

# SSC & Railway Exams

## Home Assignment



1. Which is the smallest artery in the human body?

- A. Aorta
- B. Arteriole
- C. Axilla
- D. None of these

Sol.

• **The smallest artery in the human body is an arteriole.** Arteries transport blood away from the heart and branch into smaller vessels, forming arterioles.

• Arterioles distribute blood to capillary beds, the sites of exchange with the body tissues. Capillaries lead back to small vessels known as venules that flow into the larger veins and eventually back to the heart.

• There are many different arteries in human body. Aorta is the largest artery where other arteries branch off from.

2. Enzyme Ptylin converts starch to \_\_\_\_\_.

- A. Glucose
- B. Glycose
- C. Maltose
- D. Lactose

Sol.

• The alpha-amylase called ptyalin is produced by the salivary glands.

• **Ptyalin is mixed with food in the mouth & It converts starch into maltose.**

• Salivary gland make Ptylin to hydrolyse dietary starch into disaccharides and trisaccharides which are converted by other enzymes to glucose to supply the body with energy.

3. What is the full form of UMANG App which id developed by Indian govt to promote Digital India initiative?

- A. Unified Mobile Application for New-age Governance
- B. Unified Mobile Application for New-age Government
- C. Unified Mobile Application for Newtech Governance
- D. Universal Mobile Application for New-age Governance

Sol.

\* **The full form of UMANG application is Unified Mobile Application for New-age Governance.**

\* Prime Minister **Narendra Modi launched UMANG app in November 2017.** The app is a step toward making

India going completely digital in forthcoming years.

\* The application is developed by the Ministry of Electronics and Information Technology (**MeitY**) and National e-Governance Division in order to drive Mobile Governance in India and promote Modi's Digital India program.

\* The major aim behind the app is to allow the citizens of India do everything online like facilities of passport, Aadhar, Pan etc. Umang app basically provides a unified approach where you can install one application to avail multiple government services.

4. Which of following is true about Carbon Monoxide?

- A. Colourless and odourless
- B. Flammable
- C. Denser than air
- D. All of the above

Sol. \* Carbon Monoxide is a colourless, odourless and flammable gas.

\* It is generally produced due to partial combustion of carbon fuel. It is also known as Silent Killer.

\* It is toxic to animals as it has very high reactivity with Haemoglobin present in human blood & form a toxic stable compound on reaction with Haemoglobin that leads to death. \* It was identified by the Scottish chemist William Cruikshank .

5. Mohr's scale is used for measurement of \_\_\_\_\_ of minerals.

- A. Softness
- B. Ductility
- C. Hardness
- D. Tensile Strength

Sol.

\* Mohr scale is an ordinary scale used for measuring **hardness** of various minerals.

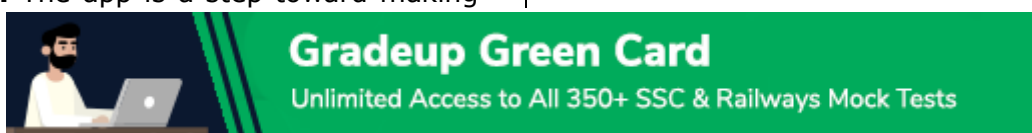
\* It was created in 1812 by Friedrich Mohr's.

\* It ranges from 1 to 10.

\* Diamond is at a scale of 10 indicating maximum hardness with an absolute hardness of 1500 and at number minimum scale at 1 is Talc.

6. Graphite is a \_\_\_\_\_ of electricity.

- A. Good conductor
- B. Bad conductor
- C. Insulator
- D. Superconductor



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Sol.

\* Graphite is an important allotrope of carbon and is a crystalline form of the element.

\* It has a crystalline structure in which a carbon atom is attached to another three atoms to form a layer hence the one vacant valency of carbon makes it a **good conductor of electricity**.

7. What is unemployment rate?

- A. Percentage of unemployed workers in the total population
- B. Percentage of unemployed workers in the total employed force
- C. Percentage of unemployed workers in the total labor force
- D. Percentage of workless people in the total labor force

Sol.

- The unemployment rate is defined as the percentage of unemployed workers in the total labor force.
- Workers are considered unemployed if they are willing to do work but still not find any work.
- Unemployment tends to be cyclical and decreases when the economy expands as companies contract more workers to meet growing demand.

8. Which of following are studied under Macro economics?

- A. Economic growth of country
- B. Individual Markets
- C. Individual Firms
- D. Decisions of Individuals

Sol.

- Macroeconomics is a branch of economics that studies how an overall economy & the market systems that operate on a large scale.
- It studies inflation, price levels, rate of economic growth, national income, gross domestic product (GDP), and changes in unemployment.
- The two main areas of macroeconomic research are long-term economic growth and shorter-term business cycles.

9. Who was the successor of King Vijayalaya of Chola dynasty?

- A. Arinjaya Chola
- B. Uttama Chola
- C. Aditya I
- D. Rajadhiraja Chola

Sol.

- **Aditya I** succeeded Vijayalaya to become the ruler of the empire.
- He defeated king **Aparajita** and the empire gained massive power under his reign.
- He conquered the Pandya Kings along with the Vadumbas and establishes control over the Pallavas power in the region.
- He was known by the surname **Kodandarama**.
- He built **108 temples** for Shiva along the banks of the Kaveri.

10. Battle of Wandiwash was fought during which Carnatic War?

- A. First Carnatic War
- B. Second Carnatic War
- C. Third Carnatic War
- D. Fourth Carnatic War

Sol.

**The Battle of Wandiwash was fought during Third Carnatic war.**

\* The Battle was fought between **French and British Powers**.

\* The battle was won by British in 1760 at Wandiwash in Tamil Nadu.

\* The British army was led by Sir Eyre Coote.

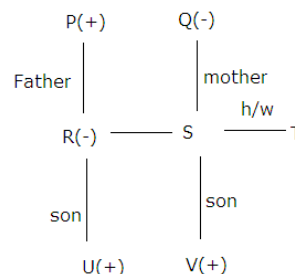
\* The Victory of British in the battle left no European rivals for British in India.

11. In a family, R is the sister of S who is married to T. U is the son of R and V is the son of S. P is the father of R. Q is the mother of S. How is V related to P?

- A. Uncle
- B. son
- C. Father
- D. Grand-son

Sol.

Family tree can be draw as given below-



From the above diagram, its clear that V is the grand-son of P.

Hence, the correct answer is option D.



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12. If ONE = 7 and ZERO = 44, then THREE = \_\_\_\_\_.

- A. 119
- B. 145
- C. 105
- D. 99

Sol.

Logic- (number of letters)<sup>3</sup>-20

As, ONE = 3<sup>3</sup>-20 = 27-20 = 7

And ZERO = 4<sup>3</sup>-20 = 64-20 = 44

Similarly,

THREE = 5<sup>3</sup>-20 = 125-20 = 105

Hence, option C is the correct response.

13. In a certain code language, BIBLIOGRAPHY is written as YHPARGOILIBIB, then in the same code language, TESTIMONIAL will be written as?

- A. LAITSEINOMIT
- B. LITSEAINOMT
- C. MITSETLAINO
- D. LAINOMITSET

Sol.

Logic- write letter in the reverse order.

As,

BIBLIOGRAPHY = YHPARGOILIBIB

Similarly,

TESTIMONIAL = LAINOMITSET

Hence, the correct answer is option D.

14. Select the Venn diagram that best illustrates the relationship between the following classes.

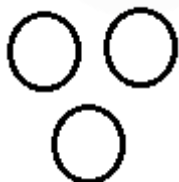
Monkey, Zebra, Camel

- A.
- B.
- C.
- D.

Sol.

Monkey, Zebra and Camel are three different kind of animals.

So, the best representation is-



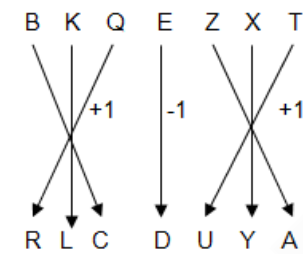
Hence, the correct answer is option A.

15. If BKQEZXT = RLCDUYA and CGLMOYR = MHDLSZP then ZNSVLTC will be written as?

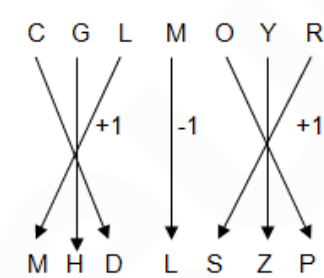
- A. UOUUDUM
- B. TOAUDUM
- C. SAOUDUM
- D. TOUAUDM

Sol.

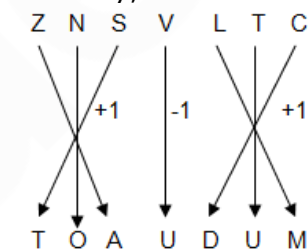
In this question, we show that-



And



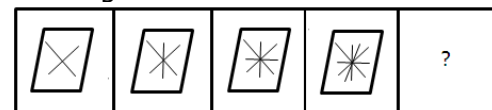
Similarly,



So ? = TOAUDUM

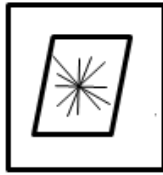
So the correct answer is option B.

16. Select the option that will come next in the given series.



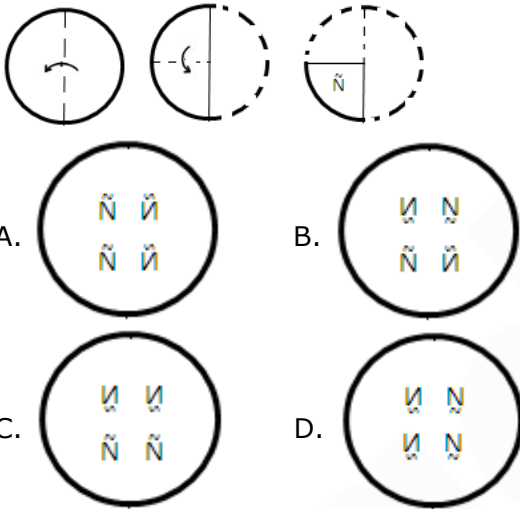
- A.
- B.
- C.
- D.

Sol.  
After carefully observing the figures given in the question, it is very clear that the answer figure(d) will be the next figure.  
Logic- no. of lines increasing by +1.



Hence, the correct answer is option D.

17. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



Sol.  
As it is punched in a book-folding manner and then again it gets punched. So, when we open it up there will be figure as shown in option(b).



Hence option(b) is correct.

18. If '+' represents '÷', '÷' represents 'x', '-' represents '+' and 'x' represents '-', then what is the value of the following expression?

$$36 + 4 \div 7 - 11 \times 50$$

- A. 24
- B. 34
- C. 44
- D. 54

Sol.

Given expression is-  
 $36 + 4 \div 7 - 11 \times 50$

After interchanging-  
 $36 \div 4 \times 7 + 11 - 50$

Apply BODMAS,  
 $36 \div 4 \times 7 + 11 - 50$

$$= 63 + 11 - 50$$

$$= 74 - 50 = 24$$

Hence, the correct answer is option A.

19. Which number will come next in the following series?

74, 137, 230, 359, 530, ?

- A. 459
- B. 749
- C. 639
- D. 329

Sol.

Logic:

$$4^3 + 10 = 74$$

$$5^3 + 12 = 137$$

$$6^3 + 14 = 230$$

$$7^3 + 16 = 359$$

$$8^3 + 18 = 530$$

$$9^3 + 20 = 749$$

So, Missing Number = 749

Hence, the correct answer is option B.

20. In the following question, select the odd number pair from the given alternatives.

- A. 8 : 66
- B. 10 : 98
- C. 7 : 51
- D. 13 : 171

Sol.

Square the first number and add '2' in it.

$$8^2 + 2 = 66$$

$$7^2 + 2 = 51$$

$$13^2 + 2 = 171$$

$$10^2 + 2 = 102 \text{ not } 98$$

Hence, option (B) is the correct answer.

21. The average of 8 observations is 47. If one new observation is added to the previous observations, then the new average becomes 50. The new observation is -

- A. 76
- B. 78
- C. 71
- D. 74

Sol.

Let the new observation be x.

Then,

$$\frac{x + 8 \times 47}{9} = 50$$

$$x + 376 = 450$$

$$x = 450 - 376$$

$$x = 74$$

So, the correct response is option D.

22. Out of 8 persons, 7 persons spent Rs. 32 each for their meals. The eighth one spent Rs. 21 more than the average expenditure of all the eight. The total money spent by all of them was

- A. Rs. 278                      B. Rs. 288.5  
C. Rs. 280                      D. Rs. 282.5

Sol.

Let expenditure of 8th person be Rs. x

$$x - \left( \frac{x + 7 \times 32}{8} \right) = 21$$

$$8x - x - 224 = 21 \times 8$$

$$7x = 168 + 224$$

$$7x = 392$$

$$x = 56$$

Total expenditure = Rs. (56 + 32 × 7) = Rs. (56 + 224) = Rs. 280

Hence, the correct response is option C.

23. A is 40% more efficient than B and C is 20% less efficient than B. Working together, they can finish a task in 15 days. In how many days, will B alone complete 75% of the task?

- A. 48                              B. 36  
C. 44                              D. 32

Sol.

Given, A is 40 % more efficient than B  
So, efficiency (Ω) of A = 1.4 efficiency (Ω) of B

and C is 20% less efficient than B.

So, (Ω) of C = 0.8 (Ω) of B

Working together, total Ω of A +B + C = 1.4 Ω B + Ω B + 0.8 Ω B = 3.2 Ω B

total work = time taken x total Ω = 15 x 3.2 Ω B = 48 Ω B

If B alone complete 75% of total work,  
Then time taken by B = (75% of total work)/ Ω B

$$= \frac{\left( \frac{75}{100} \times 48 \Omega B \right)}{\Omega B} = 36 \text{ days}$$

Hence, option B is the correct answer.

24. The difference between the compound interest and simple interest on Rs. x at 7.5% per annum for 2 years is Rs. 45. What is the value of x?

- A. 8,000                      B. 9,000  
C. 10,000                      D. 7,000

Sol.

Difference between CI and SI for 2years = Rs. 45

CI for 2 yrs at 7.5% pa for Rs. X = 15.5625% of X

SI for 2 yrs at 7.5% pa for Rs. X = 15% of X

Difference of CI and SI for 2years = 0.5625% of X

$$45 = \frac{0.5625}{100} X$$

$$X = 45 \times \frac{100}{.5625}$$

$$X = 8000$$

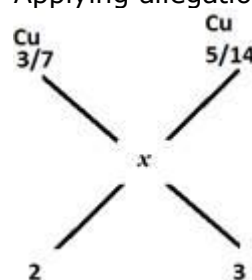
Hence, option A is the correct answer.

25. The ratios of copper to zinc in alloys A and B are 3 : 4 and 5 : 9. respectively. A and B are taken in the ratio 2 : 3 and melted to form a new alloy C. What is the ratio of copper to zinc in C?

- A. 8 : 13                      B. 27 : 43  
C. 3 : 5                      D. 9 : 11

Sol.

Let the quantity of Cu in new alloy be=x.  
Applying allegation method -



$$x = \frac{2 \times \frac{3}{7} + 3 \times \frac{5}{14}}{2 + 3} =$$

$$= \frac{\frac{6}{7} + \frac{15}{14}}{5} = \frac{27}{70}$$

Hence Cu = 27, Zn = 70 - 27 = 43

the ratio of copper to zinc in C = 27 : 43



26. If  $\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{7}$ , then  $x^3 + \frac{1}{x^3}$  is equal

to:

- A. 140                      B. 130  
C. 110                      D. 120

Sol.

$$\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{7}$$

By squaring both side

$$x + \frac{1}{x} + 2 = 7$$

$$x + \frac{1}{x} = 5$$

$$x^3 + \frac{1}{x^3} + 3x * \frac{1}{x} \left(x + \frac{1}{x}\right) = 125$$

$$x^3 + \frac{1}{x^3} + 3 * 5 = 125$$

$$x^3 + \frac{1}{x^3} = 110$$

Hence, option C is the correct answer.

27.  $\Delta ABC \sim \Delta QPR$  and  $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{1}{16}$ . If AB

= 12 cm, BC = 6 cm and AC = 9 cm then PR is equal to :

- A. 9 cm                      B. 12 cm  
C. 8 cm                      D. 24 cm

Sol.

Here it is given that

$$\Delta ABC \sim \Delta QPR \text{ and } \frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{1}{16}$$

Then

$$\frac{ar(ABC)}{ar(QPR)} = \frac{1}{16}$$

$$\frac{ar(ABC)}{ar(QPR)} = \frac{(BC)^2}{(PR)^2} = \frac{(6)^2}{(PR)^2}$$

$$\Rightarrow \frac{1}{4} = \frac{6}{(PR)}$$

$$\rightarrow PR = 6 \times 4 = 24 \text{ cm}$$

Hence PR = 24 cm

28. In  $\Delta ABC$ , D is a point on side DC such that  $\angle ADC = \angle BAC$ . If CA = 12 cm. CB = 8 cm. then CD is equal to:

- A. 18 cm                      B. 15 cm  
C. 12 cm                      D. 16 cm

Sol.

It is Given that

$$\angle ADC = \angle BAC = \theta$$

In  $\Delta ABC$  and  $\Delta ADC$ ,

$\angle BAC = \angle ADC = \theta$  (As given)

$\angle BCA = \angle ACD$  (Common Angle)

Then,  $\Delta ABC \sim \Delta DAC$

$$\text{Hence } \frac{BC}{AC} = \frac{AC}{CD}$$

Therefore

$$CD = \frac{AC^2}{BC} = \frac{12 \times 12}{8} = 18 \text{ cm}$$

29. If  $\tan \theta = \frac{1}{\sqrt{3}}$  then find the value of

$$\tan 60^\circ + \frac{1}{\tan 60^\circ}$$

- A.  $4\sqrt{3}$                       B.  $\frac{4\sqrt{3}}{3}$

- C. 2                              D. 23

Sol.

If  $\tan \theta = \frac{1}{\sqrt{3}}$  then  $\theta = 30^\circ$

$$\text{So } \tan 60^\circ + \frac{1}{\tan 60^\circ} = \sqrt{3} + \frac{1}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$$

30. The length of a room is double the breadth. The cost of colouring the ceiling at Rs. 25/m<sup>2</sup> is Rs. 5000 and cost of painting the four walls at Rs. 240/m<sup>2</sup> is Rs. 64,800. Find height of room.

- A. 4                              B. 4 . 5  
C. 3 . 5                      D. 5

Sol. Area of ceiling =

$$l \times \frac{l}{2} = \frac{5000}{25} \Rightarrow l = 20 \text{ } b = 10$$

Area of four walls,  $2(l + b) \times h =$

$$\frac{64800}{240} = 270$$

$$\Rightarrow 2(20 + 10) \times h = 270 \Rightarrow h$$

$$= \frac{270}{60} \Rightarrow 4.5 \text{ m}$$



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