SSC COMBINED GRADUATE LEVEL TIER-I (RE-EXAM-2013) , 27-04-2014 – PREVIOUS YEAR PAPER

GENERAL AWARENESS

1. In India, the interest rate on savings accounts in all the nationalized commercial banks is fixed by
   (1) Finance Minister of India
   (2) Union Finance Commission
   (3) Indian Bank Association
   (4) Reserve Bank of India

   Solution:

2. Pegging up of a currency means, fixing the value of a currency
   (1) at a constant level
   (2) at a lower level
   (3) at a higher level
   (4) leaving it to market forces

   Solution:1

3. The Oilseeds Production Programme (OPP) was launched in
   (1) 1986
   (2) 1987
   (3) 1988
   (4) 1990

   Solution:1

4. Plan Holiday was declared after
   (1) The First Five Year Plan
   (2) The Second Five Year Plan
   (3) The Third Five Year Plan
   (4) The Fourth Five Year Plart

   Solution:3

5. Which of the following pair is wrongly matched ?
   (1) Plato – Republic
   (2) Aristotle – Politics

(3) Pundit Jawaharlal Nehru Hind Swaraj
(4) Karl Marx – Das Kapital

Solution:3

6. The concept of "Rule of Law" is a special feature of constitutional system of
(1) Britain
(2) U.S.A.
(3) France
(4) Switzerland

Solution:1

7. Which of the following is not helpful in controlling money supply ?
(1) Free market policy
(2) CRR
(3) Bank Rate
(4) Change in margin requirement

Solution:1

8. Usually a big difference is seen in theory and practice in
(1) Presidential form of Government
(2) Fascist type of Government
(3) Parliamentary form of Govemment
(4) Socialist type of Government

Solution:4

9. Comptroller and Auditor General of India acts as a friend, Philosopher and Guide for.
(1) Public Accounts Committee
(2) Estimates Committee
(3) Finance Ministry
(4) Committee on Public Undertakings

Solution:1

10. How liberty can be limited ?
(1) By Rule
(2) By Law
(3) By Authority
(4) By Equality

Solution:2

11. The first meeting of the Indian National Congress held in 1885 was presided by
(1) Shri P.M. Mehta
(2) Shri Womesh Chandra Bannerjee
(3) D.E. Wacha
(4) S.N. Bannerjee

Solution:2

12. Which one of the following tribal assemblies was normally involved in the election of the tribal chief ?
(1) Samiti
(2) Sabha
(3) Gana
(4) Vidata

Solution:1

13. During which of the following periods of Indian History did the Kshatriyas have a distinct identity ?
(1) Age of the Buddha
(2) Maurya period
(3) Post-Maurya age
(4) Gupta period

Solution:1

14. The Gandhi's `Dandi March' was a part of
(1) Non-Cooperation Movement
(2) Home Rule League
(3) Civil Disobedience Movement
(4) Quit India Movement

Solution:3

15. A writ is issued by
(1) a High Court
(2) a Sub Court
(3) a District Court
(4) an Administrative Tribunal

Solution:1

16. Growth rate of population means
(1) The difference of growth between male and female.
(2) The difference in population between urban and rural area.

(3) The number of births per thousand people.
(4) The difference between birth and death rates.

Solution:4

17. Relative humidity is expressed as
(1) Grams
(2) Kilograms
(3) Percentage
(4) Ratio

Solution:3

18. Metamorphism changes rocks'
(1) structure
(2) texture
(3) both (1) and (2)
(4) actual chemical composition

Solution:3

19. The region famous for many kinds of wine and champagne is
(1) Eastern Europe
(2) Western Europe
(3) Mediterranean
(4) Glassland

Solution:3

20. Crossing-over occurs during
(1) Leptotene
(2) Zygotene
(3) Pachytene
(4) Diplotene

Solution:3

21. In which of the following multiple epidermis is found ?
(1) Boerhaavia
(2) Amaranthus
(3) Helianthus
(4) Nerium

Solution:4

22. Blood cancer is commonly known as

(1) Leucoderma
(2) Leukaemia
(3) Haemophilia
(4) Sickle-cell anaemia

Solution:2

23. The first stable product of photosynthesis is
(1) Starch
(2) Sucrose
(3) Phosphoglyceric acid
(4) Glucose

Solution:3

24. pH scale ranges from
(1) 0- 7
(2) 8- 14
(3) 0 – 14
(4) None

Solution:3

25. Slash and burn agriculture is known as 'Milpa' in
(1) Venezuela
(2) Brazil
(3) Central Africa
(4) Mexico and Central America

Solution:4

26. A real gas can act as an ideal gas in
(1) high pressure and low temperature
(2) low pressure and high temperature
(3) high pressure and high temperature
(4) low pressure and low temperature

Solution:2

27. According to special theory of relativity the mass of a particle
(1) increases with increase in velocity with respect to an observer.
(2) decreases with increase in velocity.
(3) decreases with decrease in velocity.
(4) is independent of its velocity.

Solution:1

28. The motion of the wheels of a bullock-cart while moving on the road is an example of
(1) Oscillatory and rotatory motion
(2) Oscillatory and translatory motion
(3) Translatory and rotatory motion
(4) Translatory motion only

Solution:3

29. Endoscope is an instrument used to detect the ulcers in the stomach has a long narrow tube (with a small glowing bulb at one end) which is inserted in to the stomach through the mouth contains.
(1) small current carrying wire
(2) a narrow tube containing water
(3) optical fibre
(4) a narrow tube containing some chemical solution

Solution:3

30. The 'IBM-DOS' is a
(1) Single user operating system
(2) Multiuser operating system
(3) Batch operating system
(4) Time-sharing operating system

Solution:1

31. The new technology which is emerging in the field of computer is
(1) IC-technology
(2) Parallel processing system
(3) Semiconductor technology
(4) Transistor technology

Solution:4

32. Iron rusts quickly in
(1) Rain water
(2) Sea water
(3) Distilled water
(4) River water

Solution:2

33. When a single gene controls the expression of more than one character, it is said to be

(1) Heterotrophic
(2) Autotrophic
(3) Allotropic
(4) Pleiotropic

Solution:4

34. Aerated water contains
(1) SO_2
(2) NO_2
(3) H_2
(4) CO_2

Solution:4

35. Magnetite is
(1) Fe_2O_3
(2) Fe_3O_4
(3) $FeCO_3$
(4) $2Fe_2O_3 . 3H_2O$

Solution:2

36. United Nations' appreciation for better management of cyclone, Phalin was awarded in 2014 to the government of
(1) West Bengal
(2) Andhra Pradesh
(3) Andaman & Nicobar
(4) Odisha

Solution:4

37. The Ministry sometimes referred to as "Green Ministry" in India is Ministry of
(1) Agriculture and Rural Development
(2) Environment and Forests
(3) Surface and Transport
(4) Urban Development and Landscaping

Solution:2

38. The plants which grow well, only in light are known as
(1) Sciophilous
(2) Xerophytes
(3) Heliophytes
(4) Epiphytes

Solution:3

39. Anna Jangal Yojna (my forest scheme) a bid to enhance forest cover in the State was launched in
(1) Odisha
(2) Chhattisgarh
(3) Jharkhand
(4) Assam

Solution:1

40. A book entitled, The Stories of Malgudi Days' was written by
(1) K.R. Narayanan
(2) R.K. Narayan
(3) P.M. Bajpai
(4) Abul Kalam

Solution:2

41. "Ranji Trophy" is given to the sportpersons in
(1) Football
(2) Hockey
(3) Cricket
(4) Kabaddi

Solution:3

42. Anti-Sexual Harassment Law (Prevention, Prohibition and Redressal) Act, 2013 came into force in India to protect.
(1) Women at workplace
(2) Transgenders (male)
(3) Child abuse
(4) Live-in-partners

Solution:1

43. Iron is prevented from rusting by coating with zinc. This process is called as
(1) Galvanisation
(2) Corrosion
(3) Sublimation
(4) Reduction

Solution:1

44. Special status to Jammu and Kashmir is given by the Indian Constitution under

the article
(1) 364
(2) 368
(3) 370
(4) 377

Solution:3

45. Where the Central Food Technology and Research Institute (CFTRI) is located ?
(1) Chennai
(2) Mysore
(3) Hyderabad
(4) Bangalore

Solution:2

46. The study of Drugs and their action is known as
(1) Pharmacy
(2) Palaeozoology
(3) Pharmacology
(4) Palaeontology

Solution:3

47. Food crops comprise.
(1) Cotton, Tobacco, Sugarcane
(2) Linseed, Castor, Turmeric
(3) Foodgrains, Pulses, Edible oilseeds
(4) Jute, Cotton, Chillies

Solution:3

48. The first Five Year Plan of the Government of India was based on
(1) Leontief input-output model
(2) Harrod-Domar model
(3) Mahalanobis two-sector model
(4) Mahalanobis four-sector model

Solution:2

49. Which of the followings is not correct ?
(1) PIL – Public Induced Litigation
(2) CNG – Compressed Natural Gas
(3) SIT – Special Investigation Team
(4) KYC – Know Your Customer

Solution:1

50. Find the incorrect match among the
(1) Sir Syed Murtza Khan Aligarh Muslim University
(2) Dr. B.R. Ambedkar Ambedkar University
(3) Pt. Jawaharlal Nehru Jawaharlal Nehru University
(4) Madan Mohan Malviya – Banaras Hindu University

Solution:1

ENGLISH COMPREHENSION

Directions (1-5) : 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.

1. Part of the research program (1)/ involved interviewing teenagers (2)/ in inner-city areas. (3)/ No error (4).

   Solution:2

2. I could not put up at a hotel (1)/ because the board and lodging charges (2)/ were too expensive.(3) /No error (4).

   Solution:4

3. Much harassed (1)/ he left hostel (2)/ bag and baggage. (3)/ No error (4).

   Solution:1

4. The young man (1)/ was surprised (2)/ perhaps a shade scandalized. (3)/ No error (4).

   Solution:4

5. Every boy and every girl (1)/ were given (2)/ a packet of sweets. (3)/ No error (4)

   Solution:2

   Directions (6-10) : In the following questions, sentences are given with blanks to be filled with an appropriate word (s). Four alternatives are suggested for each question. Choose the correct alternative out of-the four as your answer

6. She heard the..... of the hinges.
   (1) rattling
   (2) rustling
   (3) crashing
   (4) creaking

   Solution:4

7. The sound effects .....by the recording director.
   (1) are provided
   (2) being provide
   (3) been provided
   (4) provided

   Solution:1

8. The .....of cotton is very heavy.
   (1) bald
   (2) bail
   (3) bale
   (4) band

   Solution:3

9. The principal has given his..... to the match.
   (1) except
   (2) ascent
   (3) refuse
   (4) assent

   Solution:4

10. The hunter killed two..... for dinner.
    (1) flour
    (2) fowl
    (3) foul
    (4) fool

    Solution:2

Directions (11-13) : In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word as your answer.

11. Honest
    (1) authentic
    (2) upright
    (3) direct
    (4) actual

    Solution:2

12. Vocation
    (1) examination
    (2) seminar
    (3) occupation
    (4) holiday

    Solution:3

13. Cantankerous
    (1) noisy

(2) quarrelsome
(3) rash
(4) disrespectful

Solution:2

Directions (14-16) : In the following questions, choose the word opposite in meaning to the given word as your answer.

14. Fraguality
(1) gaiety
(2) prodigality
(4) captivity
(3) enmity

Solution:2

15. Humane
(1) unkind
(2) living being
(3) person
(4) man

Solution:1

16. Miserable
(1) solitary
(2) happy
(3) active
(4) laudable

Solution:2

Directions (17-21) : In th(following questions, four alternatives are given for the Idiom/Phrase print ed in bold in the sentence, Choose the alternative which best expresses the meaning of the Idiom/Phrase.

17. If you **read between the lines**. you will appreciate what he writes.
(1) can read leaving lines in between
(2) can read a lot quicker
(3) know what the writer thinks
(4) can read and write in the language

Solution:3

18. To throw dust in one's eyes.
(1) to harm someone

(2) to deceive
(3) to show false things
(4) to make blind

Solution:2

19. He is **a cut above** all the other boys in the group.
(1) quite taller than
(2) more active than
(3) a little rougher than
(4) rather superior to

Solution:4

20. As soon as the police arrived, the bank robbers **showed the white flag.**
(1) calmly left the scene
(2) surrendered
(3) ran away
(4) were incensed

Solution:2

21. To cut one short.
(1) to love one
(2) to insult one
(3) to criticise one
(4) to interrupt one

Solution:3

Directions (22-31) : 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).

22. The student's interest was **raised** by an article he had read.
(1) quickened
(2) multiplied
(3) increased
(4) No improvement

Solution:2

23. This telephone number is **not existing.**
(1) has not existed
(2) has not been existing

(3) doles not exist
(4) No improvement

Solution:3

24. Would it be impertinent to **ask why you are leaving** ?
(1) if asking why you are leave
(2) for asking why you are leave
(3) to asking why you are leave
(4) No improvement

Solution:4

25. We **have to know that** we can achieve things slowly and gradually, not overnight.
(1) would know that
(2) had to know that
(3) must know that
(4) No improvement

Solution:3

26. Rajesh's **ability to use** the local language surprised me.
(1) knowing of
(2) confidence with
(3) familiarity with
(4) No improvement

Solution:3

27. I usually **did not take** sugar in my tea.
(1) do not take
(2) do not takes
(3) have not taken
(4) No improvement

Solution:2

28. **Unless they modify the system**, our future generations will suffer.
(1) Unless the system is modified
(2) Unless the system will be modified
(3) If the system will not be modified
(4) No improvement

Solution:1

29. **We did not see** this movie yet.
(1) never seen
(2) have not seen
(3) never have seen
(4) No improvement

Solution:2

30. The sight of the lizard is **hateful** to me.
(1) repulsion
(2) repulsive
(3) repulse
(4) No improvement

Solution:2

31. During his long discourse, he did not **touch** the central idea of the topic.
(1) touch
(2) touch on
(3) touch upon
(4) No improvement

Solution:4

Directions (32-38) : In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentences.

32. The practise of having many wives.
(1) bigamy
(2) calligraphy
(3) polygamy
(4) polyandry

Solution:3

33. Take great pleasure.
(1) revel
(2) satisfied
(3) uphold
(4) overhaul

Solution:1

34. A strong dislike.
(1) reciprocity
(2) entreaty

(3) animosity
(4) malice

Solution:3

35. A frog **lives both on land as well as in water.**
(1) animate
(2) amphibian
(3) aquatic
(4) ambidexterous

Solution:2

36. The Mahabharata is a **long poem based on a noble theme.**
(1) summary
(2) story
(3) narration
(4) epic

Solution:4

37. A person who abstains completely from alcoholic drinks.
(1) teetotaller
(2) derelict
(3) subjunctive
(4) incriminatory

Solution:1

38. Person who files a suit.
(1) charger
(2) suitor
(3) plaintiff
(4) accuser

Solution:3

Directions (39-40) : 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.

39. (1) misionerry
(2) missionary
(3) misionary
(4) missionnary

Solution:2

40. (1) propellar
(2) propeler
(3) propeller
(4) propelre

Solution:3

Directions (41-50) : 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-1

(Q. Nos. 41 to 45)

The reports published by a Delhi based non-governmental organization working for the elimination of child labour in India suggest that there is no end in sight to the sordid saga of child labour. The studies conducted reveal the nightmarish ordeals that a vast majority of children undergo for getting the basic necessities of life. One of the activists narrated the heart-rending and shocking stories of many hapless children. He accused the society of insensitivity towards this vulnerable section.

It is said that more than five percent of the total Indian population are child workers. Tens of thousands are chiefly engaged in agriculture in rural areas and in a variety of industries in urban areas. Children as young as seven years of age spend days stitching footballs, boxing and cricket gloves for export. Many children spend their entire childhood making carpets with their dexterous hands. Unofficial figures suggest that as many as 40 to 100 million children work in hazardous industries like glassware, fireworks, quarries etc. Many of them have been forced to work in unhygienic conditions often on a casual basis.

41. .....of children work in hazardous conditions.
(1) Many
(2) Millions
(3) Five percent
(4) Thousands

Solution:2

42. The society is accused of .....towards the problem of child labour.
(1) reports
(2) vulnerability
(3) insensitivity
(4) bias

Solution:3

43. The word heart-rending means.....
(1) risky
(2) distressing
(3) shocking
(4) painful

Solution:2

44. The report was published by.....
(1) a Delhi based non-governmental organization
(2) the Delhi government
(3) a governmental organization
(4) an activist

Solution:1

45. Their childhood is spent in..... conditions.
(1) vast
(2) nightmarish
(3) hapless
(4) urban

Solution:3

PASSAGE-II

(Q. Nos.46-50)

The advent of electric power was, in a way, comparable to the successful development and application of nuclear power in the 20th century. In fact, the historical roots of electricity extend far back into antiquity. Many men had a hand both in acquring basic knowledge about the invisible form of power and in developing the ways adopted for practical purpose. One of the vital keys that helped to unlock the doors leading to the production of electricity was the discovery, in 1831, of the principle of electromagnetic induction. This discovery was made simultaneously by Michael Faladay in England and Joseph Henry in the United States. From it came the generator, sometimes also called the dynamo but several decades of development had to fol low before the first practical dynamos or generator came into existence in early 1870.

46. According to the author.
(1) Michael Faraday and Joseph Henry revolutionized elecricity in the USA
(2) Nuclear power and electricity were discovered in the 20th century
(3) The discovery of the principle of electromagnetic induction was not an important discovery
(4) The advent of electric power is equivalent to the application of nuclear power in

the 20th century

Solution:4

47. Michael Faraday and Joseph Henry discovered .....
(1) the application of nuclear power
(2) the generator
(3) the dynamo
(4) the principle of electromagnetic induction

Solution:4

48. Another word for "advent" is.....
(1) discovery
(2) arrival
(3) invention
(4) constitution

Solution:2

49. The generator was also known as the .....
(1) inductor
(2) dynamo
(3) inventor
(4) conductor

Solution:2

50. Give a synonym for "antiquity".
(1) Ancient
(2) Antipathy
(3) Modern
(4) Uniqueness

Solution:1

QUANTITATIVE APTITUDE

1. A can do a piece of work in 16 days and B in 24 days. They take the help of C and three together finish the work in 6 days. If the total remuneration for the work is 400. The amount (in rupees) each will receive, in proportion, to do the work is
   (1) A : 150, B : 100, C : 150
   (2) A : 100, B : 150, C : 150
   (3) A : 150, B : 150, C : 100
   (4) A : 100, B : 150, C : 100

Solution:1

(1) If C alone completes the work in x days, then

$$\frac{1}{16}+\frac{1}{24}+\frac{1}{x}=\frac{1}{6}$$

$$\Rightarrow \frac{1}{x}=\frac{1}{6}-\frac{1}{16}-\frac{1}{24}$$

$$=\frac{8-3-2}{48}=\frac{1}{16}$$

$\Rightarrow x = 16$ days

$\therefore$ Ratio of their remuneration

$$=\frac{1}{16}:\frac{1}{24}:\frac{1}{16}$$

$= 3 : 2 : 3$

$\therefore$ A's remuneration

$$=\frac{3}{8}\times 400 = \text{Rs. } 150$$

$$\text{B's remuneration} = \frac{2}{8}\times 400$$

$= \text{Rs. } 100$

$$\text{C's remuneration} = \frac{3}{8}\times 400$$

$= \text{Rs. } 150$

2. When 75 is added to 75% of a number, the answer is the number. Find 40% of that

number.

(1) 100

(2) 80

(3) 120

(4) 160

Solution:3

(3) If the number be x, then

$$x \times \frac{75}{100} + 75 = x$$

$$\Rightarrow \frac{3x}{4} + 75 = x$$

$$\Rightarrow x - \frac{3x}{4} = 75$$

$$\Rightarrow \frac{x}{4} = 75$$

$$\Rightarrow x = 4 \times 75 = 300$$

$\therefore$ 40% of 300

$$= \frac{300 \times 40}{100} = 120$$

3. A train 50 metres long passes a platform of length 100 metres in 10 seconds. The speed of the train in metre/second is

(1) 50

(2) 10

(3) 15

(4) 20

Solution:3

(3) Speed of train

$$= \frac{\text{Length of (train + platform)}}{\text{Time taken in crossing}}$$

$$= \frac{(50 + 100)}{10}$$

$$= \frac{150}{10} = 15 \text{ m/sec}$$

4. What will come in place of the question mark (?) in the series?
3, 8, 27, 112, (?), 3396
(1) 565
(2) 452
(3) 560
(4) 678

Solution:1

(1) The pattern is :
$3 \times 2 + 2 = 6 + 2 = 8$
$8 \times 3 + 3 = 24 + 3 = 27$
$27 \times 4 + 4 = 108 + 4 = 112$
$112 \times 5 + 5 = 560 + 5 = \boxed{565}$

5. The difference between the compound interest and simple interest on a certain sum for 2 years at 10% per annum is 300. Find the sum.
(1) 31,000
(2) 31,500
(3) 30,000
(4) 30.500

Solution:3

(3) Difference $= \frac{PR^2}{10000}$

$\Rightarrow 300 = \frac{P \times 10 \times 10}{10000}$

$\Rightarrow P = 300 \times 100 = \text{Rs. } 30000$

6. What number should be subtracted from both the terms of the ratio 11 : 15 so as to make it as 2 : 3 ?

(1) 2
(2) 3
(3) 4
(4) 5

Solution:2

(2) Required number = x

$$\therefore \frac{11-x}{15-x} = \frac{2}{3}$$

$$\Rightarrow 33 - 3x = 30 - 2x$$

$$\Rightarrow 3x - 2x = 33 - 30$$

$$\Rightarrow x = 3$$

7. The value of

$$\left(\begin{matrix}\sin^2 7\frac{1}{2}^\circ + \sin^2 82\frac{1}{2}^\circ \\ + \tan^2 2^\circ . \tan^2 88^\circ\end{matrix}\right) \text{ is}$$

(1) 1
(2) 2
(3) 0
(4) 4

Solution:2

(2) $\sin^2 7\frac{1}{2}^\circ + \sin^2 82\frac{1}{2}^\circ$

$+ \tan^2 2^\circ . \tan^2 88^\circ$

$= \sin^2 7\frac{1}{2}^\circ + \sin^2\left(90^\circ - 7\frac{1}{2}^\circ\right) +$

$\tan^2 2^\circ . \tan^2 (90^\circ - 2^\circ)$

$= \sin^2 7\frac{1}{2}^\circ + \cos^2 7\frac{1}{2}^\circ + \tan^2 2^\circ .$

$. \cot^2 2^\circ$

$[\because \sin (90^\circ - \theta) = \cos \theta;$

$\tan (90^\circ - \theta) = \cot \theta]$

$= 1 + 1 = 2$

8. Find the value of $1 - 2\sin^2\theta + \sin^4\theta$.
   (1) $\sin^4\theta$
   (2) $\cos^4\theta$
   (3) $\text{cosec}^4\theta$
   (4) $\sec^4\theta$

Solution:2

(2) $1 - 2\sin^2\theta + \sin^4\theta$
$= (1 - \sin^2\theta)^2 = (\cos^2\theta)^2 = \cos^4\theta$

9. Jasmine allows 4% discount on the marked price of her goods and still earns a profit of 20%. What is the cost price of a shirt if its marked price is 850?
   (1) 650
   (2) 720
   (3) 700
   (4) 680

Solution:4

(4) Cost price of the shirt
= Rs. x

$$\therefore x \times \frac{120}{100} = \frac{850 \times 96}{100}$$

$$\Rightarrow x \times 120 = 850 \times 96$$

$$\Rightarrow x = \frac{850 \times 96}{120} = \text{Rs. } 680$$

10. Selling an item for 1800 at a discount of 10% a shopkeeper had a gain of 200. Had he sold the item without discount the percentage of profit would have been
    (1) 10%
    (2) 20%
    (3) 25%

(4) 30%

Solution:3

(3) Marked price of item

= Rs. x

$$\therefore x \times \frac{90}{100} = 1800$$

$$\Rightarrow x = \frac{1800 \times 100}{90} = \text{Rs. } 2000$$

C.P. of item = 1800 – 200

= Rs. 1600

∴ Required gain percent

$$= \frac{2000 - 1600}{1600} \times 100$$

$$= \frac{400}{1600} \times 100 = 25\%$$

11. A table with marked price 1200 was sold to a customer for 1100. Find the rate of discount allowed on the table.

(1) 9%

(2) $8\frac{1}{3}\%$

(3) $9\frac{1}{3}\%$

(4) 10%

Solution:2

(2) Rate of discount = x%

$$\therefore 1200 \times \frac{x}{100} = 1200 - 1100$$

$$\Rightarrow 12x = 100$$

$$\Rightarrow x = \frac{100}{12} = \frac{25}{3} = 8\frac{1}{3}\%$$

12. Fach of the circles of equal radii with centres A and B pass through the centre of one another circle they cut at C and D then $\angle DBC$ is equal to

(1) 60°

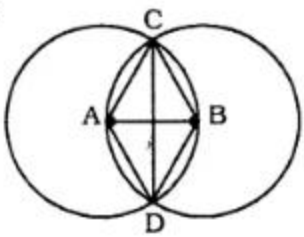
(2) 100°

(3) 120°

(4) 140°

Solution:3

.(3)



In Δ ABD,

AD = BD = AB = radius

In Δ ACB,

AC = CB = AB = radius

$\therefore \angle DBC = 60° + 60° = 120°$

13. A man, a woman and a boy together finish a piece of work in 6 days. If a man and a woman can do the work in 10 and 24 days respectively. The days taken by a boy to finish the work is

(2) 35

(1) 30

(4) 45

(3) 40

Solution:3

(3) Time taken by boy = x days

$$\therefore \frac{1}{10}+\frac{1}{24}+\frac{1}{x}=\frac{1}{6}$$

$$\Rightarrow \frac{1}{x}=\frac{1}{6}-\frac{1}{10}-\frac{1}{24}$$

$$= \frac{20-12-5}{120} = \frac{3}{120} = \frac{1}{40}$$

$\Rightarrow x = 40$ days

14. The average of 11 numbers is 63. If the average of first six numbers is 60 and the last six numbers is 65, then the 6th number is

(1) 57
(2) 60
(3) 62
(4) 64

Solution:1

(1) Sixth number $= 6 \times 60 + 6 \times 65 - 11 \times 63$
$= 360 + 390 - 693 = 57$

15. If $x^2 + \frac{1}{x^2} = 66$, then the value of $\frac{x^2 - 1 + 2x}{x} = ?$

(1) ± 8
(2) 10, – 6
(3) 6, -10
(4) ± 4

Solution:2

(2) $x^2 + \frac{1}{x^2} = 66$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 + 2 = 66$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 66 - 2 = 64$

$\Rightarrow x - \frac{1}{x} = \pm 8$

$\therefore$ Expression $= \frac{x^2 - 1 + 2x}{x}$

$= \frac{x^2}{x} - \frac{1}{x} + 2 = x - \frac{1}{x} + 2$

Putting the value of $x - \frac{1}{x}$

$= 8 + 2$ or $-8 + 2 = 10$ or -6

16. If I be the incentre of ΔABC and $\angle B = 70^\circ$ and $\angle C = 50^\circ$, then the magnitude of $\angle BIC$ is

(1) 130°

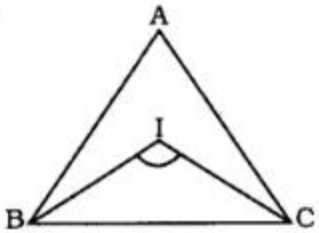
(2) 60°

(3) 120°

(4) 105°

Solution:3

(3)



$\angle IBC = \frac{70°}{2} = 35°;$

$\angle ICB = \frac{50°}{2} = 25°;$

$\therefore \angle BIC = 180° - 35° - 25°$

$= 180° - 60°$

$= 120°$

17. For a triangle ABC, D. E. F are the mid-points of its sides. If $\Delta ABC = 24$ sq. units then ΔDEF is

(1) 4 sq. units

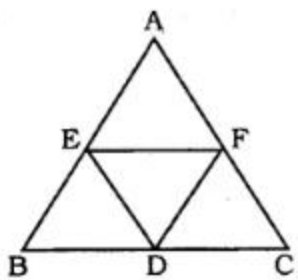
(2) 6 sq. units

(3) 8 sq. units

(4) 12 sq. units

Solution:2

(2)



$\Delta DEF = \frac{1}{4}\Delta ABC$

$= \frac{1}{4} \times 24 = 6$ sq. units

18. If $a^2 + a + 1 = 0$, then the value of a^9 is

(1) 2

(2) 3

(3) 1

(4) 0

Solution:3

(3) $a^2 + a + 1 = 0$

$\Rightarrow (a - 1)(a^2 + a + 1) = 0$

$\Rightarrow a^3 - 1 = 0$

$\Rightarrow a^3 = 1 \Rightarrow a = 1$

$\therefore a^9 = 1$

19. For a triangle circumcentre lies on one of its sides. The triangle is

(1) rigth angled

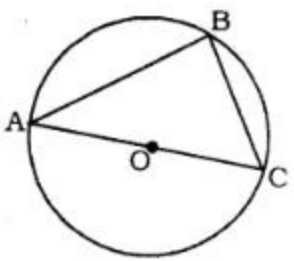
(2) obtused angled

(3) isosceles

(4) equilateral

Solution:1

.(1)



$\angle ABC = 90°$

ΔABC is a right angled triangle and 'O' is the circumcentre.

20. If $x+\frac{2}{x}=1$, then the value of $\frac{x^2+x+2}{x^2(1-x)}$ is

(1) 1
(2) -1
(3) 2
(4) -2

Solution:1

(1) Given, $x+\frac{2}{x}=1$

Expression

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

(Dividing numerator and denominator by x)

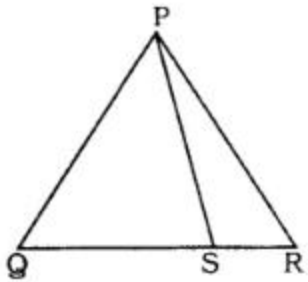
$$=\frac{x+\frac{2}{x}+1}{x(1-x)}=\frac{1+1}{x\times\frac{2}{x}}=\frac{2}{2}=1$$

21. In APQR, the line drawn from the vertex P intersects QR at a point S. If QR = 4.5 cm and SR = 1.5 cm then the ratios of the area of triangle PQS and triangle PSR is

(1) 4 : 1
(2) 3 : 1
(3) 3 : 2
(4) 2 : 1

Solution:4

(4)



$QR = 4.5$ cm

$SR = 1.5$ cm

$\therefore QS = 4.5 - 1.5 = 3$ cm

$$\frac{\Delta PQS}{\Delta PSR} = \frac{\frac{1}{2} \times h \times QS}{\frac{1}{2} \times h \times SR}$$

$$= \frac{3}{1.5} = 2 : 1$$

22. The angle in a semi-circle is
(1) a reflex angle
(2) an obtuse angle
(3) an acute angle
(4) a right angle

Solution:4

(4) Angle in a semi-circle is a right angle.

23. If $x = k^3 - 3k^2$ and $y = 1 - 3k$, then for what value of k. will be $x = y$?
(1) 0
(2) 1
(3) -1
(4) 2

Solution:2

(2) $x = k^3 - 3k^2$

$y = 1 - 3k$

When $x = y$, then

$k^3 - 3k^2 = 1 - 3k$

$\Rightarrow k^3 - 3k^2 + 3k - 1 = 0$

$\Rightarrow (k - 1)^3 = 0 \Rightarrow k - 1 = 0$

$\Rightarrow k = 1$

24. The marked price of an article is 500. A shopkeeper gives a discount of 5% and still makes a profit of 25%. The cost price of the article is.
(1) 384
(2) 380
(3) 300
(4) 376

Solution:2

(2) Cost price of the article

= Rs. x

$$\therefore x \times \frac{125}{100} = \frac{500 \times 95}{100}$$

$$\Rightarrow x = \frac{500 \times 95}{125} = \text{Rs. } 380$$

25. A can do a piece of work in 12 days and B in 15 days. They work together for 5 days and then B left. The days taken by A to finish the remaining work is
(1) 3
(2) 5
(3) 10
(4) 12

Solution:1

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

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

$$= 5\times\frac{9}{60} = \frac{9}{12} = \frac{3}{4}$$

Remaining work $= 1-\frac{3}{4} = \frac{1}{4}$

$\therefore$ Time taken by A

$$= \frac{1}{4}\times 12 = 3 \text{ days}$$

26. The simplest value of cot 9° cot 27° cot 63′ cot 81° is
(1) 0
(2) 1
(3) -1
(4) √3

Solution:2
(2) Expression

$$= \cot 9^\circ.\cot 27^\circ.\cot 63^\circ.\cot 81^\circ$$
$$= \cot 9^\circ.\cot 27^\circ.\cot(90^\circ-27^\circ).\cot(90^\circ-9^\circ)$$
$$= \cot 9^\circ.\cot 27^\circ.\tan 27^\circ.\tan 9^\circ$$

[tan (90° – θ) = cot θ; cot (90° – θ) = tan θ]

$$= \cot 9^\circ.\tan 9^\circ.\cot 27^\circ\tan 27^\circ$$
$$= 1 \quad [\tan\theta.\cot\theta = 1]$$

27. $55^3 + 17^3 - 72^3 + 201960$ is equal to
(1) -1

(2) 0

(3) 1

(4) 17

Solution:2

(2) $a = 55, b = 17, c = -72$

$a + b + c = 55 + 17 - 72 = 0$

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

28. If $(1 + \sin A)(1 + \sin B)(1 + \sin C) = (1 - \sin A)(1 - \sin B)(1 - \sin C)$, $0 < A, B, C < \pi/2$ then each side is equal to

(1) sin A sin B sin C

(2) cos A cos B cos C

(3) tan A tan B tan C

(4) 1

Solution:2

(2) $(1 + \sin A)(1 + \sin B)(1 + \sin C) = (1 - \sin A) \cdot (1 - \sin B)(1 - \sin C) = x$ (Let)

$\therefore x \cdot x = (1 + \sin A)(1 + \sin B)(1 + \sin C)(1 - \sin A)(1 - \sin B)(1 - \sin C)$

$\Rightarrow x^2 = (1 - \sin^2 A)(1 - \sin^2 B)(1 - \sin^2 C)$

$\Rightarrow x^2 = \cos^2 A \cdot \cos^2 B \cdot \cos^2 C$

$\Rightarrow x = \pm \cos A \cdot \cos B \cdot \cos C$

$\because 0 < A, B, C < \frac{\pi}{2}$

$\therefore x = \cos A \cdot \cos B \cdot \cos C$

29. A sphere and a hemisphere have the same radius. Then the ratio of their respective total surface areas is

(1) 2 : 1

(2) 1 : 2

(3) 4 : 3
(4) 3 : 4

Solution:3

(3) Radius of sphere = r units

$$\therefore \frac{\text{Surface area of sphere}}{\text{Surface area of hemisphere}}$$

$$= \frac{4\pi r^2}{3\pi r^2} = \frac{4}{3}$$

30. Find the value of

$$\sqrt{(x^2+y^2+z)(x+y-3z)} \quad \div$$

$\sqrt[3]{xy^3z^2}$ when $x = +1, y = -3, z = -1$.

(1) 1
(2) 0
(3) -1
(4) 1

Solution:3

(3) Expression

$$= \frac{\sqrt{(x^2+y^2+z)(x+y-3z)}}{\sqrt[3]{xy^3z^2}}$$

Putting $x = 1, y = -3, z = -1$

$$= \frac{\sqrt{(1+9-1)(1-3+3)}}{\sqrt[3]{1\times -27\times 1}}$$

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

Note : Original question is :

$\sqrt{(x^2+y^2+z)(x-y-3z)} \div \sqrt[3]{xy^3z^2}$

which gives answer $= -\sqrt{7}$

which is not in options.

31. The ratio of the ages of two persons is 4 : 7 and-the age of one of them is greater than that of the otter by 30 years. The sum of their ages (in years) is

(1) 110

(2) 100

(3) 70

(4) 40

Solution:1

(1) Ages of the persons $= 4x$ and $7x$ years.

$\therefore 7x - 4x = 30 \Rightarrow 3x = 30$

$\Rightarrow x = 10$

$\therefore$ Sum of their ages $= 4x + 7x$

$= 11x$ years

$= 11 \times 10 = 110$ years

32. The value of o, which satisfies the equation $\tan^{2\theta} + 3 = 3\sec\theta$, $0° \le \theta < 90°$ is

(1) 15° or 0°

(2) 30° or 0°

(3) 45° or 0°

(4) 60° or 0°

Solution:4

(4) $\tan^2\theta + 3 = 3\sec\theta$

$\Rightarrow \sec^2\theta - 1 + 3 = 3\sec\theta$

$\Rightarrow \sec^2\theta - 3\sec\theta + 2 = 0$

$\Rightarrow \sec^2\theta - 2\sec\theta - \sec\theta + 2 = 0$

$\Rightarrow \sec\theta(\sec\theta - 2) - 1(\sec\theta - 2) = 0$

$\Rightarrow (\sec\theta - 2)(\sec\theta - 1) = 0$

$\Rightarrow \sec\theta = 2$ or 1

$\Rightarrow \theta = 60°$ or $0°$.

33. A right pyramid 6 m hight has a square base of which the diagonal is $\sqrt{1152}$ m. Volume of the pyramid is

(1) 144 m^3

(2) 288 m^3

(3) 576 m^3

(4) 1152 m^3

Solution:4

(4) Area of the base of pyramid

$$= \frac{1}{2} \times (\text{diagonal})^2$$

$$= \frac{1}{2} \times 1152 = 576 \text{ sq.metre}$$

$$\text{Volume of pyramid} = \frac{1}{3} \times \text{Area of base} \times \text{Height}$$

$$= \frac{1}{3} \times 576 \times 6 = 1152 \text{ cu.metre}$$

34. A train running at the speed of 84 km/hr passes a man walking in opposite direction at the speed of 6 km/hr in 4 seconds. What is the length of train (in metre) ?

(1) 150

(2) 120

(3) 100

(4) 90

Solution:3

. (3) Relative speed = (84 + 6)

= 90 kmph

$= \left(90 \times \frac{5}{18}\right)$ m/sec.

= 25 m/sec.

∴ Length of train

= Relative speed × Time

= 25 × 4 = 100 metre

35. If $2^{x-1} + 2^{x+1} = 320$, then the value of x is

(1) 6

(2) 8

(3) 5

(4) 7

Solution:4

(4) $2^{x-1} + 2^{x+1} = 320$

$\Rightarrow 2^{x-1}\left(1 + 2^2\right) = 320$

$\Rightarrow 2^{x-1} \times 5 = 320$

$\Rightarrow 2^{x-1} = \frac{320}{5} = 64 \Rightarrow 2^{x-1} = 2^6$

$\Rightarrow x - 1 = 6 \Rightarrow x = 7$

36. Among the angles 30°, 36°, 45°, 50° one angle cannot be an exterior angle of a regular polygon. The angle is

(1) 30°

(2) 36°

(3) 45°

(4) 50°

Solution:4

(4) Sum of exterior angles of a regular polygon = 360°

But $\frac{360^\circ}{50} = 7.2 \neq$ a whole number.

37. If $\sin\theta = 0.7$, then $\cos\theta$, $0 \leq \theta < 90^\circ$, is
(1) 0.3
(2) $\sqrt{0.49}$
(3) $\sqrt{0.51}$
(4) $\sqrt{0.9}$

Solution:3

(3) $\sin\theta = 0.7$

$\therefore \cos\theta$

$= \sqrt{1 - \sin^2\theta} = \sqrt{1 - (0.7)^2}$

$= \sqrt{1 - 0.49} = \sqrt{0.51}$

38. If a = 4011 and b = 3989 then value of ab = ?
(1) 15999879
(2) 15899879
(3) 15989979
(4) 15998879

Solution:1

(1) $a = 4011, b = 3989$

$\therefore ab = 4011 \times 3989$

$= (4000 + 11)(4000 - 11)$

$= (4000)^2 - (11)^2$

$= 16000000 - 121$

$= 15999879$

39. The value of $\sin^2 65^\circ + \sin^2 25^\circ + \cos^2 35^\circ + \cos^2 55^\circ$ is

(1) 0

(2) 1

(3) 2

(4) 1/2

Solution:3

(3) Expression $= \sin^2 65^\circ + \sin^2 25^\circ + \cos^2 35^\circ + \cos^2 55^\circ$

$= \sin^2 65^\circ + \sin^2 (90^\circ - 65^\circ) + \cos^2 35^\circ + \cos^2 (90^\circ - 35^\circ)$

$= \sin^2 65^\circ + \cos^2 65^\circ + \cos^2 35^\circ + \sin^2 35^\circ$

$= 1 + 1 = 2$

40. In the following number series a wrong number is given. Find out that number.

8, 18, 40, 86, 178, 370, 752

(1) 178

(2) 180

(3) 128

(4) 156

Solution:1

(1) The pattern is :

$8 \times 2 + 2 = 16 + 2 = 18$

$18 \times 2 + 4 = 36 + 4 = 40$

$40 \times 2 + 6 = 80 + 6 = 86$

$86 \times 2 + 8 = 172 + 8$

$= \boxed{180} \neq 178$

$180 \times 2 + 10 = 360 + 10 = 370$

41. If the ratio of volumes of two cones is 2 : 3 and the ratio of the radii of their bases is 1 : 2, then the ratio of their heights will be

(1) 8 : 3

(2) 3 : 8
(3) 4 : 3
(4) 3 : 4

Solution:1

(1)

$$\frac{V_1}{V_2} = \frac{\frac{1}{3}\pi r_1^2 h_1}{\frac{1}{3}\pi r_2^2 h_2} = \left(\frac{r_1}{r_2}\right)^2 \times \frac{h_1}{h_2}$$

$$\Rightarrow \frac{2}{3} = \left(\frac{1}{2}\right)^2 \times \frac{h_1}{h_2}$$

$$\Rightarrow \frac{h_1}{h_2} = \frac{2}{3} \times 4 = \frac{8}{3}$$

42. 3 years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is same today. The present age of the baby is
(1) 1 year
(2) 1.5 year
(3) 2 years
(4) 3 years

Solution:3

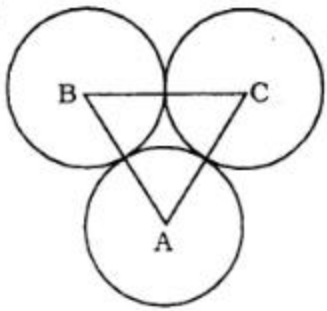
(3) Present age of child
= 17 × 6 – (17 × 5 + 3 × 5)
= 102 – (85 + 15) = 102 – 100
= 2 years

43. The three equal circles touch each other externally. If the centres of these circles be A, B, C then ABC is
(1) a right angle triangle
(2) an equilateral triangle

(3) an isosceles triangle
(4) a scalene triangle

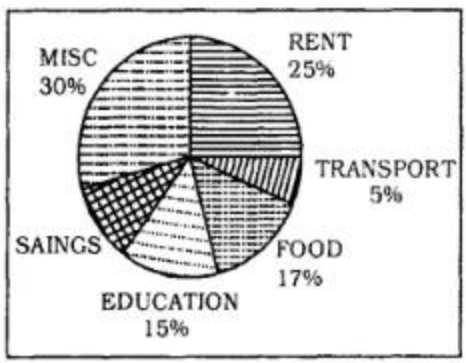
Solution:2

(2)



Radius of each circle = r units
$\therefore$ AB = BC = CA = $2r$ units

Directions (44-47) : The adjoining pie-chart shows the proportional expenditure on various items of Amar's family. If monthly income of Amar is 48,000, answer the questions.



44. Had his income be 40,000 how much would be spent on food ?
(1) 14,960
(2) 1,360
(3) 8,160
(4) 6,800

Solution:4

(4) Expenses on food

$$= 40000 \times \frac{17}{100} = \text{Rs. } 6800$$

45. If 10% of miscellaneous expenditure is earmarked for clothing, how much amount is spent on clothes ?
(1) 14,400
(2) 1,440
(3) 2,880
(4) 15,840

Solution:2

(2) Expenses on clothes

$$= 48000 \times \frac{30}{100} \times \frac{10}{100}$$

$$= \text{Rs. } 1440$$

46. How much does he save per month ?
(1) 7,200
(2) 14,400
(3) 3,840
(4) 2,400

Solution:3

(3) Savings per month = 8%

$\therefore$ Required savings

$$= \frac{48000 \times 8}{100} = \text{Rs. } 3840$$

47. How much does he spend more on rent than on transport and education taken together ?

(1) 2,400
(2) 9,600
(3) 4,800
(4) 12,000

Solution:1

. (1) Difference of percentage

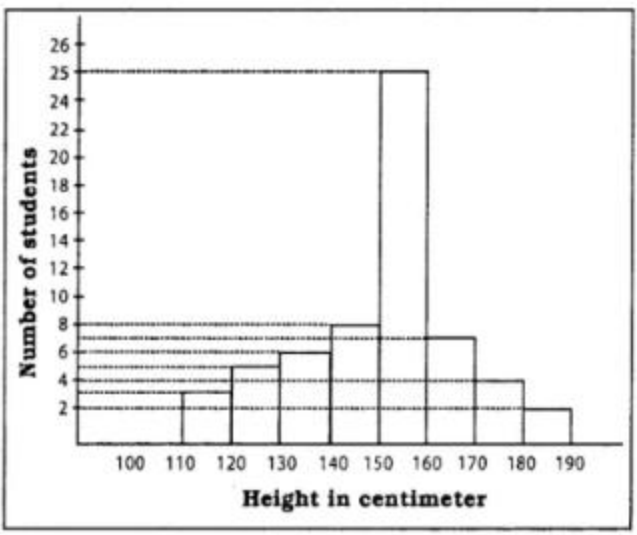
$= 25 - (5 + 15) = 5\%$

$\therefore$ Required difference

$= \frac{48000 \times 5}{100}$

$= \text{Rs. } 2400$

Directions (48-50) : Following histogram depicts the range of heights of students in a class of 60 students. Study the same and answer the questions.



48. The number of students having height more than 150 cms is
(1) 25
(2) 8
(3) 38
(4) 13

Solution:3

.(3) Required number of students = 25 + 7 + 4 + 2 = 38

49. The number of students with their heights between 130 to 150 cms is
(1) 8
(2) 6
(3) 14
(4) 22

Solution:3

.(3) Required number of students = 6 + 8 = 14

50. Group which contains maximum number of students is
(1) 130- 140
(2) 150- 160
(3) 140 – 150
(4) 160 – 170

Solution:2

.(2) Number of students in 150 – 160 class interval = 25