

SSC GRADUATE LEVEL TIER-I EXAM (EVENING SHIFT) , 21-04-2013 – PREVIOUS YEAR PAPER

GENERAL AWARENESS

1. Solids which conduct electricity at higher temperature but not at lower temperature are called
- (1) super-conductor
 - (2) metallic-conductor
 - (3) semi-conductor
 - (4) insulator

Solution:3

2. Which one of the following has greatest mass ?
- (1) electron
 - (2) proton
 - (3) neutron
 - (4) hydrogen nucleus

Solution:3

3. A television channel is characterised by
- (1) frequency of transmitted signal
 - (2) velocity of transmitted signal
 - (3) physical dimension of television screen
 - (4) size of picture tube

Solution:1

4. The first computer mouse was built by
- (1) Douglas Engelbart
 - (2) William English
 - (3) Daniel Coogher
 - (4) Robert Zawacki

Solution:1

5. An organization's profitability depends on
- (1) Quality of data processed

- (2) Quantity of data processed
- (3) Speed of processing the data
- (4) Both (1) and (3)

Solution:3

6. The density of water is 1 g/cc. This is strictly valid at

- (1) 0°C
- (2) 4°C
- (3) 25°C
- (4) 100°C

Solution:2

7. The process of photosynthesis involves conversion of

- (1) chemical energy into radiant energy
- (2) chemical energy into mechanical energy
- (3) solar energy into chemical energy
- (4) mechanical energy into solar energy

Solution:3

8. A colloidal system in which a liquid is dispersed in a liquid is called

- (1) gel
- (2) emulsion
- (3) sol
- (4) precipitate

Solution:2

9. The antiseptic compound present in dettol is

- (1) Iodine
- (2) Enloroxlenol
- (3) Biolhional
- (4) Cresol

Solution:2

10. As per the TRIPS Agreement-1994, a good originating from a region with specific character/ quality/reputation is covered/to be protected under the IPR as

- (1) Patent
- (2) Trademark
- (3) Trade secret
- (4) GI (Geographical Indicator)

Solution:4

11. Which of the following crop cultivation is banned by the Hon'ble Supreme Court of India ?
- (1) Lathyrus (Khesari)
 - (2) Genetically modified brinjal
 - (3) Bt cotton for export
 - (4) Bt cotton for local use

Solution:1

12. Ice glacier's melting is a common phenomenon linked to the rise in seawater level. The glaciers are predominantly present in
- (1) Greenland
 - (2) Antarctica
 - (3) Himalayas
 - (4) Arctic

Solution:2

13. Who is known for establishing-the "Anand Van" ?
- (1) Jubilant Buddha
 - (2) H. N. Bahuguna
 - (3) Baba Amte
 - (4) Motilal Nehru

Solution:3

14. The civilian Airport of highest altitude is in
- (1) Tibet
 - (2) Nepal
 - (3) India
 - (4) China

Solution:4

15. Genomic (DNA) studies in camel have been completed recently by the scientists of
- (1) South Africa
 - (2) India
 - (3) China
 - (4) Pakistan

Solution:4

16. International Simon Bolivar Prize was recently awarded to Aung San Suu Kyi by the government of
- (1) Mauritius

- (2) China
- (3) Venezuela
- (4) Cuba

Solution:3

17. BCCI conferred "Col. C. K. Naydu Lifetime Achievement Award" during 2012 to

- (1) Sachin Tendulkar
- (2) M.S.Dhoni
- (3) VVS Laxrnan
- (4) Sunil Gavaskar

Solution:4

18. Air quality depicting PM 2.5 is more hazardous to

- (1) Archaeological Monuments
- (2) National Parks
- (3) Botanical Gardens
- (4) Old Men and Women

Solution:4

19. Which of the following is not a fundamental right as per the Indian Constitution ?

- (1) Right to Education
- (2) Right to Information
- (3) Right to Speech
- (4) Right to Life

Solution:

20. Who is custodian of the Indian Constitution ?

- (1) President of India ?
- (2) Chief Justice of India
- (3) Prime Minister of India
- (4) Chairman of Rajya Sabha

Solution:2

21. Piped Natural Gas (PNG) is used for

- (1) Mining
- (2) Welding
- (3) Anaesthesia
- (4) Cooking

Solution:4

22. Greenpark Stadium is in

- (1) Bengaluru
- (2) Dehradun
- (3) Chandigarh
- (4) Kanpur

Solution:4

23. Rowlatt Act 1919 was enacted during the period of

- (1) Lord Chelmsford
- (2) Lord William
- (3) Lord Minto
- (4) Lord Bentinck

Solution:1

24. Panchayati Raj System was implemented first in the pair of states

- (1) Andhra Pradesh and Rajasthan
- (2) Assam and Bihar
- (3) Arunachal Pradesh and Uttar Pradesh
- (4) Punjab and Chandigarh

Solution:1

25. Human Environment Conference-1972 was held at

- (1) Stockholm
- (2) Paris
- (3) Geneva
- (4) Australia

Solution:1

26. 'Gold' is mainly related to

- (1) Local market
- (2) National market
- (3) International market
- (4) Regional market

Solution:3

27. Bilateral monopoly refers to the market situation of

- (1) two sellers, two buyers
- (2) one seller and two buyers
- (3) two sellers and one buyer
- (4) one seller and one buyer

Solution:4

28. The economist who believed that unemployment is impossible and that market mechanism has a built in regulatory system to meet any ups and downs

- (1) J.M.Keynes
- (2) Ohlin
- (3) J.B.Say
- (4) Galbraith

Solution:3

29. Constituent Assembly of India was formulated on the recommendation of

- (1) Wavel Plan
- (2) Cripps Mission
- (3) August Offer
- (4) Cabinet Mission

Solution:4

30. Which of the following is an essential element of the state?

- (1) Sovereignty
- (2) Government
- (3) Territory
- (4) All these

Solution:4

31. Which has become a legal right under 44th Amendment?

- (1) Right to Education
- (2) Right to Property
- (3) Right to Judicial Remedies
- (4) Right to Work

Solution:2

32. By which Constitution Amendment Act, Right to Property ceased to remain a fundamental right?

- (1) 44th
- (2) 42nd
- (3) 43rd
- (4) 45th

Solution:1

33. Who said -Truth is the ultimate reality and it is God" ?

- (1) Swamy Vivekananda
- (2) Rabindra Nath Tagore
- (3) M.K.Gandhi
- (4) Radhakrishnan

Solution:3

34. Which of the following tribes is associated with the "Tana Bhagat" movement ?

- (1) Uraon
- (2) Munda
- (3) Santhal
- (4) Kondadora

Solution:1

35. Who founded the Naujawan Bharat Sabha ?

- (1) B.C.Pal
- (2) G. Subramania Iyer
- (3) Sardar Bagat Singh
- (4) Rukmani Lakshmipath

Solution:3

36. The Narendra Mandal or Chamber of Princes was inaugurated in 1921 by

- (1) Lord Curzon
- (2) Lord Wellesley
- (3) Duke of Cannaught
- (4) Duke of Wellington

Solution:3

37. Buddha, Dhamma and Sang-ha together are known as

- (1) Triratna
- (2) Trivarga
- (3) Trisarga
- (4) Trimurti

Solution:1

38. Who was called Lichchavi Dauhitra ?

- (1) Chandragupta I
- (2) Skandagupta
- (3) Kumaragupta
- (4) Samudragupta

Solution:1

39. Which hill station is-called as the 'Queen of the Satpuras' ?

- (1) Pachmarhi
- (2) Nilgiri
- (3) Mahenderagiri
- (4) Cardamom

Solution:1

40. Which national highway connects Delhi and Kolkata via Mathura and Varanasi ?

- (1) NH₄
- (2) NH₂
- (3) NH₁₀
- (4) NH₆

Solution:2

41. The country where drip irrigation is more efficiently used is

- (1) India
- (2) Israel
- (3) Sri Lanka
- (4) England

Solution:2

42. Which of the following is an endangered species?

- (1) Black buck
- (2) Blue sheep
- (3) Gangetic dolphin
- (4) Mithun

Solution:2

43. Of the following man-made disasters, which is socially induced ?

- (1) Debris Avalanche
- (2) Salt Water Intrusion
- (3) Arson
- (4) Ozone depletion

Solution:3

44. Which one of the following endocrine gland is situated in the neck ?

- (1) Pancreas
- (2) Thyroid
- (3) Pituitary
- (4) Adrenals

Solution:2

45. The seat of intelligence is situated in the
- (1) cerebrum
 - (2) cerebellum
 - (3) medulla
 - (4) thalamus

Solution:2

46. What is the Normal Blood Volume in human adult ?
- (1) One litre
 - (2) Three litres
 - (3) Five litres
 - (4) Seven litres

Solution:3

47. The fasting blood glucose level in adults in mg/ 100 ml is
- (1) 200
 - (2) 160
 - (3) 100
 - (4) 60

Solution:3

48. Entomology is the study of
- (1) Birds "
 - (2) Insects
 - (3) Fossils
 - (4) Fungi

Solution:2

49. Exobiology is a science that deals with
- (1) extinct forms
 - (2) life in other planets
 - (3) life in the outer space
 - (4) life in marine habitat

Solution:3

50. In radio-communication, the signals emitted by transmitting antenna are reflected on
- (1) stratosphere

(2) ozonosphere

(3) ionosphere

(4) troposphere

Solution:3



ENGLISH COMPREHENSION

Directions (1-2) : In the following questions, four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word as your answer.

1. (1) humorous
- (2) humourous
- (3) humorus
- (4) humourus

Solution:1

2. (1) narcisism
- (2) narcissism
- (3) narcisim
- (4) narsisism

Solution:2

Directions (3-12) : In the following questions, you have two passages with 5 questions in each passage. Read the passages carefully and choose the best answer to each question out of the four alternatives.

PASSAGE I

(Question Nos. : 3 to 7)

Pidgins are languages that are not, acquired as mother tongues and that are used for a restricted set of communicative functions. They are formed from a mixture of languages and have a limited vocabulary and a simplified grammar. Pidgins serve as a means of communication between speakers of mutually unintelligible languages and may become essential, in multilingual areas. A Creole develops from a pidgin when the pidgin becomes the mother tongue of the community. To cope with the consequent expansion of communicative functions the vocabulary is increased and the grammar becomes more complex. Where a Creole and the standard variety of English coexist, as in the Car – ribbean, there is a continuum from the most extreme form of Creole to the form that is closest to the standard language. Linguists mark off the relative positions on the Creole continuum as the 'basilect' (the furthest from the standard language), the 'mesolect', and the 'acrolect'. In such situations, most Creole speakers can vary their speech along the continuum and many are also competent in the standard English of their country.

3. A pidgin develops in a situation when
 - (1) Different and mutually unintelligible languages exist side by side

- (2) A Creole becomes the mother tongue of a linguistic community
- (3) A language with restricted vocabulary undergoes an expansion in grammar and vocabulary
- (4) Two similar languages are mixed to create a new language

Solution:1

4. According to the given passage a pidgin becomes a Creole when
- (1) It ceases to be a means of communication
 - (2) It becomes the mother tongue for a new generation of speakers
 - (3) Its vocabulary undergoes some kind of change
 - (4) Two or more languages are mixed with an existing pidgin

Solution:2

5. According to the passage, a Creole continuum is
- (1) A linguistic term for the mixture of more than two languages
 - (2) A scale which measures the linguistic competence of the speaker
 - (3) A scale in which the proximity of the Creole to the standard language is measured
 - (4) A record of the continuous history of a Creole

Solution:3

6. According to the passage 'bast-led' means
- (1) An impure form of a Creole
 - (2) A form of Creole which is furthest from the standard language
 - (3) A form of creole which has an extended vocabulary
 - (4) A form of creole which is very close to the standard language

Solution:2

7. Find out a word in the passage which is opposite in meaning to the word – 'Simplified'
- (1) Complex
 - (2) Expansion
 - (3) Restricted
 - (4) Consequent

Solution:1

PASSAGE II

(Question Nos. : 8 to 12)

There were four of us – George, and William Samuel Harris, and myself, and Montmorency. We were sitting in my room, smoking and talking about "how bad we were bad from a medical point of view I mean, of course.

We were all feeling seedy, and we were getting quite nervous about it. Harris said he felt such extraordinary fits of giddiness come over him at times, that he hardly knew what he was doing; and then George said that he had fits of giddiness too, and hardly knew what he was doing. With me, it was my liver that was out of order. I knew it was my liver that was out of order, because I had just been reading a patent liver-pill circular, in which were detailed the various symptoms by which a man could tell when his liver was out of order. I had them all.

It is a most extraordinary thing, but I never read a patent medicine advertisement without being impelled to the conclusion that I am suffering from the particular disease therein dealt with in its most virulent form. The diagnosis seems in every case to correspond exactly with all the sensations that I have ever felt.

8. The four felt down and out because

- (1) the room was too smoky
- (2) they could never read a patent medicine advertisement
- (3) they thought they were ill
- (4) they had experienced a most extraordinary thing

Solution:3

9. Whenever the speaker read a liver pill circular

- (1) he suffered from an extraordinary surge of giddiness
- (2) he felt sure that he had a liver disorder
- (3) he felt the urge to smoke
- (4) All of the above

Solution:2

10. The author of the above passage seems to be suffering from

- (1) fits of morbid depression without real cause
- (2) an abnormal anxiety about his health
- (3) melancholia
- (4) an unnecessarily dark, gloomy and pessimistic attitude to life

Solution:4

11. Harris was troubled by

- (1) symptom of vertigo
- (2) garrulity
- (3) tribulation
- (4) frailty

Solution:1

12. The word which is closest in meaning to virulent is

- (1) fantastic
- (2) vital
- (3) viral
- (4) hostile

Solution:4

Directions (163-167) : In the following questions, some of the sentences have errors and some have none. Find out which part of a sentence has an error. The number of that part is your answer. If there is no error, your answer is (4) i.e., No error.

13. I whistled thrice (1)/ with full might and raise my arms (2) / towards the sky. (3)/ No error. (4)

Solution:2

14. Science and religion (1)/ are both necessary for man and for their (2)/outer and inner self respectively. (3)/ No error(4)

Solution:2

15. At certain seasons (1), some areas on Mars (2)/ is subject to strong winds. (3)/ No error (4).

Solution:3

16. As an artist (1) /Raju is as good (2)/, if not better than, Ramesh. (3)/ No error (4).

Solution:2

17. The scientists (1)/could not hardly (2)/ complete all the experiments. (3)/ No error (4).

Solution:2

Directions (18-22) : In the following questions, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

18. Google is one of the most popular search engines, it is..... by the Internet users.
- (1) utilized
 - (2) effected
 - (3) examined
 - (4) flabbergasted

Solution:1

19. Raj was tired of Puja'sapproach, so he asked her to make her final decision by that evening.
- (1) silly-willy
 - (2) dilly-dally
 - (3) wasting
 - (4) dilly-nally.

Solution:2

20. Ria isat speaking languages. It is difficult to..... only one puppy for animal shelter.
- (1) adept, adapt
 - (2) adapt, adapt
 - (3) adept, adopt
 - (4) adapt, adopt

Solution:3

21. School days are considered to be the best years of your life. When my..... year in school began, I began to think of those past enjoyable days and of my future also.
- (1) penultimate
 - (2) absolute
 - (3) integral
 - (4) termination

Solution:4

22. Being..... , the judge gave a favourable verdict.
- (1) sagacious
 - (2) pugnacious
 - (3) malicious
 - (4) tenacious

Solution:1

Directions (23-25) : In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

23. Garrulous
- (1) talkative
 - (2) sedative
 - (3) vocative
 - (4) positive

Solution:1

24. Tinsel
(1) tinkle
(2) decoration
(3) tin
(4) colourful

Solution:2

25. Labyrinth
(1) meandering
(2) rotating
(3) pacing
(4) wriggling

Solution:1

Directions (26-28) : In the following questions, choose the word opposite in meaning to the given word.

26. Cordial
(1) fast
(2) heartfelt
(3) friendly
(4) hostile

Solution:4

27. Instinctive
(1) innate
(2) rational
(3) inherent
(4) inborn

Solution:2

28. Venial
(1) minor
(2) pardonable
(3) unpardonable
(4) clean

Solution:3

Directions (29-33) : In the following questions, four alternatives are given for the Idiom/ Phrase printed in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase.

29. Hard work pays **in the long run**.

- (1) always
- (2) over a period of time
- (3) indefinitely
- (4) never

Solution:2

30. I felt **a fish out of water** among the lawyers.

- (1) special
- (2) happy
- (3) uncomfortable
- (4) proud

Solution:3

31. The Cauvery water issue led **to apple of discord** between the two Governments.

- (1) cause of anger
- (2) cause of hatred
- (3) cause of quarrel
- (4) cause of animosity

Solution:4

32. The construction remains unfinished and the workers have **let the grass grow under their feet**.

- (1) grown grass all over the lawn
- (2) gone on a luxury tour
- (3) delay doing the work
- (4) demanded more benefits

Solution:3

33. The police **smelt the rat** behind the death of the girl.

- (1) got very much confused
- (2) identified the cause of death
- (3) suspected that something is fishy
- (4) jumped to the conclusion

Solution:3

Directions (34-43) : In the following questions, a sentence/ part of the sentence is printed in **bold**. Below are given alternatives to the **bold** sentence/part of the sentence at (1), (2) and (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (4).

34. The disparity of the GDP between the rich and the poor **has broadened in the last some decades.**

- (1) have widened "in the last some decades
- (2) has widened in the last few decades
- (3) have broadened in the last few decades
- (4) No improvement

Solution:2

35. **How, is beyond my understanding, the boy could fall into the ditch.**

- (1) How the bby could fall into the ditch is beyond my understanding
- (2) Beyond my understanding is how the boy could fall into the ditch
- (3) How could the boy fall into the ditch is beyond my understanding
- (4) No improvement

Solution:1

36. The pioneer spacecraft **went beyond** Pluto.

- (1) made its way past
- (2) went across
- (3) went after
- (4) No improvement

Solution:1

37. The firm buys frozen seafood in bulk, packs it into smaller pouches and then they **sell them** to the local grocery stores.

- (1) it sells them
- (2) sell them
- (3) they sell the pouches
- (4) No improvement

Solution:1

38. The learners **are intended** to read the sources at home.

- (1) are meant
- (2) are suggested
- (3) are expected
- (4) No improvement

Solution:3

39. Fuji's invention of super computer **will be enable to make Japan** supercede America in computer technology.

- (1) will make Japan

- (2) will enable Japan
- (3) can make Japan
- (4) No improvement

Solution:2

40. I could never repay the debt I owe to my **place of study**.

- (1) Alma Mater
- (2) Motherland
- (3) Place of worship
- (4) No improvement

Solution:1

41. She cries **all the time**.

- (1) mostly everytime
- (2) Day in and day out
- (3) pretty frequently
- (4) No improvement

Solution:4

42. For a week last month, the team's 20 players were stranded because the **Government-issued passport is not up to international standards**,

- (1) Government-issued passports were not up to international standards
- (2) Government-issued passports are not up to international standards
- (3) The passports issued by the government were not up to international standards
- (4) No improvement

Solution:1

43. Since July 2008, our customers **will be able to use the** ATM network of BBY Bank, the bank that was acquired by us during that year.

- (1) have been able to use
- (2) were using
- (3) will have been able to use
- (4) No improvement

Solution:1

Directions (44-50) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentence.

44. One who is unaffected or indifferent to joy, pain, pleasure or grief
(1) Tolerant

- (2) Resigned
- (3) Passive
- (4) Stoic

Solution:4

45. A person who is greatly respected because of wisdom

- (1) veracious
- (2) vulnerable
- (3) venerable
- (4) verger

Solution:3

46. An excessively morbid desire to steal

- (1) stealomania
- (2) kleptomania
- (3) cleftomania
- (4) keptomania

Solution:2

47. Prohibited by law or treaty from being imported or exported

- (1) contraband
- (2) smuggled
- (3) counterfeit
- (4) forged

Solution:1

48. Intentional destruction of racial groups

- (1) regicide
- (2) genocide
- (3) homicide
- (4) fratricide

Solution:2

49. A person in a vehicle or on horseback escorting another vehicle

- (1) Navigator
- (2) Escort
- (3) Outrider
- (4) Security

Solution:2

50. A person specially interested in the study of coins and medals.

- (1) medallist
- (2) coinist
- (3) numismatist
- (4) numerist

Solution:3

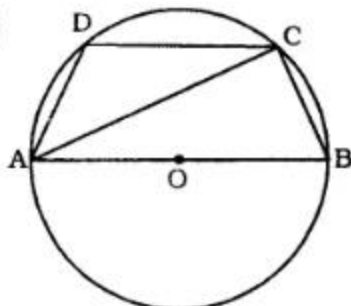


QUANTITATIVE APTITUDE

1. ABCD is a cyclic trapezium with $AB \parallel DC$ and $AB = \text{diameter of the circle}$. If $\angle CAB = 30^\circ$, then $\angle ADC$ is
- (1) 60°
 - (2) 120°
 - (3) 150°
 - (4) 30°

Solution:2

(2)



$$\angle ACB = 90^\circ$$

(Angle of semi-circle)

$$\angle CAB = 30^\circ$$

$$\therefore \angle CBA = 180^\circ - 90^\circ - 30^\circ$$

$$= 60^\circ$$

$$\text{Again, } \angle ADC + \angle ABC = 180^\circ$$

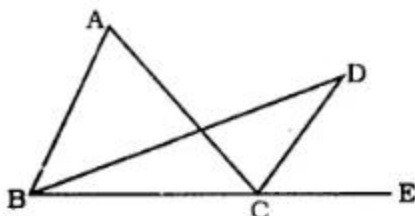
$$\therefore \angle ADC = 180^\circ - 60^\circ = 120^\circ$$

...

2. ABC is a triangle. The bisectors of the internal angle $\angle B$ and external angle $\angle C$ intersect at D. If $\angle BDC = 50^\circ$, then $\angle A$ is
- (1) 100°
 - (2) 90°
 - (3) 120°
 - (4) 60°

Solution:1

(1)

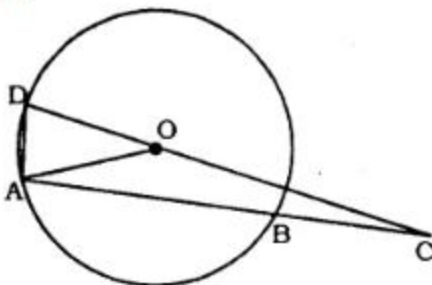


$$\begin{aligned}\angle ACE &= \angle BAC + \angle ABC \\ \angle DCE &= \angle DBC + \angle BDC \\ &= \angle DBC + 50^\circ \\ \Rightarrow \angle ACE &= \angle B + 100 \\ \therefore \angle BAC &= 100^\circ\end{aligned}$$

3. AB is the chord of a circle with centre O and DOC is a line segment originating from a point D on the circle and intersecting AB produced at C such that $BC = OD$. If $\angle BCD = 20^\circ$, then $\angle AOD = ?$
- (1) 20°
 - (2) 30°
 - (3) 40°
 - (4) 60°

Solution:3

(3)



$$\begin{aligned}BC &= DO = OA \\ \angle DAB &= 90^\circ \\ \angle DOA &= 2 \times \angle DCA = 40^\circ\end{aligned}$$

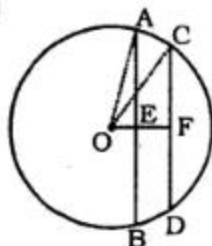
4. In a circle of radius 17 cm, two parallel chords of lengths 30 cm and 16 cm are drawn. If both the chords are on the same side of the centre, then the distance

between the chords is

- (1) 9 cm
- (2) 7 cm
- (3) 23 cm
- (4) 11 cm

Solution:2

• (2)



$$AE = 15 \text{ cm}$$

$$OA = 17 \text{ cm}$$

$$\therefore OE = \sqrt{17^2 - 15^2}$$

$$= \sqrt{(17 + 15)(17 - 15)}$$

$$= \sqrt{32 \times 2} = 8 \text{ cm}$$

$$\text{Again, } CF = 8 \text{ cm}$$

$$OC = 17 \text{ cm}$$

$$\therefore OF = \sqrt{17^2 - 8^2}$$

$$= \sqrt{(17 + 8)(17 - 8)}$$

$$= \sqrt{25 \times 9}$$

$$= 15 \text{ cm}$$

$$\text{Required answer}$$

$$= 15 - 8 = 7 \text{ cm}$$

5. If $\sin(A - B) = 1/2$ and $\cos(A + B) = 1/2$ where $A > B > 0$ and $A + B$ is an acute angle, then the value B is

(A) $\frac{\pi}{6}$

(2) $\frac{\pi}{12}$

(3) $\frac{\pi}{4}$

(4) $\frac{\pi}{2}$

Solution:2

$$(2) \sin (A - B) = \frac{1}{2} = \sin 30^\circ$$

$$\Rightarrow A - B = 30^\circ$$

$$\text{Again, } \cos (A + B) = \frac{1}{2}$$

$$= \cos 60^\circ$$

$$\Rightarrow A + B = 60^\circ$$

$$\therefore A + B + A - B = 30^\circ + 60^\circ$$

$$= 90^\circ$$

$$\Rightarrow 2A = 90^\circ$$

$$\Rightarrow A = 45^\circ$$

$$\therefore A - B = 30^\circ$$

$$\Rightarrow B = A - 30^\circ = 45^\circ - 30^\circ = 15^\circ$$

$$= \frac{15 \times \pi}{180} = \frac{\pi}{12} \text{ radian}$$

6. The fifth term of the sequence for which $t_1 = 1$, $t_2 = 2$ and $t_{n+2} = t_n + t_{n+1}$, is

(1) 5

(2) 10

(3) 6

(4) 8

Solution:4

$$(4) t_{n+2} = t_n + t_{n+1}$$

$$t_3 = t_1 + t_2 = 3$$

$$t_4 = t_3 + t_2 = 3 + 2 = 5$$

$$t_5 = t_4 + t_3 = 3 + 5 = 8$$

7. If $(x + 7954 \times 7956)$ be a square number, then the value of x is

(1) 1

(2) 16

(3) 9

(4) 4

Solution:1

(1) Possible unit digits of perfect square number = 1, 4, 9, 6, 5, 0

Hence, $x = 1$

8. A can do a piece of work in 12 days while B alone can do it in 15 days. With the help of C they can finish it in 5 days. If they are paid ₹ 960 for the whole work how much money A gets ?

(1) 480

(2) 240

(3) 320

(4) 400

Solution:4

(4) Work done by A and B in 5 days

$$= 5 \left(\frac{1}{12} + \frac{1}{15} \right) = 5 \left(\frac{5+4}{60} \right)$$

$$= \frac{9}{12} = \frac{3}{4}$$

Time taken by C in doing $\frac{1}{4}$

work = 5 days

∴ C will complete in 20 days.

$$\therefore \text{Ratio of wages} = \frac{1}{12} : \frac{1}{15} : \frac{1}{20}$$

$$= 5 : 4 : 3$$

∴ Amount received by A

$$= \frac{5}{12} \times 960 = \text{Rs. } 400$$

9. Ronald and Elan are working on an Assignment. Ronald takes 6 hours to type 32 pages on a computer, while Elan takes 5 hours to type 40 pages. How much time will they take working together on two different computers to type an assignment of 110 pages ?

- (1) 7 hrs. 30 min.
- (2) 8 hrs.
- (3) 8 hrs. 15 min.
- (4) 8 hrs. 25 min.

Solution:3

(3) Ronald's 1 hour's work

$$= \frac{32}{6} = \frac{16}{3} \text{ pages}$$

Elan's 1 hour's work = 8 pages

1 hour's work of the both

$$= \frac{16}{3} + 8 = \frac{40}{3} \text{ pages}$$

∴ Required time

$$= \frac{110 \times 3}{40} = \frac{33}{4} \text{ hours}$$

= 8 hours 15 minutes

10. One man, 3 women and 4 boys can do a piece of work in 96 hours, 2 men and 8 boys can do it in 80 hours, 2 men and 3 women can do it in 120 hours. 5 men and 12 boys can do it in

(A) $39 \frac{1}{11}$ hours

(2) $42 \frac{7}{11}$ hours

(3) $43 \frac{7}{11}$ hours

(4) 44 hours

Solution:3

(3) 1 hour's work of 1 man and

$$4 \text{ boys} = \frac{1}{160}$$

1 hour's work of 1 man and 3

$$\text{women} = \frac{1}{96}$$

1 hour's work of 3 women

$$= \frac{1}{96} - \frac{1}{160} = \frac{10-6}{960} = \frac{1}{240}$$

1 hour's work of 2 men

$$= \frac{1}{120} - \frac{1}{240} = \frac{1}{240}$$

1 hour's work of 4 boys

$$= \frac{1}{160} - \frac{1}{480}$$

$$= \frac{3-1}{480} = \frac{1}{240}$$

$\therefore 2 \text{ men} = 3 \text{ women} = 4 \text{ boys}$

$\therefore 2 \text{ men} + 8 \text{ boys} = 12 \text{ boys}$

$5 \text{ men} + 12 \text{ boys} = 22 \text{ boys}$

$\therefore \text{By } M_1 D_1 = M_2 D_2$

$$\Rightarrow 12 \times 80 = 22 \times D_2$$

$$\Rightarrow D_2 = \frac{12 \times 80}{22}$$

$$= \frac{480}{11} = 43 \frac{7}{11} \text{ hours}$$

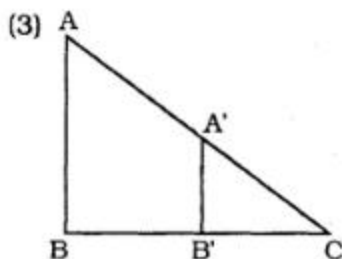
11. ABC is a right angled triangle, B being the right angle. Mid-points of BC and AC are respectively B' and A'. The ratio of the area of the quadrilateral AA' B'B to the area of the triangles ABC is

(1) 1 : 2

(2) 2 : 3

(3) 3:4

(4) None of the above

Solution:3

$$A'B' = \frac{1}{2} AB$$

$$\Delta A'B'C \sim \Delta ABC$$

$$\therefore \frac{\Delta ABC}{\Delta A'B'C} = \frac{4}{1}$$

$$\Rightarrow \frac{\Delta A'B'C}{\Delta ABC} = \frac{1}{4}$$

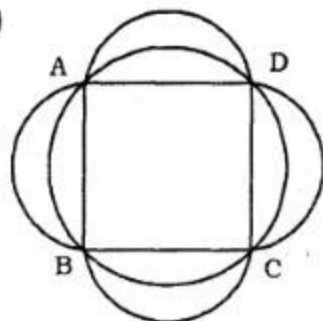
$$\Rightarrow 1 - \frac{\Delta A'B'C}{\Delta ABC} = 1 - \frac{1}{4}$$

$$\Rightarrow \frac{\square AA'B'B}{\Delta ABC} = \frac{3}{4}$$

12. A square ABCD is inscribed in a circle of unit radius. Semicircles are described on each side as a diameter. The area of the region bounded by the four semicircles and the circle is
- (1) 1 sq. unit
 (2) 2 sq. unit
 (3) 1.5 sq. unit
 (4) 2.5 sq. unit

Solution:2

(2)



$$BD = 2 \text{ units}$$

$$AB = \sqrt{2} \text{ units}$$

Area of square = 2 square units

Area of four semicircles

$$= 4 \times \frac{\pi r^2}{2}$$

$$= \frac{4 \times \pi \times \frac{1}{2}}{2}$$

$$= \pi \text{ sq. units}$$

∴ Required area

$$= 2 + \pi - \pi = 2 \text{ sq. units.}$$

13. If the perimeters of a rectangle and a square are equal and the ratio of two adjacent sides of the rectangle is 1 : 2 then the ratio of area of the rectangle and that of the square is

- (1) 1 : 1
- (2) 1 : 2
- (3) 2 : 3
- (4) 8 : 9

Solution:4

(4) Sides of rectangle are $2x$ and x units.

Side of square = y units

$$\therefore 4y = 6x$$

$$\Rightarrow \frac{x}{y} = \frac{4}{6} = \frac{2}{3}$$

$$\therefore \frac{2x \times x}{y^2} = \frac{2x^2}{y^2} = \frac{2 \times 4}{9}$$

$$= 8 : 9$$

14. The interest on a certain sum of money is 22 and the true discount on the same sum for the same time and at the same rate is 7 20, Find the sum.

(1) 220

(2) 200

(3) 210

(4) 212

Solution:1

(1) Sum

$$= \frac{\text{S.I.} \times \text{True discount}}{\text{S.I.} - \text{True discount}}$$

$$= \frac{22 \times 20}{22 - 20} = \text{Rs. } 220$$

15. A retailer purchased radiosets at the rate of 400 each from a wholesaler. He raised the price by 30% and then allowed a discount of 8% on each set. His profit will be

(1) 19%

(2) 78.4%

(3) 22%

(4) 19.6%

Solution:4

(4) Marked price of a radio set

$$= \frac{400 \times 130}{100} = \text{Rs. } 520$$

$$\text{S.P.} = \frac{520 \times 92}{100} = \text{Rs. } 478.4$$

$$\therefore \text{Gain per cent} = \frac{78.4}{400} \times 100$$

$$= 19.6\%$$

16. A reduction in the price of apples enables a person to purchase 3 apples for 1 instead of 1.25. What is the % of reduction in price (approximately) ?
- (1) 20
(2) 25
(3) 30
(4) $33 \frac{1}{3}$

Solution:1

(1) Percentage decrease

$$= \frac{25}{125} \times 100 = 20\%$$

17. 700 is divided among A, B, C in such a way that the ratio of the amounts of A and B is 2 : 3 and that of B and C is 4 : 5. Find the amounts in 7 each received, in the order A, B, C.
- (1) 150, 250, 300
(2) 160, 240, 300
(3) 150, 250, 290
(4) 150, 240, 310

Solution:2

$$\therefore (2) A : B = 2 : 3 = 8 : 12$$

$$B : C = 4 : 5 = 12 : 15$$

$$\therefore A : B : C = 8 : 12 : 15$$

$$\text{Sum of ratios} = 35$$

$$\therefore \text{A's share} = \frac{8}{35} \times 700$$

$$= \text{Rs. } 160$$

$$\text{B's share} = \frac{12}{35} \times 700$$

$$= \text{Rs. } 240$$

$$\text{C's share} = \frac{15}{35} \times 700$$

$$= \text{Rs. } 300$$

18. The ratio of monthly incomes of A, B is 6 : 5 and their monthly expenditures are in the ratio 4 : 3. If each of them saves ₹ 400 per month, find the sum of their monthly incomes.

(1) 2300

(2) 2400

(3) 2200

(4) 2500

Solution:

(3) Incomes of A and B

$$= \text{Rs. } 6x \text{ and } 5x$$

Expenses of A and B

$$= \text{Rs. } 4y \text{ and } 3y$$

$$\therefore 6x - 4y = 400 \quad \dots\dots(i)$$

$$5x - 3y = 400 \quad \dots\dots(ii)$$

By equation (i) $\times 3$ - (ii) $\times 4$

$$\Rightarrow 18x - 12y - 20x + 12y$$

$$= 1200 - 1600$$

$$\Rightarrow 2x = 400 \Rightarrow x = 200$$

\therefore Total income

$$= 6x + 5x = 11x$$

$$= \text{Rs. } 2200$$

19. A and B have together three times what B and C have, while A, B, C together have thirty rupees more than that of A. If B has 5 times that of C, then A has
- (1) 60
 - (2) 65
 - (3) 75
 - (4) 45

Solution:2

$$(2) A + B = 3(B + C)$$

$$A + B + C = A + 30$$

$$B = 5C$$

$$\therefore A + B = 3(B + C)$$

$$\Rightarrow A + 5C = 18C \Rightarrow A = 13C$$

$$\therefore A + B + C = A + 30$$

$$\Rightarrow A + 5C + C = A + 30$$

$$\Rightarrow A + \frac{6A}{13} = A + 30$$

$$\Rightarrow 6A = 30 \times 13$$

$$\Rightarrow A = \text{Rs. } 65$$

20. A cricket player after playing 10 tests scored 100 runs in the 11th test. As a result, the average of his runs is increased by 5. The present average of runs is
- (1) 45
 - (2) 40
 - (3) 50
 - (4) 55

Solution:3

(3) If the average in 10 tests be x , then,

$$x \times 10 + 100 = (x + 5) \times 11$$

$$\Rightarrow 11x - 10x = 100 - 55$$

$$\Rightarrow x = 45$$

$$\therefore \text{Required average} = 50$$

21. A fruit seller buys some oranges at the rate of 4 for 10 and an equal number more at 5 for 10. He sells the whole lot at 9 for 20. What is his loss or gain per cent ?

(A) Loss per cent $1\frac{19}{81}\%$

(2) Gain percent $1\frac{19}{81}\%$

(3) No loss or no profit

(4) Loss per cent 2%

Solution:

(1) Let 20 apples of each type be bought.

C.P. of 40 apples

$$= \text{Rs.} \left(20 \times \frac{10}{4} + 20 \times \frac{10}{5} \right)$$

$$= \text{Rs. } 90$$

Total S.P.

$$= \frac{40 \times 20}{9}$$

$$= \text{Rs. } \frac{800}{9}$$

$$\text{Loss} = 90 - \frac{800}{9} = \frac{10}{9}$$

$$\therefore \text{Loss per cent} = \frac{\frac{10}{9}}{90} \times 100$$

$$= \frac{100}{81} = 1\frac{19}{81}\%$$

22. 15 litres of a mixture contains alcohol and water in the ratio 1 : 4. If 3 litres of Water is mixed in it, the percentage of alcohol in the new mixture will be

(A) 15

(2) $16\frac{2}{3}$

(3) 17

(4) $18\frac{1}{2}$ **Solution:2**

. (2) Alcohol = 3 litres

Water = 12 litres

∴ Required percentage

$$= \frac{3}{15+3} \times 100$$

$$= \frac{50}{3} = 16\frac{2}{3}$$

23. A man rides at the rate of 18 km/hr, but stops for 6 mins. to change horses at the end of every 7th km. The time that he will take to cover a distance of 90 km is

(1) 6 hrs.

(2) 6 hrs. 12 min.

(3) 6 hrs. 18 min.

(4) 6 hrs. 24 min.

Solution:2

. (2) Number of stoppages = 12

∴ Total time

$$\left(\frac{90}{18}\right) \text{ hours} + \frac{12 \times 6}{100} \text{ minutes}$$

$$= 6 \text{ hours } 12 \text{ minutes}$$

24. A man rows down a river 15 km in 3 hrs. with the stream and returns in 7.5 hrs, The rate at which he rows in still water is
- (1) 2.5 km/hr
 - (2) 1.5 km/hr
 - (3) 3.5 km/hr
 - (4) 4.5 km/hr

Solution:3

• (3) Speed of person in still water = x kmph and speed of current = y kmph

$$\therefore x + y = \frac{15}{3} = 5 \text{ kmph}$$

$$x - y = \frac{15}{\frac{15}{2}} = 2 \text{ kmph}$$

On adding,

$$2x = 7 \Rightarrow x = \frac{7}{2} = 3.5 \text{ kmph}$$

25. There is 100% increase to an amount in 8 years, at simple interest. Find the compound interest of ₹ 8000 after 2 years at the same rate of interest.
- (1) 2500
 - (2) 2000
 - (3) 2250
 - (4) 2125

Solution:4

(4) S.I. = Rs. 100,

Principal = Rs. 100

$$\therefore \text{Rate} = \frac{\text{S.I.} \times 100}{\text{Principal} \times \text{Time}}$$

$$= \frac{100 \times 100}{100 \times 8} = \frac{25}{2} \%$$

$$\begin{aligned}
 \therefore \text{C.I.} &= P \left[\left(1 + \frac{r}{100} \right)^T - 1 \right] \\
 &= 8000 \left[\left(1 + \frac{25}{200} \right)^2 - 1 \right] \\
 &= 8000 \left(\frac{81}{64} - 1 \right) = \frac{8000 \times 17}{64} \\
 &= \text{Rs. 2125}
 \end{aligned}$$

26. If the number p is 5 more than q and the sum of the squares of p and q is 55, then the product of p and q is

- (1) 10
(2) -10
(3) 15
(4) -15

Solution:3

$$\begin{aligned}
 (3) \quad p &= q + 5 \\
 \Rightarrow p - q &= 5 \\
 p^2 + q^2 &= 55 \\
 \therefore (p - q)^2 + 2pq &= 55 \\
 \Rightarrow 25 + 2pq &= 55 \\
 \Rightarrow 2pq &= 30 \\
 \Rightarrow pq &= 15
 \end{aligned}$$

If $a + \frac{1}{a-2} = 4$, then the val-

27. ue of (1) 0

$$(a-2)^2 + \left(\frac{1}{a-2} \right)^2 \text{ is}$$

- (2) 2

(3) -2

(4) 4

Solution:2

$$(2) \ a + \frac{1}{a-2} = 4$$

$$\Rightarrow (a-2) + \frac{1}{(a-2)} = 4 - 2 = 2$$

On squaring,

$$\Rightarrow (a-2)^2 + \frac{1}{(a-2)^2} + 2 = 4$$

$$\Rightarrow (a-2)^2 + \frac{1}{(a-2)^2} = 2$$

28. If $a + b + c = 2s$, then

$$\frac{(s-a)^2 + (s-b)^2 + (s-c)^2 + s^2}{a^2 + b^2 + c^2}$$

is equal to

$$(1) \ a^2 + b^2 + c^2$$

$$(2) \ 0$$

$$(3) \ 1$$

$$(4) \ 2$$

Solution:3**(3) Expression**