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Indian Army




MER

Nursing Assistant

Recruitment Exam

50
PRACTICE
SETS



-  *Practice Sets designed as per Revised Syllabus & Exam Pattern*
-  *Sectionwise Arrangement of Questions*

Indian Army

MER
Nursing Assistant
Recruitment Exam

**50 PRACTICE
SETS**

Author
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About Examination

Scheme of Written Examination

S.No.	Subject	Questions	Marks	Pass Marks
(a)	General Knowledge	10	40	80
(b)	Physics	05	20	
(c)	Mathematics	05	20	
(d)	Chemistry	15	60	
(e)	Biology	15	60	

SYLLABUS

(a) GENERAL KNOWLEDGE

The test will include questions relating 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 Subcontinents, Inventions and Discoveries, The Constitution of India, International Organizations, 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.

(b) 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, Newtons 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, Ohms Law, Simple Electrical Circuits, Heating.

(c) MATHEMATICS

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

(d) 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 Carbon dioxide, 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.

(e) BIOLOGY

Basic Biology, Life Process, Study of Birds, Human Beings, Uniqueness of Human Body, Food and Health, Necessity of Balanced Diet, Wasteful Food Practices, Food Yield, Essentials for Good Health, Cycles of materials, Ecological Balance, Living Resources, Habitat and Organisms, Adaptation.

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 society. Questions are also designed to test knowledge of current events and such matters of everyday observation and experience as may be expected of an educated person. At times questions may be asked other than the above topics, but definitely within the syllabus of CBSE.



Indian Army

MER Nursing Assistant

Practice Set 01

Instructions

- This paper consists of 50 Multiple Choice Questions divided in 5 Sections; **Section A** (General Knowledge), **Section B** (Mathematics), **Section C** (Physics), **Section D** (Biology) & **Section E** (Chemistry).
- Each question carries 4 marks, 1 mark will be deducted for every wrong answer.

Section A General Knowledge

1. The Keibul Lamjao National Park is located in
(a) Mizoram (b) Manipur
(c) Tripura (d) Assam
2. Who is awarded with Ramanujan Prize 2021?
(a) Deepak Dhar (b) Dr. Neena Gupta
(c) Ram Shastri (d) John Hopefield
3. Globally, December 1 is celebrated as the
(a) World Health Day
(b) World AIDS Day
(c) World Human Rights Day
(d) World Habitat Day
4. Jaintia tribe is inhabited in which state?
(a) Arunachal Pradesh (b) Mizoram
(c) Manipur (d) Meghalaya
5. The Southern Railway is headquartered at
(a) Hyderabad (b) Bangalore
(c) Secunderabad (d) Chennai
6. The first Speaker of Lok Sabha was
(a) KM Munshi (b) CD Deshmukh
(c) GV Mavalankar (d) HJ Kania
7. What is the State Bird of Union Territory of Ladakh?
(a) Black necked Crane (b) Kingfisher
(c) Great Hornbill (d) Monal
8. Which of the following planets is not a terrestrial planet?
(a) Mercury (b) Venus
(c) Earth (d) Saturn
9. Who is competent to dissolve the Parliament?
(a) Prime Minister (b) President
(c) Vice-President (d) Governor
10. Wankhede Stadium (Mumbai) is a famous ground for
(a) Football (b) Cricket
(c) Chess (d) Hockey

Section B Mathematics

11. If $\frac{\cos\theta}{1 + \sin 90^\circ} = \frac{1}{4}$, then find the value of θ .
(a) 0° (b) 30°
(c) 45° (d) 60°

12. If $a + b - c = 0$, then find the value of $a^3 + b^3 - c^3 + 3abc$
 (a) 1 (b) 3 (c) 0 (d) 2
13. The sides of a triangle have length 112 cm, 78 cm and 50 cm. Find its area.
 (a) 1680 cm² (b) 1744 cm²
 (c) 1674 cm² (d) None of these
14. The derivative of the function $f(x) = 3x$ at $x = 2$ is
 (a) 0 (b) 1 (c) 2 (d) 3
15. A man took loan from a bank at the rate of 12% p.a. simple interest. After 3yr he had to pay ₹ 5400 interest only for the period. The principal amount borrowed by him was
 (a) ₹ 2000 (b) ₹ 10000
 (c) ₹ 15000 (d) ₹ 20000

Section C Physics

16. Matter is found in the form of
 (a) solid
 (b) liquid
 (c) solid, liquid and gas
 (d) solid and liquid
17. The weight of a body at the centre of Earth is
 (a) half the weight at the surface
 (b) zero
 (c) twice the weight at the surface
 (d) infinite
18. A particle moves with a uniform velocity.
 (a) The particle must be at rest.
 (b) The particle moves along a curved path.
 (c) The particle moves along a circle.
 (d) The particle moves along a straight line.
19. A coin flicked across a table stops because
 (a) no force acts on it
 (b) it is very heavy
 (c) the table exerts a frictional force on it
 (d) the Earth attracts it
20. When a stone tied to a string is whirled in a circle, the work done on it by the string is
 (a) positive (b) negative
 (c) zero (d) undefined

Section D Biology

21. Who among the following is known as 'Father of Biology'?
 (a) Darwin (b) Aristotle
 (c) Haeckel (d) Edward Jenner
22. Scientific study of birds is known as
 (a) Limnology (b) Herpetology
 (c) Malacology (d) Ornithology
23. Bifocal lenses are used by people suffering from
 (a) myopia and hypermetropia
 (b) hypermetropia but not myopia
 (c) myopia but not hypermetropia
 (d) myopia or hypermetropia
24. Which one of the following tissues is responsible for increase of girth in the stem of a plant?
 (a) Tracheid
 (b) Pericycle
 (c) Intercalary meristem
 (d) Lateral meristem
25. Kwashiorkor disease in children is caused by
 (a) sufficient carbohydrates, but less fats in diet
 (b) sufficient carbohydrates and fats, but deficient proteins in diet
 (c) sufficient vitamins, but deficient fats in diet
 (d) sufficient fats, but deficient vitamins in diet
26. The exhaustible natural resource is
 (a) coal
 (b) solar energy
 (c) wind energy
 (d) hydrothermal energy
27. are called the amphibians of the plant kingdom.
 (a) Pteridophytes (b) Angiosperms
 (c) Bryophytes (d) Thallophytes
28. The normal blood pressure of human beings is in one of the following ranges
 (a) 140/80 mm (b) 110/70 mm
 (c) 120/80 mm (d) 110/75 mm

- 29.** Which one of the following is a marine fish?
(a) Rohu (b) Hilsa
(c) *Catla* (d) Common carp
- 30.** Which protein-sugar pair is present in milk?
(a) Casein, sucrose (b) Casein, lactose
(c) Ferritin, maltose (d) Albumin, glucose
- 31.** Stomata are sunken types in
(a) mesophytes (b) xerophytes
(c) hygrophytes (d) hydrophytes
- 32.** Which one of the following is not an essential micro-nutrient for plants?
(a) Boron (b) Potassium
(c) Sodium (d) Magnesium
- 33.** Human heart has
(a) four chambers
(b) three chambers
(c) two chambers
(d) five chambers
- 34.** Which of the following parts of a flower is not a reproductive organ?
(a) Stigma (b) Style
(c) Anther (d) Sepal
- 35.** Structural and functional unit of the kidney is
(a) medulla (b) nephridia
(c) nephron (d) hilum
- Section E Chemistry**
- 36.** Which of the following is a solid?
(a) Chloroform (b) Iodoform
(c) Ethyl alcohol (d) Ether
- 37.** Which among the following has lowest electron affinity?
(a) Fluorine (b) Chlorine
(c) Bromine (d) Argon
- 38.** The buffer action of blood is due to the presence of
(a) HCl and NaCl (b) Cl^- and CO_3^{2-}
(c) Cl^- and HCO_3^- (d) HCO_3^- and H_2CO_3
- 39.** Which of the following will have maximum mass?
(a) 0.1 mole of NH_3
(b) 1 g of iron
(c) 1022 molecules of CO_2
(d) 0.01 mol of H_2O
- 40.** The discovery of neutron became very late because
(a) it is present in nucleus
(b) it is not fundamental particle
(c) it does not move
(d) it does not carry any charge
- 41.** Which among the following is true for formation of gas bubble?
(a) It is a chemical change
(b) It is a physical change
(c) It is a chemical property
(d) It is a physical property
- 42.** How many elements are there in the 5th period of modern periodic table?
(a) 2 (b) 8
(c) 18 (d) 36
- 43.** Which of the following reacts with water at a high rate?
(a) Li (b) K
(c) Na (d) Rb
- 44.** Which one of the following reducing agents can also act as an oxidising agent?
(a) H_2 (b) H_2S
(c) SO_2 (d) HI
- 45.** Which are the materials generally employed as solder in soldering operation in electronics?
(a) Iron and tin
(b) Lead and tin
(c) Aluminium and lead
(d) Aluminium and iron
- 46.** The component which is present in highest proportion in water gas is
(a) CO_2 (b) CH_4
(c) H_2 (d) steam

- 47.** Which one of the following does not contain silver?
 (a) Horn silver (b) German silver
 (c) Ruby silver (d) Lunar caustic
- 48.** Sulphide ores are common for the metals
 (a) Ag, Cu and Pb
 (b) Ag, Cu and Sn
 (c) Ag, Mg and Pb
 (d) Al, Cu and Pb
- 49.** Richest source of nitrogen is
 (a) dried blood (b) raw bone meal
 (c) fish manure (d) dry activated sludge
- 50.** Which among the following is true for formation of gas bubble?
 (a) It is a chemical change.
 (b) It is a physical change.
 (c) It is a chemical property.
 (d) It is a physical property.

Answer Sheet

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

Hints & Solutions

11. (d) Given,

$$\frac{\cos \theta}{1 + \sin 90^\circ} = \frac{1}{4}$$

$$\Rightarrow \frac{\cos \theta}{1 + 1} = \frac{1}{4}$$

$$[\because \sin 90^\circ = 1]$$

$$\Rightarrow \cos \theta = \frac{2}{4} = \frac{1}{2} = \cos 60^\circ$$

$$\therefore \theta = 60^\circ$$

12. (c) Given, $a + b - c = 0$

$$\Rightarrow a + b = c \quad \dots(i)$$

On cubing both sides,

$$\Rightarrow a^3 + b^3 + 3ab(a + b) = c^3$$

$$\Rightarrow a^3 + b^3 + 3abc = c^3$$

[from Eq. (i)]

$$\therefore a^3 + b^3 - c^3 + 3abc = 0$$

13. (a) Let $a = 112$ cm, $b = 78$ cm

and $c = 50$ cm

We know that,

$$s = \frac{a + b + c}{2}$$

$$= \frac{112 + 78 + 50}{2}$$

$$= \frac{240}{2} = 120$$

\therefore Area of triangle

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{120(120-112)(120-78)(120-50)}$$

$$= \sqrt{120 \times 8 \times 42 \times 70}$$

$$= \sqrt{2822400}$$

$$= 1680 \text{ cm}^2$$

14. (d) We have,

$$f(x) = 3x$$

$$\Rightarrow f'(x) = 3$$

$$\therefore f'(2) = 3$$

15. (c) Let amount of loan = ₹ x

$$SI = \frac{\text{Principal amount} \times \text{Rate} \times \text{Time}}{100}$$

$$5400 = \frac{x \times 12 \times 3}{100}$$

$$\therefore x = \frac{5400 \times 100}{36}$$

$$= ₹ 15000$$



Indian Army

MER Nursing Assistant

Practice Set 02

Instructions

- This paper consists of 50 Multiple Choice Questions divided in 5 Sections; **Section A** (General Knowledge), **Section B** (Mathematics), **Section C** (Physics), **Section D** (Biology) & **Section E** (Chemistry).
- Each question carries 4 marks, 1 mark will be deducted for every wrong answer.

Section A General Knowledge

1. 'Manas Tiger Sanctuary' is located in
(a) Rajasthan (b) Assam
(c) Madhya Pradesh (d) Uttar Pradesh
2. Which of the following is not an exclusive part of Parliament?
(a) Vice-President (b) President
(c) Lok Sabha (d) Rajya Sabha
3. Who is/are honoured with Nobel Prize in Medicine 2021?
(a) David Julius
(b) Ardem Patapoutian
(c) Both (a) and (b)
(d) Maria Ressa
4. Which is India's first large state to record 100% first-dose vaccinations?
(a) Telangana (b) Odisha
(c) Tamil Nadu (d) Karnataka
5. India's first atomic power station was set up at
(a) Surat (Gujarat)
(b) Tarapur (Maharashtra)
(c) Trombay (Maharashtra)
(d) Solapur (Maharashtra)
6. Who took over as the 27th chief of the Indian Air Force?
(a) RKS Bhadauria
(b) MM Naravane
(c) VR Chaudhary
(d) Karambir Singh
7. Which Five Year Plan was also known as 'Gadgil Yojana'?
(a) Fifth (b) Fourth
(c) Third (d) Second
8. 'National Protein Day' is annually observed in India on
(a) March 26 (b) February 27
(c) February 28 (d) March 8
9. A book titled 'The Blue Book' is authored by
(a) Deepam Chatterjee
(b) Piyush Goyal
(c) Amitava Kumar
(d) Ken Ghosh
10. Which day is celebrated as International Women's Day?
(a) January 12 (b) January 25
(c) February 14 (d) March 8

Section B Mathematics

11. In a school parade, the ratio of the number of boys and girls is 9 : 7 and the total number of boys and girls is 256. Find the number of girls.
 (a) 102 (b) 112
 (c) 118 (d) 128
12. If the volume of a cube is 2197 cm^3 , what will be the surface area of the cube?
 (a) 1020 cm^2 (b) 1014 cm^2
 (c) 1016 cm^2 (d) 1024 cm^2
13. If median = 137, mean = 137.05, then the value of mode is
 (a) 156.90 (b) 136.90
 (c) 186.90 (d) 206.90
14. D and E are points on side AB and AC of $\triangle ABC$. DE is parallel to BC . If $AD : DB = 2 : 3$, what is the ratio of area of $\triangle ADE$ and area of quadrilateral $BDEC$?
 (a) 4 : 21 (b) 4 : 25 (c) 4 : 29 (d) 4 : 9
15. The average salary of workers of a factory is ₹ 6000. The average salary of 15 technicians is ₹ 12000 and that of non-technicians is ₹ 3750. Find the total number of workers in the factory.
 (a) 40 (b) 25
 (c) 35 (d) None of these

Section C Physics

16. The momentum of a body of given mass is proportional to its
 (a) volume (b) shape
 (c) speed (d) colour
17. Two bodies of unequal masses are dropped from a cliff. At any instant, they have equal
 (a) momentum (b) acceleration
 (c) potential energy (d) kinetic energy
18. Which of the following phenomena is involved in kaleidoscope?
 (a) Refraction
 (b) Reflection

- (c) Total Internal Reflection (TIR)
 (d) Diffraction

19. Magnetic keepers are used to protect magnets from
 (a) Earth's magnetic field
 (b) effect of other magnets
 (c) self-demagnetisation
 (d) demagnetisation due to heating
20. Which of the following is the insulator?
 (a) Silver (b) Copper (c) Gold (d) Wood

Section D Biology

21. Cross pollination through insect agent is called
 (a) Anthropophily (b) Malacophily
 (c) Entomophily (d) Ornithophily
22. Memory is the responsibility of
 (a) grey matter (b) white matter
 (c) cerebrum (d) cerebellum
23. Nematocysts are present in
 (a) starfish (b) *Ascaris*
 (c) centipede (d) sea anemone
24. Which of the following statements is correct?
 (a) Pulses contains 80% carbohydrates.
 (b) Rice contains 90% carbohydrates and 8-10% proteins.
 (c) Rice contains 60% carbohydrates and 35-40% proteins.
 (d) Rice contains 70% carbohydrates and 25-30% proteins.
25. The master control centre of the human body in
 (a) brain (b) heart (c) stomach (d) liver
26. In ocean, where is 'Benthos' found?
 (a) At bottom of ocean
 (b) At upper surface of ocean
 (c) In an enclosed area of ocean
 (d) Along the shore
27. In human body, percentage of which element is highest?
 (a) Hydrogen (b) Nitrogen
 (c) Carbon (d) Oxygen

- 28.** Largest organelle of an eukaryotic cell is
(a) nucleus (b) chloroplast
(c) ribosomes (d) mitochondria
- 29.** Which of the following is a vestigial organ in human?
(a) Heart (b) Kidney
(c) Lungs (d) Appendix
- 30.** Which among the following can be termed as a 'dynamic living entity'?
(a) Tree (b) Water (c) Forest (d) Air
- 31.** Term vitamin was first given by
(a) Funk (b) Leeuwenhoek
(c) C. Benda (d) Altmann
- 32.** Name the enzyme that is present in human saliva.
(a) Pepsin (b) Trypsin
(c) Ptyline (d) Chymotrypsin
- 33.** Which one among the following cattle breed produces highest amount of milk?
(a) Brown Swiss (b) Holstein
(c) Dutch Belted (d) Blaarkop
- 34.** Kiwi is found in
(a) Sikkim (b) Himachal Pradesh
(c) New Zealand (d) Bangladesh
- 35.** Which of the following is not a multicellular organism?
(a) Fungi (b) *Spirogyra*
(c) *Hydra* (d) *Paramecium*
- 38.** Which of the following is not true for a chemical change?
(a) It is an irreversible process.
(b) No new substance is formed.
(c) Formation of new substance takes place.
(d) Change of states may occur.
- 39.** What is the formula mass of anhydrous sodium carbonate?
(Given, that the atomic masses of sodium, carbon and oxygen are 23u, 12u and 16u, respectively).
(a) 286 u (b) 106 u
(c) 83 u (d) 53 u
- 40.** Which of the following has the almost entire mass of the atom?
(a) Proton (b) Neutron
(c) Nucleus (d) Electron
- 41.** On the labels of the bottles, some soft drinks are claimed to be acidity regulators. They regulate acidity using
(a) carbon dioxide
(b) bicarbonate salts
(c) Both (a) and (b)
(d) carbon dioxide and lime
- 42.** Bleaching action of chlorine is due to which reaction?
(a) Oxidation (b) Hydrolysis
(c) Redox (d) Decomposition
- 43.** Which metal is generally used for coating of brass utensils to prevent copper contamination?
(a) Tin (b) Zinc
(c) Aluminium (d) Lead
- 44.** All the elements in a group in the periodic table have the same
(a) atomic weight.
(b) number of valence electrons
(c) atomic number
(d) None of the above
- 45.** Which of the following metals is the most reactive metal?
(a) Copper (b) Calcium
(c) Iron (d) Zinc

Section E Chemistry

- 36.** In a compound, the elements are always present in definite proportions by
(a) mass (b) volume
(c) size (d) density
- 37.** The ability of an atom in a chemical compound to attract shared electron is termed as
(a) Electron affinity
(b) Ionisation enthalpy
(c) Atomic attraction
(d) Electronegativity

- 46.** A gas X is used in filling balloons for meteorological observations. It is also used in gas-cooled nuclear reactors. Identify X .
- (a) Helium (b) Neon
(c) Argon (d) Krypton
- 47.** Which one of the following is the purest form of carbon?
- (a) Charcoal (b) Coke
(c) Fullerene (d) Carbon black
- 48.** Combination of one volume of nitrogen with three volumes of hydrogen produces
- (a) one volume of ammonia
(b) two volumes of ammonia
(c) three volumes of ammonia
(d) one and a half volumes of ammonia
- 49.** Which of the following is not an ore of iron?
- (a) Cuprite (b) Haematite
(c) Magnetite (d) Siderite
- 50.** The most conspicuous chemical change that take place when soil is flooded is reduction of
- (a) Fe (b) P
(c) S (d) None of these

Answer Sheet

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

Hints & Solutions

11. (b) Let the number of boys and girls are $9x$ and $7x$ respectively.

According to the question,

$$\begin{aligned} 9x + 7x &= 256 \\ \Rightarrow 16x &= 256 \\ \Rightarrow x &= 16 \end{aligned}$$

\therefore Number of girls

$$= 7x = 7 \times 16 = 112$$

12. (b) Given, volume of cube
 $= 2197 \text{ cm}^3$

$$\Rightarrow a^3 = 2197 \quad [\because a \text{ is side of cube}]$$

$$\Rightarrow a = 13 \text{ cm}$$

\therefore Surface area of cube

$$\begin{aligned} &= 6a^2 = 6 \times (13)^2 \\ &= 6 \times 169 = 1014 \text{ cm}^2 \end{aligned}$$

13. (b) We know that,

$$\begin{aligned} \text{Mode} &= 3 \text{ Median} - 2 \text{ Mean} \\ &= 3 \times 137 - 2 \times 137.05 \\ &= 411 - 274.1 = 136.9 \end{aligned}$$

14. (a) Given, $DE \parallel BC$

and $AD : DB = 2 : 3$

Now, In $\triangle ADE$ and $\triangle ABC$

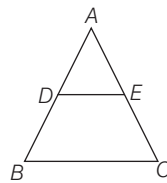
$\angle A = \text{Common}$

$\angle ADE = \angle ABC$

and $\angle AED = \angle ACB$

So, $\triangle ADE \sim \triangle ABC$

[By AAA similarly]



$$\text{Then, } \frac{\text{ar } \triangle ADE}{\text{ar } (\triangle ABC)} = \frac{AD^2}{AB^2}$$

$$\Rightarrow \frac{\text{ar } (\triangle ADE)}{\text{ar } (\triangle ABC)} = \frac{4}{25}$$

$$\therefore \frac{\text{ar}(\triangle ADE)}{\text{ar}(\triangle ECB)} = \frac{\text{ar}(\triangle ADE)}{(\triangle ABC) - \text{ar}(\triangle ADE)}$$

$$= \frac{4}{25 - 4}$$

$$= \frac{4}{21} = 4 : 21$$

15. (d) Let there are x non-technicians in the factory.

According to the question,

$$\begin{aligned} (15 \times 12000 + x \times 3750) \\ &= (15 + x) \times 6000 \end{aligned}$$

$$\left[\because \text{Average} = \frac{\text{Sum of numbers}}{\text{Total number}} \right]$$

$$\begin{aligned} \Rightarrow 180000 + 3750x \\ &= 90000 + 6000x \end{aligned}$$

$$\Rightarrow 2250x = 90000$$

$$\Rightarrow x = 40$$

\therefore Total number of workers in the factory = $15 + x$

$$= 15 + 40$$

$$= 55$$