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AGNIPATH SCHEME

INDIAN ARMY

AGNIVEER

TECHNICAL

PHASE I

Online Computer Based Written Exam (CEE)

Equally Useful for Agniveer Technical (Aviation/ Ammunition Examiner)

with OFFICIAL ONLINE PRACTICE TEST (SOLVED)

Maj. RD Ahluwalia

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All About Online CEE

The screening of candidates will be carried out for following categories as per qualitative requirement.

S.NO.	Category	Education	Age
(a)	Agniveer (Technical)	10 + 2/Intermediate Exam Pass in Science with Physics, Chemistry, Maths and English with 50% marks in aggregate and 40% in each subject. *OR* 10+ 2/Intermediate Exam Pass from any recognized state education board or central education board to include NIOS and ITI course of minimum one year in required field with NSQF level 4 or above.	$17\frac{1}{2}$–23
(b)	Agniveer Technical (Aviation & Ammunition Examiner)		

Note : The upper age limit has been relaxed from 21 years to 23 years as a onetime measure for the Recruiting Year 2022-23.

Height & Weight - As per policy in vogue.

Relaxation in Physical Standards.

S.NO.	Category	Height (cms)	Chest (cms)	Weights (kgs)
(a)	For son of service & ex-servicement, war widow and widow of ex-servicemen.	2	1	2
(b)	For adopted son/son-in-law of a war widow, if she has no son. Adoption had done during the lifetime of a soldier will be valid for the purpose of award of bonus marks/Concessions and enrolment through UHQ enrolment.	2	1	2

Note : An elligible candidate can be grated prescribed relaxations in all three measurements i.e. height, chest and weight.

Special Physical Standards. As applicable.

Candidates will be tested as stated below

Physical Fitness Test (At Rally Site)							Remarks
1.6 km Run		Beam (Pull Ups)			9 Feet Ditch	Zig-Zag Balance	
Group	Time	Marks	Pull Ups	Marks	Need to Qualify	Need to Qualify	
Group-I	Group-I Up till 5 min 30 sec	60	10	40			
Group-II	5 min 31 sec to 5 min 45 sec	48	9 8 7 6	33 27 21 16			

Physical Measurement (At Rally Site)

Physical measurement will be carried out as per the Physical standards.

Medical Test

(a) As per laid down medical standards at the Rally Site.

(b) Unfit candidates will be referred to MH for specialist review. Candidates to report to designated Military Hospital within 5 days from referral and review medical exam to be completed by Military Hospital within 14 days as per policy.

Written Test through Common Entrance Examination (CEE)

(a) Will be conducted for medically fit candidates at nominated venue. Date and time of written test will be intimated at rally site and through Admit Cards.

(b) Admit Card for the CEE for the Rally Fit candidates will be issued at Rally Site itself.

(c) Admit Card for the CEE for the review Fit cases will be issued after getting medically fit by concerned specialist/specialists at MH.

SYLLABUS

GENERAL KNOWLEDGE

The test will include questions related to India and its neighbouring countries especially pertaining to History, Culture, Geography and who's who. In addition Abbreviations, Sports, Awards and Prizes, Terminology, Indian Armed Forces, Continents and Sub-continents, Inventions and Discoveries, The Constitution of India, International Organisations, Books and Authors, Knowledge of Important events that have happened in India and at world level in the recent years, Current important world events, Prominent personalities etc.

PHYSICS

Physical Properties and States of Matter, Mass, Weight, Volume, Density and Specific Gravity, Principle of Archimedes, Pressure Barometer, Motion of objects, Velocity and Acceleration, Newton's Laws of Motion, Force and Momentum, Parallelogram of Forces, Stability and Equilibrium of bodies, Gravitation, Elementary ideas of work, Power and Energy, Heat and its Effects, Sound waves and their properties, Reflection and refraction, Spherical mirrors and Lenses, Type and properties of magnet, Static and Current Electricity, Conductors and Non-conductors, Ohm's Law, Simple Electrical Circuits, Heating.

MATHEMATICS

(i) Algebra
(ii) Matrices and Determinants
(iii) Analytical Geometry
(iv) Trigonometry
(v) Integral Calculus
(vi) Differential Calculus
(vii) Probability and Statistics
(viii) Number System
(ix) Fundamental Arithmetical Operations
(x) Mensuration
(xi) Area, Volume and Surface Area

CHEMISTRY

Physical and Chemical changes, Elements, Mixtures and Compounds, Symbols, Formulae and simple Chemical Equations, Law of Chemical Combination, Properties of Air and Water, Preparation and Properties of Hydrogen, Oxygen, Nitrogen and Carbondioxide, Oxidation and Reduction, Acids, Bases and Salts, Carbon and its forms, Natural and Artificial Fertilizers, Elementary ideas about the Structure of Atom, Atomic, Equivalent and Molecular Weights, Valency.

Note *The above syllabus is not a comprehensive list of topics pertaining to the subject. Questions are designed to test the candidate's general awareness of the environment around him and its application to the society.*
Questions are also designed to test knowledge of current events and such matters of everyday observation and experience as may be expected from an educated person.
At times questions may be asked other than the above topics but definitely within the syllabus of CBSE.

Indian Army

AGNIVEER TECHNICAL

Official Online Practice Test

1. ..... was writer of 'Discovery of India'.
(a) Indira Gandhi
(b) Jawaharlal Nehru
(c) Subhash Chandra Bose
(d) Mahatma Gandhi

2. Who was the last Viceroy of British India?
(a) Lord Canning (b) Lord Curzon
(c) Lord Dalhousie (d) Lord Mountbatten

3. The capital of Canada is ..... .
(a) Luxembourg (b) Athens
(c) Ottawa (d) Tirane

4. Who was the first woman Chief Justice of High Court?
(a) Smt Bachendri Pal
(b) Smt Sucheta Kripalani
(c) Smt Leila Seth
(d) Smt. Kiran Bedi

5. Who is known as Iron Man?
(a) Rabindranath Tagore
(b) Chitranjan Das
(c) Lala Lajpat Rai
(d) Sardar Vallabh Bhai Patel

6. GFE_IG_EII_FEI_GF_II
(a) FIGIE (b) IFIGE
(c) IFGIE (d) EIFGI

7. If Amit's father is Billoo's father's only son and Billoo has neither a brother nor a daughter, what is the relationship between Amit and Billo?
(a) Father-daughter (b) Cousins
(c) Uncle-nephew (d) Father-son

8. Which of the following letters in the given series is wrong?
BEINSAI
(a) A (b) S (c) I (d) E

9. If code for LEMON is ELMNO then what is the code for TYPES?
(a) YTPSE (b) YTSEP (c) YSTEP (d) YTPES

10. Complete the series MUMBAI : LTLAZH : : DELHI ?
(a) BCKGH (b) CDKGG
(c) IHLED (d) CDKGH

11. Alfred Nobel invented
(a) Dynamite (b) Diesel engine
(c) Dynamo (d) X-ray

12. A body dropped from a certain height to the ground. When it is half-way down, it possesses.... .
(a) only potential energy
(b) both kinetic energy and potential energy
(c) only kinetic energy
(d) zero energy

13. At which angle, the range of the projectile is maximum?
(a) 90 (b) 45 (c) 60 (d) 30

14. Force/Area is the formula of ..... ?
(a) pressure (b) density
(c) mass (d) surface tension

15. The total resistance in the parallel combination of three resistances 9 Ω, 7 Ω and 5 Ω is ..... .
(a) 2.29 Ω (b) 2.20 Ω
(c) 4.22 Ω (d) 122 Ω

16. Current in a conductor is due to …… .
(a) free electrons and holes
(b) motion of free electrons in it
(c) motion of positive ions
(d) protons

17. A particle of mass m has momentum p. Its kinetic energy will be …… .
(a) p^2m (b) mp
(c) $p^2 / 2m$ (d) p^2 / m

18. Minority carriers is a p-type semiconductor are …… .
(a) electrons (b) protons
(c) neutrons (d) photons

19. Electromagnetic induction is related to
(a) Bohr (b) Faraday
(c) Doppler (d) Dalton

20. When we jump out of a boat standing in water, it moves in which direction?
(a) Side ways (b) Forward
(c) Law of motion (d) Backward

21. Velocity of sound will be highest in …… .
(a) water (b) air
(c) alcohol (d) steel

22. When light rays travel from air to water ..... .
(a) it is reflected
(b) it proceeds undeviated
(c) it bends away from the normal
(d) it bends towards the normal

23. Dimensional formula of pressure?
(a) $[M^1L^0T^2]$ (b) $[ML^{-1}T^2]$
(c) $[MLT^2]$ (d) $[M^1L^2T^{-1}]$

24. What is the unit of energy?
(a) Newton (b) Newton/Meter
(c) Watt (d) Joule

25. Why does water boil below 100°C at higher altitudes?
(a) Pollution-free air at higher altitudes increases the calorific value of fuel used.
(b) Water available at higher altitudes is purer than that in the plains.
(c) There is lesser dissipation of heat at higher altitudes.
(d) The atmospheric pressure at higher altitudes is low as compared that at sea level.

26. A man's wage was reduced by 50% and again the reduced wage was increased by 50%. What is his loss?
(a) 0.25 (b) 0 (c) 0.04 (d) 0.03

27. If $F(x) = x^2$ and $g(x) = x + 3$, then find out the value of $F(g)$?
(a) $x^2 + 6x + 9$ (b) x^4
(c) $x^2 + 8x + 9$ (d) $x^3 + 3x + 2$

28. $\int \sin^3 x \cos^2 x$
(a) $-\frac{1}{3}\cos^3 x + \frac{1}{5}\sin x^5 + C$
(b) $\frac{1}{3}\sin x^3 + \frac{1}{5}\cos x^5 + C$
(c) $-\frac{1}{3}\cos x^3 + \frac{1}{5}\cos x^5 + C$
(d) None of the above

29. A trader marks his goods 40% above the cost price. He sells them at a discount of 20%. What is his loss or gain percentage?
(a) 12% loss (b) 12% gain
(c) 10% loss (d) 14% gain

30. Derivative of $(5x^3 + 2x - 4)(x + 1) =$
(a) $20x^3 + 15x^2 + 4x - 2$
(b) $20x^4 + 15x^3 + 4x^2$
(c) $20x^4 + 15x^3 + 4x^2 + 2x$
(d) $20x^2 + 15x - 2$

31. An agent gets a commission of 2.5% on the sales of cloth, if on a certain day, he gets ₹ 12.50 as commission, the cloth sold through him on that day is worth?
(a) ₹ 1250 (b) ₹ 500 (c) ₹ 250 (d) ₹ 750

32. If $\sin\theta = \frac{3}{5}$ then find out the value of $3\,\text{cosec}\,\theta + 4\sec\theta = ?$
(a) 11 (b) 8
(c) 9 (d) 10

33. A wire is in the form of a circle of radius 42 cm. It is bent into a square. Determine the side of the square.
(a) 66 cm (b) 62 cm
(c) 63 cm (d) 64 cm

34. $\int (3x^2 + 1/x)\, dx$

(a) $2x^3 = 2\sqrt{x^2} + C$

(b) $x^3 + \sqrt{x^2} + C$

(c) $2x^3 \log x + C$

(d) $x^3 + \log x + C$

35. ${}^{11}C_2 = ?$

(a) 50 (b) 60
(c) 52 (d) 55

36. Divide 1870 into three parts in such a way that half of the first part, one third of the second part and one sixth of the third part are equal. Then, the third part is .....

(a) 510 (b) 340
(c) 1020 (d) 1320

37. The ratio of copper and zinc in brass is 11 : 6. How much zinc is there in 850 kg of brass?

(a) 510 kg (b) 200 kg
(c) 300 kg (d) 550 kg

38. A group of 84 men can complete a work in 17 days. In how many days that work can be completed by 119 men?

(a) 12 days (b) 18 days
(c) 14 days (d) 15 days

39. If probability of an event is $P(E) = 0.05$. What is the probability of 'not E'?

(a) 0.05 (b) − 0.05
(c) − 0.95 (d) 0.95

40. Rahul Dravid in his 12th inning makes a score of 63 runs and thereby increases its average score by 2. What is his average after the 12th inning

(a) 43 (b) 40
(c) 41 (d) 42

41. The chemical reactions which release heat are ..... reactions.

(a) endothermic (b) photochemical
(c) exothermic (d) None of these

42. The reciprocal of viscosity is called .....

(a) fluidity (b) resistance
(c) surface tension (d) reynolds number

43. Isotopes are atoms showing same .....

(a) atomic number (b) atomic mass
(c) number of neutrons (d) mass number

44. Chemical name of bleaching powder is ……

(a) sodium oxide
(b) potassium chloride
(c) sodium carbonate
(d) calcium hypochlorite

45. Silicon is a ..... .

(a) metal complex (b) non-conductor
(c) conductor (d) semiconductor

46. Mendeleev's periodic law is based on.

(a) atomic weight (b) atomic number
(c) number of neutron (d) atomic volume

47. Cooking oil can be converted in vegetables ghee by the process

(a) hydrogenation (b) oxidation
(c) crystallisation (d) distillation

48. The oxidation state of Mn in K_2MnO_4 .....

(a) 2 (b) 7
(c) 6 (d) − 2

49. Out of the four halogens, the one which has the highest electron affinity is .....?

(a) Br (b) I
(c) Cl (d) F

50. In the atmosphere, % of oxygen is .....

(a) 46 (b) 18 (c) 78 (d) 21

Answers

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

Solutions

1 (b) Jawaharlal Nehru was the writer of 'Discovery of India'. The book gives the reader a comprehensive understanding of Indian history, philosophy and culture from the perspective of an Indian who is fighting for the independence of his nation. During the time that he was locked up, he authored the book.

2 (d) Lord Mountbatten served as the last Viceroy of India. He was in the position of absolute power and was the person in charge for the implementation of the Independence of India Act, Partition of India and Transfer of Power.

3 (c) The capital of Canada is Ottawa. Canada is a country in North America. It is the world's second-largest country by total area. It shares southern and western border with the United States. Its three largest metropolitan areas are Toronto, Montreal and Vancouver.

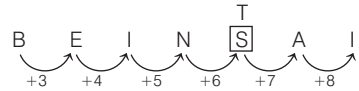
4 (c) Justice Leila Seth served as the first woman judge on the Delhi High Court and was the first woman to become Chief Justice of a State High Court, Himachal Pradesh High Court, on 5th August, 1991. She was also the first woman to be designated as a senior counsel by the Supreme Court of India.

5 (d) Vallabhbhai Jhaverbhai Patel, commonly known as Sardar Patel or Iron man of India was an Indian lawyer, influential political leader, barrister and statesman who served as the first Deputy Prime Minister and Home Minister of India from 1947 to 1950. He is also known to led the popular Bardoli Movement in the state of Gujarat. The world's tallest 'Statue of Unity' is dedicated to him. And his birthday marks the celebration of 'National Unity Day'.

6 (c) Here,
G F E I I /G F E I I / G F E I I / G F E I I
$\Rightarrow$ I F G I E

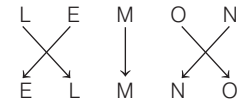
7 (d) Amit's father is Billo's father's only son i.e. Billo is the father of Amit.

8 (b) The pattern of the series is as follows,

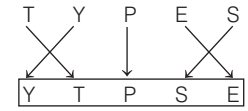


Here, S is wrong.

9 (a) Here,

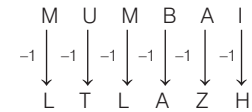


Similarly,

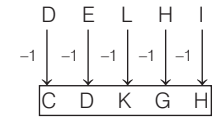


Hence, here S is wrong.

10 (d) Here,



Similarly,



11 (a) Nobel invented dynamite in 1867 a substance easier and safes to handle than the more unstable nitroglycerin.

12 (b) When the object is half-way down, it will have both kinetic energy and potential energy. When an object is at the top most point of its motion, it has only potential energy. When it has reached the lowest point it, has only kinetic energy.

13 (b) As we know that,
Range of projectile,

$$R = \frac{u^2 \sin 2\theta}{g}$$

where, u = initial velocity of particle,
θ = angle of projection
and g = gravitation acceleration.
When $\theta = 45°$,

$$R = \frac{u^2 \sin (2 \times 45)}{g}$$

$$\Rightarrow \quad R_{max} = \frac{u^2}{g}$$

Therefore, option (b) is correct.

14 (a) As we know that,

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

The unit of pressure is N/m^2 or pascal.

15 (b) Given $R_1 = 9\ \Omega$, $R_2 = 7\ \Omega$

and $R_3 = 5\ \Omega$

All the resistances are connected in parallel combination is given by

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\frac{1}{R_{eq}} = \frac{1}{9} + \frac{1}{7} + \frac{1}{5}$$

$$\frac{1}{R_{eq}} = \frac{(7 \times 5) + (9 \times 5) + (9 \times 7)}{9 \times 7 \times 5}$$

$$\frac{1}{R_{eq}} = \frac{35 + 45 + 63}{9 \times 7 \times 5}$$

$$\frac{1}{R_{eq}} = \frac{143}{315}$$

$$R_{eq} = \frac{315}{143} = 2.20\ \Omega$$

16 (b) Current in a conductor is due to motion of the free electrons in it. A Metallic conductor has a large number of free electrons in it when a potential difference is applied acrosses the ends of a metallic wire, the free electrons begin to drift from the low potential to high potential.

17 (c) Given,

mass of particle = m

momentum of particle = p

As we know that,

kinetic energy (KE) = $\frac{1}{2} mv^2$

where, v = velocity of particle

$$= \frac{1}{2} mv^2 \times \frac{m}{m}$$

$$= \frac{m^2v^2}{2m} = \frac{(mv)^2}{2m}$$

$$= \frac{p^2}{2m} \qquad (\because\ p = mv)$$

18 (a) The p-type semiconductor holes are majority charge carrier and electrons are minority charge carriers.

19 (b) Electromagnetic induction was discovered by Faraday. According to Faraday ''The magnitude of the induced emf in a circuit is equal to the time rate of change of magnetic flux through the circuit.

20 (d) From the Newton's third law, ''Every action has a equal and opposite reaction''. So, if we jump in a forward direction, then it exerts a force on a boat in a backward direction.

21 (d) The speed of sound is the greatest in solids. Therefore, the speed of sound is highest in steel. Speed of sound decreases as it moves from solids to liquids and liquids to gases.

22 (d) When light travels from a rarer (air) to a denser medium (water), it bends towards the normal.

23 (*) As we know that,

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}} = \frac{[M^1L^1T^{-2}]}{[L^2]}$$

$$= [M^1L^{-1}T^{-2}]$$

24 (d) The SI unit of energy is joule. The commercial unit of energy is kilowatt-hour.

25 (d) As the atmospheric pressure is low at higher attitudes is compared to that sea level which causes decrease in boiling point as pressure is inversely proportional the temperature. So, water does boil below 100°C at higher attitude.

26 (a) Let the man's initial wage = ₹ x

After 50% reduction wage

$$= (100 - 50)\% \text{ of } x$$

$$= \frac{50}{100} \times x = ₹\ \frac{x}{2}$$

Now, after 50% increment wage

$$= (100 + 50)\% \text{ of } \frac{x}{2}$$

$$= \frac{150}{100} \times \frac{x}{2} = ₹\ \frac{3x}{4}$$

$$\text{Loss \%} = \frac{x - \frac{3x}{4}}{x} \times 100$$

$$= \frac{x}{4x} \times 100 = 25\%$$

So, loss = 25% = $\frac{25}{100} = 0.25$

27 (a) Here, $F(x) = x^2$

and $g(x) = x + 3$

Then, $F(g) = (x + 3)^2$

$$= x^2 + 2 \times x \times 3 + (3)^2$$

$$= x^2 + 6x + 9$$

28 (c) $\int \sin^3 x \cos^2 x\, dx$

$= \int \sin x \sin^2 x \cos^2 x\, dx$

$= \int \sin x (1 - \cos^2) \cos^2 x\, dx$

$= \int \sin x \cos^2 x\, dx - \int \sin x \cos^4 x\, dx$

Let $\cos x = t$

$\Rightarrow -\sin x\, dx = dt$

$$\int \sin^3 x \cos^2 x\, dx$$

$$= -\int -\cos^2 x \sin x\, dx + \int -\cos^4 x \sin x\, dx$$

$$= -\int t^2 dt + \int t^2 dt \left(\because \int x^n dx = \frac{x^{n+1}}{n+1}\right)$$

$$= -\frac{t^3}{3} + \frac{t^5}{5} + C$$

$$= -\frac{1}{3}\cos^3 x + \frac{1}{5}\cos^5 x + C$$

29 (b) Let the cost price of the goods = ₹ $100x$

Marked price

$= (100 + 40)\%$ of $100x$

$= ₹\ 140x$

Selling price

$= (100 - 20)\%$ of $140x$

$= \frac{80}{100} \times 140x = ₹\ 112x$

Gain = SP – CP = $112x - 100x$

$= ₹\ 12x$

Gain % = $\frac{12x}{100x} \times 100 = 12\%$

30 (a) $(5x^3 + 2x - 4)(x + 1)$

$= 5x^4 + 2x^2 - 4x + 5x^3 + 2x - 4$

$= 5x^4 + 5x^3 + 2x^2 - 2x - 4$

$\frac{d}{dx}(5x^3 + 2x - 4)(x + 1)$

$= \frac{d}{dx}$

$(5x^4 + 5x^3 + 2x^2 - 2x - 4)$

$= 5 \times 4x^3 + 5 \times 3x^2 + 2 \times 2\, x - 2 - 0$

$= 20x^3 + 15x^2 + 4x - 2$

31 (b) Let the cloth sold through the agent on the day = ₹ x

Then, 2.5% of $x = 12.50$

$\Rightarrow \frac{2.5}{100} \times x = 12.50$

$\Rightarrow x = \frac{12.50 \times 100}{2.5} = 500$

So, total sales on that day = ₹ x = ₹ 500.

32 (d) Given, $\sin\theta = \frac{3}{5}$

$$\cos\theta = \sqrt{1 - \sin^2\theta} = \sqrt{1 - \left(\frac{3}{5}\right)^2}$$

$$= \sqrt{1 - \frac{9}{25}} = \sqrt{\frac{16}{25}} = \frac{4}{5}$$

Now, $\text{cosec}\,\theta = \frac{1}{\sin\theta} = \frac{5}{3}$,

$$\sec\theta = \frac{1}{\cos\theta} = \frac{5}{4}$$

So, $3\,\text{cosec}\,\theta + 4\sec\theta = 3 \times \frac{5}{3} + 4 \times \frac{5}{4}$

$= 5 + 5 = 10$

33 (a) Circumference of the circular wire = Perimeter of the square

$\Rightarrow 2\pi r = 4a$

(r = radius, a = side of square)

$\Rightarrow 2 \times \frac{22}{7} \times 42 = 4a$

$\Rightarrow a = \frac{2 \times 22 \times 42}{4 \times 7} = 66$ cm

So, side of the square,

$a = 66$ cm.

34 (d) $\int \left(3x^2 + \frac{1}{x}\right) dx$

$= \int 3x^2\, dx + \int \frac{1}{x} dx$

$= 3 \times \frac{x^3}{3} + \log x + C$

$= x^3 + \log x + C$

35 (d) ${}^{11}C_2 = \frac{11!}{2!\,(11-2)!}$ $\left[\because {}^nC_r = \frac{n!}{r!\,(n-r)!}\right]$

$= \frac{11 \times 10 \times 9!}{2! \times 9!} = \frac{11 \times 10}{2}$

$= 55$

36 (c) Let the first, second and third parts are x, y and z, respectively.

Given, $\frac{1}{2} \times x = \frac{1}{3} \times y$

$$= \frac{1}{6} \times z = k \text{ (let)}$$

$\Rightarrow$ $x = 2k$, $y = 3k$ and $z = 6$ k

Then, $x : y : z = 2k : 3k : 6k$

$$= 2 : 3 : 6$$

The third part,

$$z = \frac{6}{2 + 3 + 6} \times 1870$$

$$= 1020$$

37 (c) The ratio of copper and zinc in brass = 11 : 6

Zinc in 850 kg of brass

$$= \frac{6}{11 + 6} \times 850$$

$$= 6 \times 50 = 300 \text{ kg}$$

38 (a) Given, $M_1 = 84$, $D_1 = 17$, $M_2 = 119$, $D_2 = ?$

We know that,

$$M_1D_1 = M_2D_2$$

$$\Rightarrow \quad 84 \times 17 = 119 \times D_2$$

$$\Rightarrow \quad D_2 = \frac{84 \times 17}{119} = 12$$

Required number of days

$$= D_2 = 12$$

39 (d) Given, probability of an event,

$P(E) = 0.05$

Probability of 'not E' = $1 - P(E)$

$P(\bar{E}) = 1 - 0.05 = 0.95$

40 (c) Let Rahul Dravid's average score after 11th inning = x

Total run after 11th inning = $11x$

Given, $\quad \frac{11x + 63}{12} = x + 2$

$$\Rightarrow \quad 11x + 63 = 12x + 24$$

$$\Rightarrow \quad 12x - 11x = 63 - 24$$

$$\Rightarrow \quad x = 39$$

Average after 12th inning

$$= x + 2 = 39 + 2 = 41$$

41 (c) Exothermic reaction releases energy in the form of light or heat. It is the opposite reaction of endothermic. e.g. Thermite reaction and Haber's process.

42. (a) The reciprocal of viscosity is called fluidity. We know that, ability of liquid to resist its flow are called viscosity and tendency to allow its flow easily are called fluidity. It means that a less viscous liquid will have more fluidity.

43 (a) Isotopes are atoms showing same atomic number due to same number of protons and similar chemical properties but mass number and atomic mass are not same due to not similar number of neutrons.

44 (d) Chemical name of bleaching powder is calcium hypochlorite and chemical formula is $CaCl_2$. It is prepared on dry slaked lime with chlorine gas.

45 (d) Silicon is a semiconductor material which means electricity conducts under some conditions or circumstances. Its electrical properties are called doping and transistor usually making by this material so, it is used for electronic devices.

46 (a) Mendeleev's periodic law is based on atomic weight because according to this law, the physical and chemical properties are periodic functions of their atomic but masses.

It had seven periods cells, eight group cells but don't had zero group and insert gas due to not define in that time.

47 (a) Cooking oil can be converted in vegetable ghee by the process of hydrogenation. It is a reaction of unsaturated fatty acids is basically the reaction where the hydrogen gets added in double bond of alkane or alkyne in presence of nickel.

48 (c) The oxidation state of Mn in K_2MnO_4 is + 6.

We know that,

Oxidation number of oxygen = – 2

Oxidation number of hydrogen = + 1

Therefore K_2MnO_4

$$= 2 \times (1) + n - 2 \times (4) = 0$$

$$= 8 - 2 = + 6$$

In compound formed by union of metals with non-metals, the metal atoms have positive oxidation number and non-metals have negative oxidation number.

49 (c) Out of four halogens, Cl. (chlorine) is the only one which has the highest electron affinity. It means that it can accept is the 17th element has the highest electron affinity.

50 (d) In the atmosphere, the percentage of oxygen is 21%. Along with air, it holds many tiny dust particles called aerosols. The second most abundant gas in the atmosphere is oxygen and Earth is surrounding by many of gases which state in form of air. Nitrogen is most abundant gas in the atmosphere and carbon dioxide, argon, methane are found in less quantities.