PREVIOUS YEAR PAPER

SSC MTS 2021 — 8 July 2022, Shift 2

SSC MTS & Havaldar · 8 July 2022 · 1:00 PM - 2:30 PM

92 of the paper's 100 questions · marks per question not printed on the response sheet

Left out of the original paper: 8 (any question that needs a figure or formatting we cannot show, has no answer in the response sheet, or could not be checked against a second copy of the paper).

Questions from the Staff Selection Commission's paper of 8 July 2022, 1:00 PM - 2:30 PM. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/ssc-mts/previous-year-papers/ssc-mts-2021-8-jul-shift-2/

General English

1. Select the most appropriate option to fill in the blank.

The Mid-Day Meal Programme has been running _____ 21 years.

(a) for
(b) off
(c) since
(d) of

Answer: (a)

2. Select the option that can be used as a one-word substitute for the given group of words.

Not fit to eat

(a) Sullen
(b) Potable
(c) Inedible
(d) Fragile

Answer: (c)

3. Select the option that can be used as a one-word substitute for the given group of words.

A large group of people, especially the nomadic

(a) Cavalry
(b) Urban
(c) Horde
(d) Hamlet

Answer: (c)

4. Select the correctly spelt word.

(a) Innoculete
(b) Inoculate
(c) Inocculate
(d) Innoculate

Answer: (b)

5. Select the most appropriate meaning of the given idiom.

Water under the bridge

(a) Something which happens all the time
(b) Something that does not affect the past
(c) Anything from the past that is not significant or important anymore
(d) A problem which has been existing and will continue to exist in the future

Answer: (c)

6. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

Rivers / has being of primary / importance throughout / human history.

(a) Rivers
(b) human history
(c) has being of primary
(d) importance throughout

Answer: (c)

7. Select the most appropriate meaning of the underlined idiom.

Ron added a feather in his cap by winning that international tournament.

(a) To feel well and healthy
(b) An achievement to be proud of
(c) To take advantage of one's position
(d) An expression of extreme annoyance

Answer: (b)

8. The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.

In spite of hardly work / she was not able / to pass the exam.

(a) In spite of hardly work
(b) No error
(c) to pass the exam
(d) she was not able

Answer: (a)

9. Select the most appropriate option to fill in the blank.

He came back from the game, took a _____ shower and was ready for the evening.

(a) fast
(b) clean
(c) heavy
(d) quick

Answer: (d)

10. Select the option that can be used as a one-word substitute for the given group of words.

An action of making amends for a wrong or injury

(a) Atonement
(b) Redemption
(c) Rite
(d) Perjury

Answer: (a)

11. Select the most appropriate synonym of the given word.

Intervene

(a) Embody
(b) Combine
(c) Coalesce
(d) Arbitrate

Answer: (d)

12. Select the most appropriate synonym of the given word.

Sinister

(a) Pertinent
(b) Saintly
(c) Pleasant
(d) Evil

Answer: (d)

13. Select the option that rectifies the incorrectly spelt words in the given sentence.

They have legitimete grounds to engagge users.

(a) They have legetimate grounds to engag users.
(b) They have legitimete grounds to engaege users.
(c) They have legitimate grounds to engage users.
(d) They have legitamate grounds to engage users.

Answer: (c)

14. Select the option that will improve the underlined part of the given sentence. In case no improvement is needed, select 'No improvement required'.

Despite not getting approval from the leader, we decided to carry out the plan.

(a) carry over
(b) carry away
(c) carry off
(d) No improvement required

Answer: (d)

15. Select the option that will improve the underlined part of the given sentence. In case no improvement is needed, select 'No improvement required'.

In my experience, the press gallery are more concern to public affairs than private ones.

(a) is more concerned with
(b) No improvement required
(c) is much more concerned of
(d) are much concern for

Answer: (a)

16. Select the most appropriate ANTONYM of the given word.

Abate

(a) Moderate
(b) Observe
(c) Aggravate
(d) Decrease

Answer: (c)

17. Select the most appropriate ANTONYM of the given word.

Obvious

(a) Hidden
(b) Plain
(c) Vapid
(d) Active

Answer: (a)

18. Select the option that can be used as a one-word substitute for the given group of words.

Animals that live in water

(a) Nocturnal
(b) Aerial
(c) Terrestrial
(d) Aquatic

Answer: (d)

19. Select the most appropriate ANTONYM of the underlined word in the given sentence.

Many died in captivity and many suffered appalling <u>brutality.</u>

(a) ferocity
(b) cruelty
(c) sensuality
(d) gentleness

Answer: (d)

20. Parts of the following sentence have been given as options. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.

The use of calculators is prohibited in the examination.

(a) is prohibited in
(b) No error
(c) The use of calculators
(d) the examination

Answer: (b)

Passage — for questions 21–25

> In the following passage, some words have been delet[illegible] Read the passage carefully and select the most appropriate option to fill in each blank.
>
> Endurance was the three-masted ship in (1) _____ Si[illegible]nest Shackleton and a (2) _____ of 27 men sailed for the Antarctic on the 1914–1917 Imperial Tr[illegible]-Antarctic Expedition. The ship, originally named Polaris, was built at Framnæs shipy[illegible]d _____ in 1912 from Sandefjord in Norway. After her commissioners could no longer pay the shi[illegible], the ship (4) _____ bought by Shackleton in January 1914 for the expedition, which would be her first (5) _____.

21. Select the most appropriate option to fill in blank number 1.

(a) which
(b) who
(c) that
(d) where

Answer: (a)

22. Select the most appropriate option to fill in blank number 2.

(a) watch
(b) team
(c) crew
(d) group

Answer: (c)

23. Select the most appropriate option to fill in blank number 3.
    (a) released
    (b) launched
    (c) started
    (d) recovered
    Answer: (b)

24. Select the most appropriate option to fill in blank number 4.
    (a) were
    (b) was
    (c) is
    (d) are
    Answer: (b)

25. Select the most appropriate option to fill in blank number 5.
    (a) voyage
    (b) route
    (c) drive
    (d) hike
    Answer: (a)

General Intelligence and Reasoning

1. Select the number that can replace the question mark (?) in the following series.

42, 38, 80, 118, 198, 316,?
    (a) 486
    (b) 506
    (c) 514
    (d) 494
    Answer: (c)

2. Eight boys A, B, C, D, E, F, G and H are sitting around a square table, facing towards the centre(but not necessarily in the same order). Two boys are sitting on each side. G and C are sitting on the same side. E is sitting opposite to G and E is to the immediate right of B. F and H are sitting on the adjacent side of G and C. F and H are sitting on the same side. H is fourth to the left of B. D is not the immediate neighbour of G. Which of the following pairs of boys represent the boys sitting on the same side of the square table?
    (a) AC
    (b) HD
    (c) BD
    (d) BA
    Answer: (d)

3. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster. TRO : QMN :: BLA : ?

(a) YHZ

(b) XGZ

(c) XHG

(d) YGZ

Answer: (d)

4. The weight of seven boys B1, B2, B3, B4, B5, B6 and B7 are compared. The weight of no two boys is the same. The weight of B4 is less than only three boys. The weight of B1 is more than B7. The weight of B2 is the most. B5 and B6 both weigh more than B1. The weight of B3 is less than that of B7.

How many boys weigh less than B1?

(a) 4

(b) 3

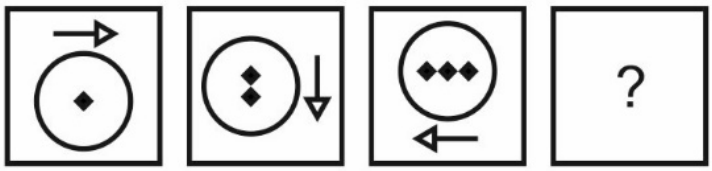
(c) 1

(d) 2

Answer: (d)

5.

Select the figure from among the given options that can replace the question mark (?) in the following series.



(a)



(b)



(c)



(d)



Answer: (a)

6. In a certain code language, 'nu vu du' is written as 'Time and Money', 'hu du ru' is written as 'Manage Money Judiciously', and 'tu vu lu' is written as 'Save More Time'. What is the code for 'Save More Money' in that code language?

(a) du nu lu

(b) nu tu du

(c) tu lu du

(d) tu vu du

Answer: (c)

7. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

KING : HFKD :: FRKM : ?

(a) CLHJ

(b) CLHK

(c) COHK

(d) COHJ

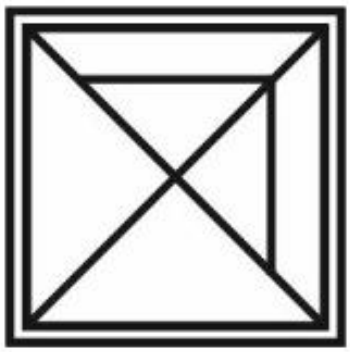
Answer: (d)

8.

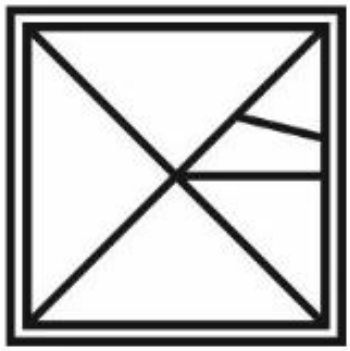
Select the option in which the given figure is embedded. (Rotation is not allowed)



(a)



(b)



(c)



(d)



Answer: (d)

9. In a certain code language, 'TORQ' is coded as '21(and 'HARN' is coded as '123'. How will 'PADM' be coded in that code language?

(a) 94

(b) 112

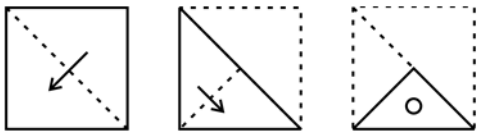
(c) 102

(d) 86

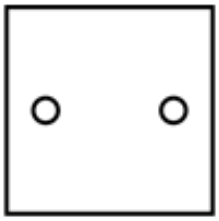
Answer: (c)

10.

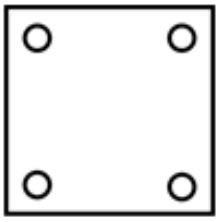
The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?



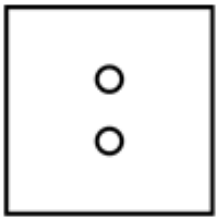
(a)



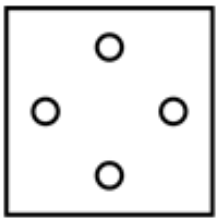
(b)



(c)



(d)



Answer: (d)

11. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:
I. No car is a bench.
II. All tables are cars.

Conclusions: I. Some cars are tables. II. Some cars are benches.
III. No bench is a table.

(a) Only conclusion II follows
(b) All the conclusions follow
(c) Only conclusions I and III follow
(d) Only conclusions I and II follow

Answer: (c)

12. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

XJ, AG, DD, GA, ?

(a) KX
(b) JX
(c) KY
(d) JY

Answer: (b)

13. Select the option in which the numbers are related in the same way as are the numbers in the given set.

(18, 400, 484)

(a) (20, 400, 576)
(b) (14, 256, 400)
(c) (22, 400, 324)
(d) (24, 676, 784)

Answer: (d)

14. Five people, J, N, P, R and S are sitting in a straight row, facing the North, but not necessarily in the same order. Only N sits between J and S. S sits to the immediate left of P. J sits to the immediate right of R. Who sits at the second position from the left end?

(a) S
(b) J
(c) P
(d) R

Answer: (b)

15. Select the option that is related to the fifth term in the same way as the second term is related to the first term and the fourth term is related to the third term.

U144 : S121 :: N100 : L81 :: G64 : ?

(a) E49

(b) G49

(c) F36

(d) D30

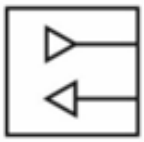
Answer: (a)

16.

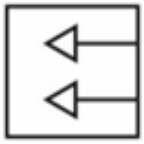
Select the figure from the options that can replace the question mark (?) and complete the pattern (rotation is not allowed).



(a)



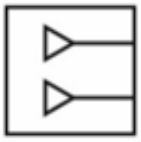
(b)



(c)



(d)



Answer: (a)

17. In a certain code language, 'MISTER' is coded as '925301','UNCLE' is coded as '84670', and 'SEN' is coded as '504'. How will 'MISTIC' be coded in that language?

(a) 936571

(b) 925326

(c) 876523

(d) 367829

Answer: (b)

18. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:
I. All Crax are Chips.
II. All Drinks are Chips.

Conclusions:
I. Some Drinks are not Crax.
II. All Chips are Crax.

(a) Only conclusion I follows
(b) Neither conclusion I nor II follows
(c) Both conclusions I and II follow
(d) Only conclusion II follows

Answer: (b)

19. Select the option in which the numbers shares the same relationship as that shared by the numbers in the given set.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /deleting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed) (46, 138, 414)

(a) (38, 114, 342)
(b) (42, 126, 504)
(c) (52, 156, 624)
(d) (56, 224, 896)

Answer: (a)

20. In a certain code language, 'HAIR' is written as 'SJBI', 'POLE' is written as 'FMPQ'. How will 'MANY' be written in that language?

(a) ZOBM
(b) ZPBN
(c) ZOCN
(d) ZOBN

Answer: (d)

21. Which two numbers (not digits) and two signs need to be interchanged to make the given equation correct?

28 × 4 + 15 ÷ 8 – 34 = 388

(a) × and ÷; 28 and 8
(b) + and ÷; 4 and 34
(c) – and ×; 15 and 28
(d) + and ×; 15 and 8

Answer: (a)

22.

Select the figure from the options that can replace the question mark (?) and complete the pattern.



(a)



(b)



(c)



(d)



Answer: (d)

23. After interchanging the given two signs + and – and two numbers 6 and 25, what will be the value of the given expression?

4 – 6 ÷ 5 × 25 + 14

(a) 5

(b) 10

(c) 20

(d) 15

Answer: (c)

24. Select the option that will replace the question mark (?) in the given series.

11, 16, 26, 41, 61, ?

(a) 76

(b) 91

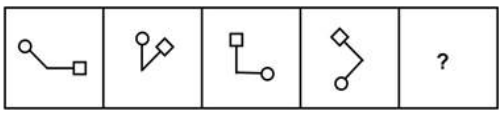
(c) 86

(d) 81

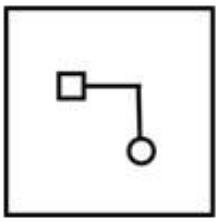
Answer: (c)

25.

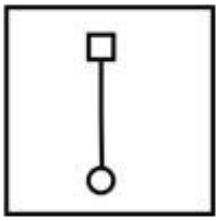
Select the figure from among the given options that can replace the question mark (?) in the following series.



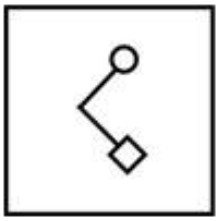
(a)



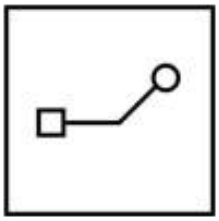
(b)



(c)



(d)



Answer: (d)

Numerical Aptitude

1.

The length of the common chord of two circles of radii 18 cm and 16 cm is 19.2 cm. What is the distance between the centres of the two circles? [Give your answer correct to the nearest integer value.]

(a)

23 cm

(b)

28 cm

(c)

20 cm

(d)

35 cm

Answer: (b)

2.

Study the given table and answer the question that follows.

The table below shows the number of cricket bats made by five workers on six days of a particular week.

Day / Worker	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
A	90	70	110	85	75	60
B	40	65	70	82	90	95
C	100	95	74	80	63	60
D	40	40	50	45	60	30
E	54	65	32	48	85	96

In how many days is the number of bats made by C more than the average number of bats made by A per day?

(a)

3

(b)

4

(c)

2

(d)

1

Answer: (c)

3.

The length and the breadth of a rectangular cardboard are 40 cm and 35 cm, respectively. If the biggest possible square is cut out from this cardboard, what is the area of the remaining part of the cardboard?

(a)

$175\ cm^2$

(b)

$275\ cm^2$

(c)

$425\ cm^2$

(d)

$325\ cm^2$

Answer: (a)

4.

If the HCF of two numbers (each greater than 17) be 17 and the LCM be 561, then find the sum of the numbers.

(a)

387

(b)

238

(c)

268

(d)

340

Answer: (b)

6.

The average weight of 17 students of a class is 56 kg. 3 new students whose weights are 57, 62 and 68 kg, respectively, join the class. Find the new average weight of the students of the class.

(a)

56.45 kg

(b)

56.95 kg

(c)

58.05 kg

(d)

57.65 kg

Answer: (b)

7.

J can complete a work in 21 days, K can complete it in 42 days and L can complete it in 63 days. If J, K and L work together, in how many days can they complete the work?

(a)

$11\frac{6}{11}$

(b)

$11\frac{3}{11}$

(c)

$11\frac{4}{11}$

(d)

$11\frac{5}{11}$

Answer: (d)

8.

If $A=\frac{3\times4+2}{6\div3+2}$ and $B=\frac{12\div6\times2}{8\div4-3}$, then what is the value of A^2+B^2-2AB?

(a)

72.25

(b)

52.25

(c)

42.25

(d)

56.25

Answer: (d)

10.

A sum of money is distributed among A, B and C in the ratio 8 : 4 : 3. If A divides his part between D and E in the ratio 9 : 7, then what is the ratio of the share of C to that of D?

(a)

4 : 5

(b)

3 : 4

(c)

2 : 3

(d)

6 : 7

Answer: (c)

11.

The average age of 3 girls is 24 years and their ages are in the proportion of 7 : 8 : 9. What is the age of the eldest girl?

(a)

24 years

(b)

25 years

(c)

21 years

(d)

27 years

Answer: (d)

12.

Find the sum of money which must be invested at simple interest for 8 months at 6% per annum in order to earn ₹250 as interest.

(a)

₹6,550

(b)

₹6,225

(c)

₹7,250

(d)

₹6,250

Answer: (d)

13.

The cash difference between the selling prices of an article at a profit of 8% and at a loss of 4% is ₹54. Find the cost price of the article.

(a)

₹720

(b)

₹450

(c)

₹540

(d)

₹480

Answer: (b)

14.

A certain number of identical spheres are formed by melting a large sphere of radius 28 cm. What is the number of small spheres formed if the surface area of each small sphere is 2464 cm^2? [Use $\pi = \frac{22}{7}$]

(a)

8

(b)

9

(c)

6

(d)

7

Answer: (a)

15.

The marked price of a laptop is ₹65,000. The laptop is sold at a discount of 20%. If a profit of 30% is made through the sale, then what is the cost price of the laptop?

(a)

₹50,000

(b)

₹45,000

(c)

₹48,000

(d)

₹40,000

Answer: (d)

17.

In a city 60% of the population are males and the rest are females. If the ratio of married males to non-married males is 5 : 7, and the ratio of married females to non-married females is 2 : 3, then what percentage of the total population is married?

(a)

41%

(b)

59%

(c)

51%

(d)

49%

Answer: (a)

21.

Points A and B are 200 km apart. A person starts from A at 10 a.m. at a speed of 10 km/h and goes towards B. Another person starts from B at 11 a.m.at a speed of 20 km/h and goes towards A. At what time will they meet?

(a)

5:10 p.m.

(b)

4:40 p.m.

(c)

5:40 p.m.

(d)

5:20 p.m.

Answer: (d)

22.

A boat can travel in still water at 7 km/h and the speed of the stream is 3 km/h. Find the total time (in hours) taken by the boat to travel 60 km upstream and return to the starting point.

(a)

20

(b)

15

(c)

21

(d)

16

Answer: (c)

23.

The length of a rectangle is increased by $16\frac{2}{3}\%$. By what approximate percentage should its breadth be decreased so that the area of the rectangle remains unchanged?

(a)

17.5%

(b)

14.29%

(c)

10%

(d)

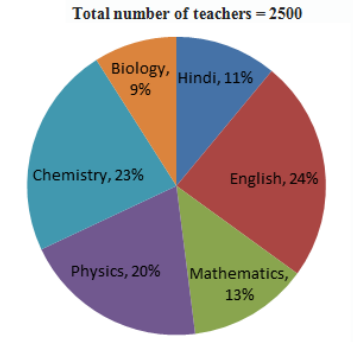
12.5%

Answer: (b)

24.

Study the given pie-chart and answer the question that follows.

The pie-chart shows the percentage-wise distribution of teachers in a district who teach six different subjects as percentages of the total number of teachers of all the subjects taken together.



What is the ratio of the number of teachers who teach English to the number of teachers who teach Chemistry?

(a)

3 : 2

(b)

23 : 18

(c)

24 : 23

(d)

13 : 20

Answer: (c)

25.

Select the number that will come in place of the question mark (?) in the mathematical statement.

$(0.064)^{123} \div 0.16^{47} \times 0.4^{34} \times 0.4^{29} = (0.4)^{?}$

(a)
350

(b)
320

(c)
338

(d)
341

Answer: (c)

General Awareness

1. Which schedule of the Indian Constitution has provisions related to the Union list?

(a) Fourth schedule
(b) Ninth schedule
(c) Seventh schedule
(d) Tenth schedule

Answer: (c)

2. Sarai Nurmahal is a centrally protected [illegible] of India. It is situated in which state of India?

(a) Uttar Pradesh
(b) West Bengal
(c) Punjab
(d) Himachal Pradesh

Answer: (c)

3. Open Market Operations conducted by the Reserve Bank of India (RBI) are of _____ types.

(a) two
(b) three
(c) five
(d) four

Answer: (a)

4. Which of the following diseases is caused by the prolonged deficiency of vitamin D?

(a) Rickets
(b) Chickenpox
(c) Scurvy
(d) Marasmus

Answer: (a)

5. The Deccan plateau lies to the south of which of the following rivers?

(a) Narmada
(b) Krishna
(c) Kaveri
(d) Penna

Answer: (a)

6. Ravikirti was a court poet of which Chalukya ruler?

(a) Bhima II
(b) Pulakeshin II
(c) Vikramaditya II
(d) Kirtivarman II

Answer: (b)

7. Which article of the Indian Constitution states that 'No person shall be prosecuted and punished for the same offence more than once'?

(a) Article 18
(b) Article 28
(c) Article 20
(d) Article 21A

Answer: (c)

9. Pandit Kishan Maharaj was associated with which trument?

(a) Santoor
(b) Dholak
(c) Tabla
(d) Sitar

Answer: (c)

10. What is the approximate atomic mass (u) of hydrogen?

(a) 12
(b) 4
(c) 1
(d) 14

Answer: (c)

11. What is the atomic number of chromium?

(a) 24
(b) 18
(c) 21
(d) 19

Answer: (a)

12. In which city, Prime Minister Narendra Modi launched the Ayushman Bharat Health Infrastructure Mission?

(a) Kanpur
(b) Lucknow
(c) Noida
(d) Varanasi

Answer: (d)

13. In which year did the Mughal emperor Aurangzeb die?

(a) 1707
(b) 1701
(c) 1705
(d) 1703

Answer: (a)

14. _____ is the deepest landlocked and well-protected port in India.

(a) Kandla port
(b) Vishakhapatnam port
(c) Tuticorin port
(d) Mumbai port

Answer: (b)

15. Radha Sridhar received the Sangeet Natak Akade Award for the year 2018 for her contribution to which classical dance of India?

(a) Kathak dance
(b) Kuchipudi
(c) Sattriya
(d) Bharatanatyam

Answer: (d)

16. Who was appointed as the Chief Economic Advisor to the Government of India in January 2022?

(a) S Ramakrishnan
(b) Krishnamurthy Subramanian
(c) Raghuram Rajan
(d) V Anantha Nageswaran

Answer: (d)

17. Which of the following statements is correct?
I. Most of Ashoka's inscriptions were written in Brahmi script.
II. Many of Chanakya's ideas were written down in a book called the Arthashastra.

(a) Only II
(b) Only I
(c) Neither I nor II
(d) Both I and II

Answer: (d)

18. Which of the following states does the dance form 'Kalbelia' belong to?
    (a) Uttarakhand
    (b) Punjab
    (c) Rajasthan
    (d) Odisha
    Answer: (c)

19. In which state of India is the Yaoshang festival celebrated?
    (a) Uttar Pradesh
    (b) Manipur
    (c) Rajasthan
    (d) Tamil Nadu
    Answer: (b)

20. As per census 2011, which of the following is the most spoken language of India?
    (a) Hindi
    (b) Marathi
    (c) English
    (d) Telugu
    Answer: (a)

21. How many players are a part of the team on the fi[illegible]n a game of Hockey?
    (a) 10
    (b) 16
    (c) 12
    (d) 11
    Answer: (d)

22. Which of the following bases is found in window cleaner?
    (a) Magnesium hydroxide
    (b) Ammonium hydroxide
    (c) Sodium hydroxide
    (d) Calcium hydroxide
    Answer: (b)

23. David Warner played for which team in IPL 2022?
    (a) Sunrisers Hyderabad
    (b) Royal Challengers Bangalore
    (c) Delhi Capitals
    (d) Punjab Kings
    Answer: (c)

24. According to the 2011 Census, which of the following has the second highest sex ratio in India?
    (a) Tamil Nadu
    (b) Kerala
    (c) Puducherry
    (d) Maharashtra

    Answer: (c)

Answer key

Answer key as marked in the Staff Selection Commission's response sheet. "—" means the sheet did not show it clearly.

General English

1	**(a)**	2	**(c)**	3	**(c)**	4	**(b)**	5	**(c)**	6	**(c)**	7	**(b)**	8	**(a)**
9	**(d)**	10	**(a)**	11	**(d)**	12	**(d)**	13	**(c)**	14	**(d)**	15	**(a)**	16	**(c)**
17	**(a)**	18	**(d)**	19	**(d)**	20	**(b)**	21	**(a)**	22	**(c)**	23	**(b)**	24	**(b)**
25	**(a)**														

General Intelligence and Reasoning

1	**(c)**	2	**(d)**	3	**(d)**	4	**(d)**	5	**(a)**	6	**(c)**	7	**(d)**	8	**(d)**
9	**(c)**	10	**(d)**	11	**(c)**	12	**(b)**	13	**(d)**	14	**(b)**	15	**(a)**	16	**(a)**
17	**(b)**	18	**(b)**	19	**(a)**	20	**(d)**	21	**(a)**	22	**(d)**	23	**(c)**	24	**(c)**
25	**(d)**														

Numerical Aptitude

1	**(b)**	2	**(c)**	3	**(a)**	4	**(b)**	6	**(b)**	7	**(d)**	8	**(d)**	10	**(c)**
11	**(d)**	12	**(d)**	13	**(b)**	14	**(a)**	15	**(d)**	17	**(a)**	21	**(d)**	22	**(c)**
23	**(b)**	24	**(c)**	25	**(c)**										

General Awareness

1	**(c)**	2	**(c)**	3	**(a)**	4	**(a)**		**(a)**	6	**(b)**	7	**(c)**	9	**(c)**
10	**(c)**	11	**(a)**	12	**(d)**	13		4	**(b)**	15	**(d)**	16	**(d)**	17	**(d)**
18	**(c)**	19	**(b)**	20	**(a)**	21	**(d)**	22	**(b)**	23	**(c)**	24	**(c)**		