide ore is
 (a) Galena (b) Cinnabar (c) Bauxite (d) Cryolite
2. Molecular mass of an organic compound containing carbon and hydrogen is 100. Its empirical formula is
 (a) C_4H_4 (b) C_3H_6 (c) C_7H_{16} (d) C_2H_3
3. Members of a homologous series do not have
 (a) same general formula (b) same molecular mass
 (c) similar methods of preparation (d) similar chemical properties.
4. What is the IUPAC name of the following compound?


 (a) 2, 3, 3, 7, 7 - pentamethyl octane (b) 2, 2, 6, 6, 7 - pentamethyl octane
 (c) 2, 3, 7, 7, 7 - pentamethyl nonane (d) 3, 3, 7, 7, 8 - pentamethyl nonane
5. Which of the following compounds on dehydration gives ethene?
 (a) Acetylene (b) Ethanol (c) Ethyl bromide (d) calcium carbide.

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$$\begin{array}{r}
 1 \\
 12 \\
 17 \\
 \hline
 84 \\
 16 \\
 \hline
 100
 \end{array}$$

6. A molal solution is one that contains 1 mole of a solute in
 (a) 1 L of solvent (b) 1 L of solution (c) 1000 g of solvent (d) 22.4 L of the solution
7. Molarity of a solution containing 1 g of NaOH in 250 ML of its solution is
 (a) 0.1 (b) 1 (c) 0.01 (d) 0.001
8. Which solution will be strongly acidic.
 (a) when $\text{pOH} = 4.5$ (b) when $\text{pOH} = 14$ (c) when $\text{pH} = 0$ (d) Both B and C
9. The conjugate acid of NH_2^- is
 (a) NH_3 (b) NH_2OH (c) NH_4^+ (d) N_2H_2
10. The radioactivity is observed in the elements with
 (a) high atomic number (b) high mass number
 (c) unstable nucleus (d) All of these
11. Flux is used during smelting
 (a) to reduce metallic oxide (b) to decrease the fusion temperature
 (c) to remove the impurities (d) to make the ore porous

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$$\begin{array}{r} 23 \\ 10 \overline{) 230} \\ \underline{20} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

$$\frac{4058}{2905} \times \frac{2}{100}$$

$$\begin{array}{r} 62.930 \\ 62.928 \\ \hline 0.002 \\ \hline 2 \end{array}$$

$$\frac{40}{250}$$

$$\frac{.1}{25 \overline{) 40}}$$

Mary was working in the lab with our unknown solution. She noticed that there was no precipitate in the bottom of a beaker even after it had been on the lab bench for several days. She tested it with a light and saw that the light got scattered as it passed through the solution. What type of a mixture is the liquid?

- (a) Heterogeneous (b) Homogeneous (c) Suspension (d) ~~Colloid~~

What is the symbol of the species composed of each of the following sets of subatomic particles.

1. 20p, 20n, 18e
(a) Ar, H (b) Ca, H (c) Ar^{2-}, H^+ (d) ~~Ca^{2+}, H^+~~

The atomic number of an element is 25. Write the period to which it belongs.

- (a) ~~3~~ (b) 5 (c) 4 (d) 2

The most basic oxide is

- (a) Fe_2O_3 (b) SiO_2 (c) ~~Na_2O~~ (d) Al_2O_3

Which of the following sets of atoms can combine to form ionic bonds?

- (a) C and H (b) C and Cl (c) H and O (d) K and Br

In which of the following molecules octet rule is not obeyed?

- (a) BF_3 (b) HCl (c) NF_3 (d) H_2O_2

If a sample of copper contains 69.1% of ^{63}Cu of isotopic mass 62.930 u and 30.9% of ^{65}Cu of isotopic mass 64.928. calculate the relative atomic mass of copper.

- (a) ~~63~~ (b) 65 (c) 63.547 (d) 65.547

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19. The formula of a metal sulphate is M_2SO_4 . The formula of its phosphate is
 (a) M_2PO_4 (b) M_3PO_4 (c) $M(PO_4)_2$ (d) MPO_4
20. The reaction in which conversion of sugar into CO_2 is an example of
 (a) oxidation (b) reduction (c) redox (d) None
21. The correctly balanced equation for $FeS_2 + O_2 \rightarrow Fe_2O_3 + SO_2$ is
 (a) $2FeS_2 + O_2 \rightarrow Fe_2O_3 + 4SO_2$
 (b) $2FeS_2 + 3O_2 \rightarrow 2Fe_2O_3 + 4SO_2$
 (c) $4FeS_2 + 4O_2 \rightarrow 2Fe_2O_3 + 2SO_2$
 (d) $4FeS_2 + 11O_2 \rightarrow 2Fe_2O_3 + 8SO_2$
22. In the reaction $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(l)$ when 1 mole of ammonia and 1 mole of O_2 are made to reach to completion.
 (a) 1 mole of H_2O is produced
 (b) 1 mole of NO is produced
 (c) All oxygen will be consumed
 (d) All the ammonia is consumed
23. The number of grams present in 1 gram-atom of sodium is
 (a) 1 g (b) 13 g (c) 23 g (d) $\frac{1}{12}$ g
24. If the pressure and temperature of 2L of CO_2 are doubled, the volume of this gas will be
 (a) 1 L (b) 3 L (c) 2 L (d) 4 L
25. Which of the following exhibits the weakest in the molecular force?
 (a) NH_3 (b) He (c) HCl (d) H_2O

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$C_{12}H_{22}O_{12}$

90 a