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SSC COMBINED GRADUATE LEVEL TIER-I EXAM, 26-06-2011 (2ND SITTING) – PREVIOUS YEAR PAPER

GENERAL AWARENESS

1. The reserves held by Commercial Banks over and above the statutory minimum, with the RBI are called
(1) Cash reserves
(2) Deposit reserves
(3) Excess reserves
(4) Momentary reserves

Solution : 3

2. Who is authorised to issue coins in India ?
(1) Reserve Bank of India
(2) Ministry of Finance
(3) State Bank of India
(4) Indian Overseas Bank

Solution : 2

3. Which four countries are called the Asian Tigers ?
(1) Hong Kong, Singapore, South Korea, Taiwan
(2) Hong Kong, China, Singapore, Taiwan
(3) Hong Kong, Malaysia, Singapore, China
(4) Hong Kong, South Korea, China, Taiwan

Solution : 1

4. In the Budget Estimates for 2011-12, an allocation of 300 crore has been made for promoting output of pulses in 60,000 villages in miffed areas with a view to, attaining self sufficiency in pulses in a period of
(1) two years
(2) three years
(3) four years
(4) five years

Solution : 2

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5. In the budget for 2011-12 presented by the Finance Minister on 28-2-2011, the growth rate for the year 2010-11 was projected at
(1) 7.6%
(2) 8.0%
(3) 8.6%
(4) 9.0%

Solution : 3

6. The 'break-even' point is where
(1) marginal revenue equals marginal cost
(2) average revenue equals average cost
(3) total revenue equals total cost
(4) None of the above

Solution : 3

7. The method of Impeachment of the President of India is adopted from
(I) U.S.A.
(2) U.K.
(3) U.S.S.R.
(4) France

Solution : 1

8. In the Eighth Schedule of the Constitution of India, which languages were added subsequently?
(1) English, Sindhi, Marathi, Sanskrit
(2) Sanskrit, Sindhi, Konkani, Manipuri
(3) Sindhi, Konkani, Manipuri, Nepali
(4) Marathi, Oriya, Konkani, Nepali

Solution : 3

9. Indian Parliament Means
(1) Rajya Sabha – Lok Sabha
(2) Rajya Sabha – Lok Sabha Prime Minister
(3) President of India – Rajya Sabha – Lok Sabha
(4) President of India – Vice-President of India – Lok Sabha Rajya Sabha

Solution : 3

10. Generally, the soil of the northern plains of India has been formed by
(1) degradation
(2) aggradation
(3) weathering in situ
(4) erosion

Solution : 2

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11. Hiuen Tsang visited India during the reign of
(1) Chandragupta I
(2) Chandragupta II
(3) Harshavardhana
(4) Rudradaman

Solution : 3

12. The Muslim adventurer who destroyed the Nalanda University was
(1) Alla-ud-din Khilji
(2) Muhammad-bin-Tughlak
(3) Muhammad-bin-Bhaktiyar
(4) Muhammad-bin-Quasim

Solution : 3

13. Painting reached its highest level of development during the reign of
(1) Akbar
(2) Aurangzeb
(3) Jahangir
(4) Shah Jahan

Solution : 3

14. The communal electorate was introduced for the first time in India in
(1) 1919
(2) 1935
(3) 1906
(4) 1909

Solution : 4

15. The two states which had non-Congress Ministries in 1937 were
(1) Bengal and Punjab
(2) Punjab and NWFP
(3) Madras and Central Provinces
(4) Bihar and Uttar Pradesh

Solution : 1

16. Sea breeze is formed during
(1) Day time
(2) Night time
(3) Both
(4) Seasonal

Solution : 1

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17. What percentage of world's freshwater is stored as glacial ice ?
(1) 50%
(2) 10%
(3) 70%
(4) 30%

Solution : 3

18. Which one of the following rivers of India does not make a delta ?
(1) Ganges
(2) Godavari
(3) Mahanadi
(4) Tapti

Solution : 4

19. Which one of the following state has the longest coastline ?
(1) Maharashtra
(2) Tamil Nadu
(3) Gujarat
(4) Andhra Pradesh

Solution : 3

20. The pass located in Himachal Pradesh is
(1) Shipldla
(2) Zojila
(3) Nathula
(4) Jelepla

Solution : 1

21. Match the following and select the correct answer from the codes given below :

Crops	**Producing state**
(1) Tea	(1) HimachalPradesh
(2) Sugarcane	(2) Assam
(3) Groundnut	(3) Uttar Pradesh
(4) Apple	(4) Gujarat

(1) a-2, b-4, c-1, d-3
(2) a-2, b-3, c-4, d-1
(3) a-3, b-2, c-1, d-4
(4) a-4, b-3, c-1, d-2

Solution : 2

22. An example of false fruit is
(1) Apple
(2) Guava

(3) Mango
(4) Tomato

Solution : 1

23. Normal fasting blood sugar level per 100 nil. of blood in man is
(1) 30 – 50 mg
(2) 50 – 70 mg
(3) 80 -100 mg
(4) 120 -140 mg

Solution : 3

24. Rate of interest is determined by
(1) The rate of return on the capital invested
(2) Central Government
(3) Liquidity preference
(4) Commercial Banks

Solution : 3

25. The vector of disease sleeping sickness is
(1) sand-fly
(2) house-fly
(3) fruit-fly
(4) tse-tse fly

Solution : 4

26. For how many years have the dinosaurs been extinct ?
(1) About 25 million years
(2) About 65 million years
(3) About 100 million years
(4) About 135 million years

Solution : 2

27. A geostationary satellite revolves round the earth from
(1) East to West
(2) West to East
(3) North to South
(4) South to North

Solution : 2

28. Among the following materials sound travels fastest in
(1) Steel
(2) Air

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(3) Vacuum
(4) Water

Solution : 1

29. The rear side of the moon was photographed by
(1) Viking I
(2) Viking II
(3) Luna III
(4) Mariner IX

Solution : 3

30. Which phenomenon do bats or dolphins use to find prey, predators or obstacles ?
(1) Refraction of sound
(2) Formation of beats
(3) Scattering of sound
(4) Echo location

Solution : 4

31. What did the first electronic digital computer contain?
(1) Transistors
(2) Valves
(3) Core memory .,
(4) Semiconductor memory

Solution : 2

32. Microsoft Office's personal information manager is
(1) Outlook
(2) Internet Explorer
(3) Organizer
(4) Access

Solution : 1

33. Hard steel contains
(1) 2 to 5 per cent carbon
(2) 0.5 to 1.5 per cent carbon
(3) 0.1 to 0.4 per cent carbon
(4) 0.01 to 0.04 per cent carbon

Solution : 2

34. Cement is formed by strongly heating a mixture of
(1) limestone and graphite
(2) limestone and clay

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(3) chalk and graphite
(4) clay and graphite

Solution : 2

35. Glass is a
(1) superheated solid
(2) supercooled liquid
(3) supercooled gas
(4) superheated liquid

Solution : 2

36. The temperature of oxy-acetylene flame is around
(1) 2800°C
(2) 3200°C
(3) 4000°C
(4) 1500°C

Solution : 2

37. Which is the most stable ecosystem ?
(1) Desert
(2) Ocean
(3) Mountain
(4) Forest

Solution : 1

38. Lambert's law is related to
(1) Reflection
(2) Refraction
(3) Interference
(4) Illumination

Solution : 4

39. The coral reefs are the marine counterparts of
(1) Temperate forests
(2) Tropical rain forests
(3) Savannahs
(4) Scrubland

Solution : 2

40. The Refrigerant 'FREON' is
(1) Calcium Tetra Fluoride
(2) Difluoro Dichloro Methane

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(3) Fluorspar and Felspar
(4) Hydrofluosilicic Acid

Solution : 2

41. In the budget speech on February 28, 2011, the Finance Minister has announced that an international award with prize money of 't 1 crore is being instituted in the memory of Rabindranath Tagore for promoting
(1) international peace
(2) emancipation of underprivileged
(3) universal brotherhood
(4) human rights

Solution : 3

42. The strong earthquake-cum-tsunami which has moved Japan's main island Honshu by a few feet has also caused Earth's axis to wobble by about
(1) 1 inch
(2) 2 inches
(3) 4 inches
(4) 6 inches

Solution : 3

43. WIKILEAKS, a whistleblowers website is an international organisation based in
(1) U.S.A.
(2) U.K.
(3) Sweden
(4) Norway

Solution : 3

44. 'Nomadic Elephant' was the joint military exercise held some time back in India between India and
(1) China
(2) U.S.A.
(3) Russia
(4) Mongolia

Solution : 4

45. The maximum limit on poll expenditure for parliamentary constituencies has been , raised in February, 2011 to
(1) 30 lakhs
(2) 35 lakhs
(3) 40 lakhs
(4) 50 lakhs

Solution : 3

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46. Who received Sangeet Natak Akademi's Ustad Bismillah Khan Yuva Puraskar for Dance in 2009 ?
(1) Omkar Shrikant Dadarkar
(2) Ragini Chander Sarkar
(3) Abanti Chakravorty and Sukracharya Rabha
(4) K. Nellai Manikandan

Solution : 2

47. Which of the following folk dances is associated'with Jammu and Kashmir ?
(1) Jhora
(2) Veedhi
(3) Rauf
(4) Suisini

Solution : 3

48. Which of the following books has been written by Kamala Das ?
(1) Witness the Night
(2) The Red Devil
(3) Earth and Ashes
(4) Tonight This Savage Rite

Solution : 4

49. Who invented the Jet Engine ?
(1) Karl Benz
(2) Sir Frank Whittle
(3) Thomas Savery
(4) Michael Faraday

Solution : 2

50. South-South dialogue is associated with
(1) Co-operation among developing nations
(2) Arms conference
(3) Summit meeting between developed and developing countries
(4) All the above

Solution : 1

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ENGLISH COMPREHENSION

Directions (1- 5) : In the following questions,, some of the sentences have errors and some are correct. Find out which part of a sentence has an error. The number of that part is your answer. If a sentence is free from errors, then your answer is (4) i.e., No error.

1. If you had told me(1) / I would have helped you (2) / solve the problem. (3)/ No error (4)

   Solution : 4

2. "The Arabian Nights" (1) / are indeed (2) / an interesting book. (3) / No error (4)

   Solution : 2

3. He (1) / loved her (2) / dispite of himself. (3) / No error (4)

   Solution : 3

4. Of all the models (1) / Jessica is (2) / the more good-looking one. (3)/ No error (4)

   Solution : 3

5. When I went there (1) / Charles is playing (2) / a game of chess.(3) / No error (4)

   Solution : 2

Directions (6 – 10) : In the following questions, sentences are given with blanks to be filled in with an appropriate words. Four alternatives are suggested for each question. Choose the correct alternative out of the four.

6. _____your instructions, we have closed your bank account.
   (1) In lieu of
   (2) With regard to
   (3) In accordance with
   (4) On account of

   Solution : 3

7. _____she is clever, she often makes mistakes.
   (1) Despite
   (2) Since
   (3) Although
   (4) Yet

   Solution : 3

8. Do you prefer _____or traditional art forms ?
   (1) archaic

(2) contemporary
(3) foreign
(4) simultaneous

Solution : 2

9. The farmers_____ their farms, if they had known that a thunderstorm was approaching.
(1) will leave
(2) would leave
(3) will have left
(4) would have left

Solution : 4

10. The Paralympics is a competition for the_____.
(1) disadvantaged
(2) discouraged
(3) disabled
(4) despised

Solution : 3

Directions (11 – 15) : In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

11. Poignant
(1) showy
(2) sad
(3) silly
(4) snobbish

Solution : 2

12. Querulous
(1) critical
(2) curious
(3) complaining
(4) ambiguous

Solution : 3

13. Audacious
(1) brilliant
(2) powerful
(3) bold
(4) frightening

Solution : 3

14. Perilous
(1) hazardous
(2) rigorous
(3) resilient
(4) requisite

Solution : 1

15. Reverie
(1) determination
(2) day-dream
(3) reality
(4) realization

Solution : 2

Directions (16 – 20) : In the following questions, choose the word opposite in meaning to the given word.

16. Autonomous
(1) self-government
(2) dependent
(3) defensive
(4) neutral

Solution : 2

17. Deceitful
(1) sincere
(2) useful
(3) plain
(4) honest

Solution : 4

18. Exonerate
(1) admit
(2) release
(3) convict
(4) reject

Solution : 3

19. Exaggerate
(1) underwrite
(2) understate
(3) ignore
(4) condemn

Solution : 2

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20. Controversial
(1) indisputable
(2) restrained
(3) controlled
(4) appeasing

Solution : 1

Directions (21 – 25) : In the following questions, four alternatives are given for the meaning of the given Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase.

21. To strain every nerve
(1) to make utmost efforts
(2) to feel weak and tired
(3) to be a diligent worker
(4) to be methodical in work

Solution : 1

22. To flog a dead horse
(1) to whip a dead horse
(2) to attempt to do the impossible
(3) waste one's efforts
(4) to take advantage of a weakness

Solution : 2

23. To show a clean pair of heels
(1) to hide
(2) to escape
(3) to pursue
(4) to follow

Solution : 2

24. To die in harness
(1) premeditated murder
(2) dying young in an accident
(3) to die while in service
(4) to be taken by surprise

Solution : 3

25. To feather one's nest
(1) to make a residential house
(2) something that lasts for a short time

(3) to profit in a dishonest way
(4) None of the above

Solution : 3

Directions (26 – 30) : In the following questions, a sentence or bold part thereof is given which may need improvement. Alternatives are given at (1), (2) and (3) below, which may be a better option. In case no im provement is needed, your answer is (4).

26. A taller Sikh rushed forward than any of his comrades.
(1) A Sikh, taller than any of his comrades, rushed forward
(2) A Sikh rushed forward taller than any of his comrades
(3) A Sikh rushed forward than any of his comrades taller
(4) No improvement

Solution : 1

27. An author in the reign of Queen Anne who was famous lived in a cottage.
(1) An author in the reign, who was famous, of Queen Anne lived in a cottage
(2) In the reign of Queen Anne, an author lived in a cottage, who was famous
(3) An author who was famous in the reign of Queen Anne lived in a cottage
(4) No improvement

Solution : 3

28. In the absence of your support, he would have lost the election.
(1) Lacking your support, he would have lost the election
(2) But for your support, he would have lost the election
(3) He would have lost the election, if you had not supported him
(4) No improvement

Solution : 3

29. My uncle is enough rich to buy a car.
(1) My uncle is rich enough to buy a car
(2) My uncle is richer enough to by a car
(3) My uncle is enough richer to buy a car
(4) No improvement

Solution : 1

30. Walking along the road, an old man ran over the lorry.
(1) Walking along the road, an old man ran behind the lorry
(2) Running along the road, the lorry ran over an old man
(3) The lorry ran over an old man walking along the road
(4) No improvement

Solution : 3

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Directions (31 – 35) : In the following questions, groups of four words are given. In each group, one word is correctly spelt. Find the correctly spelt word.

31. (1) persistance
(2) thesaurus
(3) conspicous
(4) renaisance

Solution : 2

32. (1) acoustic
(2) norcoctic
(3) pesirnist
(4) permentant

Solution : 1

33. (1) impetous
(2) ignoable
(3) ingnorninious
(4) idiosyncresy

Solution : 3

34. (1) inconsistant
(2) repentant
(3) exponant
(4) excultent

Solution : 2

35. (1) demagogue
(2) deliverence
(3) delinquancy
(4) delibarative

Solution : 1

Directions (36 – 40) : In the following questions, out of the four alterna-tives, choose the one which can be substituted for the given words/sentences.

36. A person who has no money to pay off his debts
(1) Insolvent
(2) Poor
(3) Destitute
(4) Pauper

Solution : 1

37. Words uttered impiously about God
(1) amoral

(2) philosophy
(3) logic
(4) blasphemy

Solution : 4

38. Quibble
(1) Premeditate
(2) Prenominate
(3) Prevaricate
(4) Preponderate

Solution : 3

39. One who compiles a dictionary
(1) geographer
(2) lexicographer
(3) lapidist
(4) linguist

Solution : 2

40. A test in which cells from dis eased organs are removed and tested
(1) Biopsy
(2) Autopsy
(3) Operation
(4) Amputation

Solution : 1

Directions (41 – 50) : In the following passage, some of the words have been left out. First read the passage over and try to understand what it is about. Then fill in the blanks with the help of the alternatives given.

PASSAGE

A (41) becomes a flowing stream only (42) there is continuity of (43) life in a society. In (44) words, a (45) culture comes into (46)when people (47) a continuous way of life. Such (48) expresses itself (49) in various ways in common traditions and (50) of conduct.

41. (1) civilization
(2) culture
(3) idea
(4) philosophy

Solution : 2

42. (1) at
(2) what

(3) when
(4) as

Solution : 3

43. (1) individual
(2) nature's
(3) society's
(4) collective

Solution : 2

44. (1) different
(2) difficult
(3) other
(4) many

Solution : 3

45. (1) distinctive
(2) unique
(3) clear
(4) foggy

Solution : 1

46. (1) phase
(2) existence
(3) action
(4) thinking

Solution : 2

47. (1) develop
(2) create
(3) follow
(4) end

Solution : 3

48. (1) inconsistency
(2) uniqueness
(3) greatness
(4) continuity

Solution : 4

49. (1) in
(2) of

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(3) with
(4) at

Solution : 1

50. (1) rules
(2) regulations
(3) norms
(4) laws

Solution : 3

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NUMERICAL APTITUDE

1. A hemisphere and a cone have equal bases. If their heights are also equal, the ratio of their curved surfaces will be

(1) 1: √2

(2) √2 : 1

(3) 1 : 2

(4) 2 : 1

Solution : 2

(2) Let the radius of the base of hemisphere be r units.
Radius of the base of cone = r units and $h = r$ units
Slant height

$= \sqrt{r^2 + r^2} = \sqrt{2r^2} = \sqrt{2}r$

Curved surface of hemisphere :
Curved surface of cone

$= 2\pi r^2 : \pi r \times \sqrt{2}r$

$= 2 : \sqrt{2} = \sqrt{2} : 1$

2. If $x = \sqrt{\frac{\sqrt{5}+1}{\sqrt{5}-1}}$, then, the value of $5x^2 - 5x - 1$ is

(1) 0

(2) 3

(3) 4

(4) 5

Solution : 3

(3)

$$x = \sqrt{\frac{\sqrt{5}+1}{\sqrt{5}-1} \times \frac{\sqrt{5}+1}{\sqrt{5}+1}} = \sqrt{\frac{(\sqrt{5}+1)^2}{5-1}}$$

$$= \sqrt{\frac{(\sqrt{5}+1)^2}{4}} = \frac{\sqrt{5}+1}{2}$$

$\therefore 5x^2 - 5x - 1$

$$= 5\left(\frac{(\sqrt{5}+1}{2}\right)^2 - 5\frac{(\sqrt{5}+1)}{2} - 1$$

$$= 5\left(\frac{5+1+2\sqrt{5}}{4}\right) - \frac{5\sqrt{5}+5}{2} - 1$$

$$= 5\left(\frac{3+\sqrt{5}}{2}\right) - \frac{5\sqrt{5}+5}{2} - 1$$

$$= \frac{15+5\sqrt{5}-5\sqrt{5}-5-2}{2}$$

$$= \frac{8}{2} = 4$$

3. When 2^{33} is divided by 10, the remainder will be

(1) 2

(2) 3

(3) 4

(4) 8

Solution : 1

(1) $2^1 = 2$; $2^2 = 4$; $2^3 = 8$;
$2^4 = 16$; $2^5 = 32$
i.e. The unit's digits repeats if-self after power 4.
Remainder after we divide 33 by 4 = 1
Unit's digit in the product of 2 = 2
Remainder on division by 10 = 2

4. The value of $3 + \cfrac{3}{3 + \cfrac{1}{3 + \frac{1}{3}}}$ is

(1) $\frac{40}{11}$

(2) $\frac{43}{11}$

(3) $\frac{46}{11}$

(4) $\frac{41}{11}$

Solution : 2

(2) Expression $= 3 + \cfrac{3}{3 + \cfrac{1}{\cfrac{9+1}{3}}}$

$$= 3 + \frac{3}{3 + \frac{3}{10}} = 3 + \frac{3}{\frac{30+3}{10}}$$

$$= 3 + \frac{30}{33} = 3 + \frac{10}{11} = \frac{33+10}{11} = \frac{43}{11}$$

5. Find the unit digit in the product
$(4387)^{245} \times (621)^{72}$.
(1) 1
(2) 2
(2) 5
(4) 7

Solution : 4

(4) $7^1 = 7$; $7^2 = 49$; $7^3 = 343$;
$7^4 = 2401$; $7^5 = 16807$

i.e. The unit's digit repeats itself after power 4.
Remainder after we divide 245 by 4 = 1
$\therefore$ Unit's digit in the product of $(4387)^{245} \times (621)^{72}$ = Unit's digit in the product of $(4387)^1 \times (621)^{72}$
$= 7 \times 1 = 7$

6. If $\sqrt{2} = 1.4142$, find the value of

$$2\sqrt{2} + \sqrt{2} + \frac{1}{2+\sqrt{2}} + \frac{1}{\sqrt{2}-2}$$

(1) 1.4144
(2) 2.8284
(3) 28.284
(4) 2.4142

Solution : 2

(2) Expression

$$= 2\sqrt{2} + \sqrt{2} + \frac{1}{2+\sqrt{2}} + \frac{1}{\sqrt{2}-2}$$

$$= 2\sqrt{2} + \sqrt{2} + \left(\frac{1}{2+\sqrt{2}} - \frac{1}{2-\sqrt{2}}\right)$$

$$= 2\sqrt{2} + \sqrt{2} + \left(\frac{2-\sqrt{2}-2-\sqrt{2}}{(2+\sqrt{2})(2-\sqrt{2})}\right)$$

$$= 2\sqrt{2} + \sqrt{2} + \frac{-2\sqrt{2}}{4-2}$$

$$= 2\sqrt{2} + \sqrt{2} - \sqrt{2} = 2\sqrt{2}$$
$$= 2 \times 1.4142 = 2.8284$$

7. If $X * Y = X^2 + Y^2 - XY$ then $11 * 13$ is
(1) 117
(2) 147
(3) 290
(4) 433

Solution : 2

(2) $X \star Y = X^2 + Y^2 - XY$
$11 \star 13 = 11^2 + 13^2 - 11 \times 13$
$= 121 + 169 - 143 = 147$

8. The value of $\frac{(3.2)^3 - 0.008}{(3.2)^2 + 0.64 + 0.04}$ is
(1) 0
(2) 2.994
(3) 3.208
(4) 3

Solution : 4

. (4) Expression

$$= \frac{(3.2)^3 - (0.2)^3}{(3.2)^2 + 3.2 \times 0.2 + (0.2)^2}$$

Let $3.2 = a$ and $0.2 = b$

$$\text{Expression} = \frac{a^3 - b^3}{a^2 + ab + b^2}$$

$$= \frac{(a-b)(a^2 + ab + b^2)}{a^2 + ab + b^2} = a - b$$

$= 3.2 - 0.2 = 3$

9. If $a^{1/3} = 11$, then the value of $a^2 - 331a$ is

(1) 1331331

(2) 1331000

(3) 1334331

(4) 1330030

Solution : 2

. (2) $a^{\frac{1}{3}} = 11 \Rightarrow a = 11^3 = 1331$

. $a^2 - 331a = a(a - 331)$

$= 1331\ (1331 - 331)$

$= 1331 \times 1000 = 1331000$

10. If $\sqrt{1 + \frac{x}{961}} = \frac{32}{31}$, then the value of x is

(1) 63

(2) 61

(3) 65

(4) 64

Solution : 1

. (1) $\sqrt{1 + \frac{x}{961}} = \frac{32}{31}$

Squaring both sides,

$$1 + \frac{x}{961} = \left(\frac{32}{31}\right)^2 = \frac{1024}{961}$$

$$\Rightarrow \frac{x}{961} = \frac{1024}{961} - 1 = \frac{1024 - 961}{961} = \frac{63}{961}$$

$\Rightarrow x = 63$

Note: The Information Provided here is only for reference. It May vary the Original.

11. If a and b are odd numbers, then which of the following is even ?

(1) a + b + ab

(2) a + b − 1

(3) a + b + 1

(4) a + b + 2ab

Solution : 4

(4) The sum of two odd number is even. The same is the case with their product.
$a + b + 2ab$ = Even number

12. 2^{16} -1 is divisible by

(1) 11

(2) 13

(3) 17

(4) 19

Solution : 3

(3) $2^{16} - 1 = (2^8)^2 - 1$
$= (2^8+1)(2^8-1)$
$= (256 + 1)(256 - 1)$
$= 257 \times 255$ which is exactly divisible by 17.

13. The HCF and LCM of two numbers are 12 and 924 respectively. Then the number of such pairs is

(1) 0

(2) 1

(3) 2

(4) 3

Solution : 3

. (3) Let the numbers be $12x$ and $12y$ where x and y are prime to each other.
. LCM = $12xy$
. $12xy = 924$
› $xy = 77$
. Possible pairs = (1,77) and (7,11)

Note: The Information Provided here is only for reference. It May vary the Original.

14. What is the least number which, when divided by 5, 6, 7, 8 gives the remainder 3 but is divisible by 9 ?

(1) 1463

(2) 1573

(3) 1683

(4) 1793

Solution : 3

(3) LCM of 5, 6, 7, 8 = 35 × 24
= 840
Required number = 840 k + 3
which is exactly divisible by 9.
For k = 2, it is divisible by 9.
Required number = 840k + 3
= 840 × 2 + 3 = 1683

15. Three numbers are in the ratio 3 : 4 : 5. The sum of the largest and the smallest equals the sum of the second and 52. The smallest number is

(1) 20

(2) 27

(3) 39

(4) 52

Solution : 3

(3) Let the numbers be $3x$, $4x$ and $5x$.
$\therefore\ 5x + 3x = 4x + 52$
$\Rightarrow\ 4x = 52 \Rightarrow x = 13$
$\therefore$ The smallest number
$= 3x = 3 \times 13 = 39$

16. If the radius of a circle is increased by 50%, its area is increased by

(1) 125%

(2) 100%

(3) 75%

(4) 50%

Solution : 3

(3) Percentage increase in area

$$= \left(50 + 50 - \frac{50 \times 50}{100}\right)\% = 75\%$$

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17. A and B working separately can do a piece of work in 9 and 12 days respectively. If they work for a day alternately with A beginning, the work would be completed in

(1) $10\frac{2}{3}$ days

(2) $10\frac{1}{2}$ days

(3) $10\frac{1}{4}$ days

(4) $10\frac{1}{3}$ days

Solution : 3

. (3) Part of work done by A and B in first two days

$$= \frac{1}{9} + \frac{1}{12} = \frac{4+3}{36} = \frac{7}{36}$$

Part of work done in first 10 days

$$= \frac{35}{36}$$

Remaining work $= 1 - \frac{35}{36} = \frac{1}{36}$

Now it is the turn of A.

. Time taken by A

$$= \frac{1}{36} \times 9 = \frac{1}{4} \text{ day}$$

. Total time

$$= 10 + \frac{1}{4} = 10\frac{1}{4} \text{ days}$$

18. A and B together can do a work in 10 days. B and C together can do the same work in 6 days. A and C together can do the work in 12 days. Then A, B and C together can do the work in

(1) 28 days

(2) 14 days

(3) $5\frac{5}{7}$ days

(4) $8\frac{2}{7}$ days

Solution : 3

. (3) (A + B)'s 1 day's work = $\frac{1}{10}$

(B + C)'s 1 day's work = $\frac{1}{6}$

(C + A)'s 1 day's work = $\frac{1}{12}$

Adding all three

2 (A + B + C)'s 1 day's work

$= \frac{1}{10} + \frac{1}{6} + \frac{1}{12} = \frac{6+10+5}{60}$

$= \frac{21}{60} = \frac{7}{20}$

. (A + B + C)'s 1 day's work = $\frac{7}{40}$

. All three together will complete the work in $\frac{40}{7} = 5\frac{5}{7}$ days

19. A does half as much work as B in three- fourth of the time. If together they take 18 days to complete a work, how much time shall B take to do it alone ?

(1) 30 days

(2) 35 days

(3) 40 days

(4) 45 days

Solution : 1

(1) Let B complete the work in x days.

$\therefore$ Work done by A in $\frac{3x}{4}$ days = $\frac{1}{2}$

$\therefore$ Time taken by A in completing the work = $2 \times \frac{3x}{4} = \frac{3x}{2}$ days

$\therefore$ (A + B)'s 1 day's work

$= \frac{1}{x} + \frac{2}{3x} = \frac{3+2}{3x} = \frac{5}{3x}$

$\therefore \frac{5}{3x} = \frac{1}{18} \Rightarrow 3x = 90$

$\Rightarrow x = 30$

$\therefore$ Time taken by B in completing the work = 30 days

20. If a wire is bent into the shape of a square, then the area of the. square so formed is 81cm2. When the wire is rebent into a semicircular shape, then the area, (in cm2) of the semicircle

will be (Take $\pi = \frac{22}{7}$)

(1) 22

(2) 44

(3) 77

(4) 154

Solution : 3

(3) Side of square $= \sqrt{81} = 9$ cm

$\therefore$ Total length of wire

$= 4 \times 9 = 36$ cm

Now, perimeter of semi-circle

$= \pi r + 2r$

$\Rightarrow r(\pi + 2) = 36$

$$\Rightarrow r = \frac{36}{\pi + 2} = \frac{36}{\frac{22}{7} + 2}$$

$$= \frac{36}{\frac{36}{7}} = \frac{36}{36} \times 7 = 7 \text{ cm}$$

$\therefore$ Area of semi-circle

$$= \frac{\pi r^2}{2} = \frac{22}{7 \times 2} \times 7 \times 7$$

$= 77$ sq.cm.

21. Marbles of diameter 1.4 cm are dropped into a cylindrical beaker containing some water and are fully submerged. The dia meter of the beaker is 7 cm. Find how many marbles have been dropped in it if the water rises by 5.6 cm.

(1) 50

(2) 150

(3) 250

(4) 350

Solution : 2

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.(2) Volume of raised water in cylindrical beaker

$= \pi r^2 h = \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 5.6$

$= 215.6$ cu.cm.

Volume of a marble $= \frac{4}{3}\pi r^3$

$= \frac{4}{3} \times \frac{22}{7} \times (0.7)^3 = \frac{4.312}{3}$ cu.cm.

$\therefore$ Number of marbles

$= \frac{215.6}{\frac{4.312}{3}} = \frac{215.6 \times 3}{4.312} = 150$

22. Water is flowing at the rate of 3 km/hr through a circular pipe of 20 cm internal diameter into a circular cistern of diameter 10m and depth 2m. In how much time will the cistern be filled ?

(1) 1 hour

(2) 1 hour 40 minutes

(3) 1 hour 20 minutes

(4) 2 hours 40 minutes

Solution : 2

(2) Water flowed in 1 hour through the pipe

$= \frac{22}{7} \times \frac{10 \times 10 \times 3000}{10000}$ metre^3

$= \frac{660}{7}$ metre^3

Volume of circular/cylindrical cistern

$= \frac{22}{7} \times 5 \times 5 \times 2 = \frac{1100}{7}$ metre^3

$\therefore$ Required time $= \frac{\frac{1100}{7}}{\frac{660}{7}} = \frac{5}{3}$ hours

$= 1$ hour $\frac{2}{3} \times 60$ minutes

$= 1$ hour 40 minutes

23. A bicycle wheel makes 5000 revolutions in moving 11 km. The diameter of the wheel, in cm, is

(1) 35
(2) 55
(3) 65
(4) 70

Solution : 4

.(4) Distance covered by wheel in one revolution = $2\pi r$

$\therefore\ 5000 \times 2\pi r = 11 \times 1000$

$\Rightarrow\ 5000 \times 2 \times \frac{22}{7} \times r = 11000$

$\Rightarrow r = \frac{11000 \times 7}{5000 \times 2 \times 22} = 0.35$ metre

= 35 cm

$\therefore$ Diameter

= 2 × radius = 2 × 35 = 70 cm

24. At each corner of a triangular field of sides 26 m. 28 m and 30 m, a cow is tethered by a rope of, length 7 m. The area (in m^2) ungrazed by the cows is
(1) 336
(2) 259
(3) 154
(4) 77

Solution : 2

(2) Area grazed by all cows

$= \frac{180^\circ}{360^\circ}\pi r^2 = \frac{\pi r^2}{2}$

$= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7 = 77$ sq.metre

Semi-perimeter of triangular field(s)

$= \frac{26 + 28 + 30}{2} = 42$ metre

$\therefore$ Area of the field

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

$= \sqrt{42(42-26)(42-28)(42-30)}$

$= \sqrt{42 \times 16 \times 14 \times 12}$

= 336 sq.metre

$\therefore$ Area ungrazed by the cows

= 336 − 77

= 259 sq.metre

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25. A shopkeeper allows 23% commission on his advertised price and stiil makes a profit of 10%. If he gains 56 on one item, his advertised price of the item, in , is

(1) 820

(2) 780

(3) 790

(4) 800

Solution : 4

(4) Let the advertised price be Rs. x.

$\therefore$ S.P. = Rs. $\frac{77x}{100}$

$\therefore$ C.P. = Rs. $\left(\frac{77x}{100} - 56\right)$

$\therefore \frac{77x - 5600}{100} \times \frac{110}{100} = \frac{77x}{100}$

$\Rightarrow \frac{77x - 5600}{100} = \frac{77x}{110} = \frac{7x}{10}$

$\Rightarrow 77x - 5600 = 70x$

$\Rightarrow 7x = 5600$

$\Rightarrow x =$ Rs. 800

26. The single discount equal to three consecutive discounts of 10%, 12% and 5% is

(1) 26.27%

(2) 24.76%

(3) 9%

(4) 11%

Solution : 2

(2) Single equivalent discount for 10% and 12%.

$= \left(12 + 10 - \frac{12 \times 10}{100}\right)\% = 20.8\%$

Single equivalent discount for 20.8% and 5%.

$= \left(20.8 + 5 - \frac{20.8 \times 5}{100}\right)\%$

$= 24.76\%$

27. If x : y = 5 : 6, then $(3x^2 - 2y^2)(y^2 _ x^2)$ is

(1) 7 : 6

(2) 11 : 3

(3) 3 : 11
(4) 6 : 7

Solution : 3

(3) $\frac{x}{y} = \frac{5}{6}$

$$\therefore \frac{3x^2 - 2y^2}{y^2 - x^2} = \frac{3.\frac{x^2}{y^2} - 2}{1 - \frac{x^2}{y^2}}$$

$$= \frac{3 \times \frac{25}{36} - 2}{1 - \frac{25}{36}} = \frac{75 - 72}{36 - 25} = \frac{3}{11}$$

28. An alloy contains copper, zinc and nickel in the ratio of 5 : 3 : 2. The quantity of nickel in kg that must be added to 100 kg of this alloy to have the new ratio 5 : 3 : 3 is
(1) 8
(2) 10
(3) 12
(4) 15

Solution : 2

(2) Let x kg of nickel be mixed.

$\therefore \frac{20 + x}{100 + x} = \frac{3}{11}$

$\Rightarrow 220 + 11x = 300 + 3x$

$\Rightarrow 11x - 3x = 300 - 220$

$\Rightarrow 8x = 80$

$\Rightarrow x = 10$ kg.

29. The ratio of the ages of Ram and Rahim 10 years ago was 1 : 3. The ratio of their ages five years hence will be 2 : 3. Then the ratio of their present ages is
(1) 1 : 2
(2) 3 : 5
(3) 3 : 4
(4) 2 : 5

Solution : 2

(2) Let the ages of Ram and Rahim 10 years ago be x and $3x$ years respectively.
After 5 years from now,

$$\frac{x+15}{3x+15} = \frac{2}{3}$$

$\Rightarrow 6x + 30 = 3x + 45$

$\Rightarrow 3x = 45 - 30 = 15$

$\Rightarrow x = 5$

$\therefore$ Radio of their present ages

$= (x + 10) : (3x + 10)$

$= 15 : 25 = 3 : 5$

30. The incomes of A, Band C are in the ratio 7 : 9 : 12 and their spendings are in the ratio 8 : 9 : 15. If A saves 1/4 th of his income, then the savings of A, B and C are in the ratio of

(1) 69 : 56 : 48

(2) 47 : 74 : 99

(3) 37 : 72 : 49

(4) 56 : 99 : 69

Solution : 4

(4) Let the incomes of A, B and C be Rs. $7x$, Rs. $9x$ and Rs. $12x$ respectively and their expenditures be Rs. $8y$, Rs. $9y$ and Rs. $15y$ respectively.

$$\therefore 7x - 8y = \frac{7x}{4}$$

$\Rightarrow 28x - 32y = 7x$

$$\Rightarrow 21x = 32y \Rightarrow y = \frac{21x}{32}$$

A's savings $= \frac{7x}{4}$

B's savings $= 9x - 9y$

$$= 9\left(x - \frac{21x}{32}\right) = \frac{9 \times 11x}{32} = \frac{99x}{32}$$

C's savings $= 12x - 15y$

$$= 12x - \frac{15 \times 21x}{32} = \frac{69x}{32}$$

$\therefore$ Required ratio

$$= \frac{7x}{4} : \frac{99x}{32} : \frac{69x}{32} = 56 : 99 : 69$$

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31. Out of 4 numbers, whose average is 60, the first one is one-fourth of the sum of the last three. The first number is

(1) 15

(2) 45

(3) 48

(4) 60

Solution : 3

(3) If the first number be x, then,

$$x = \frac{240 - x}{4}$$

$$\Rightarrow 4x = 240 - x$$

$$\Rightarrow 5x = 240$$

$$\Rightarrow x = \frac{240}{5} = 48$$

32. The average of 25 observations is 13. It was later found that an observation 73 was wrongly entered as 48. The new average is

(1) 12.6

(2) 14

(3) 15

(4) 13.8

Solution : 2

(2) Difference of two observations

$$= 73 - 48 = 25$$

$$\therefore \text{ New average } = 13 + \frac{25}{25} = 14$$

33. If the cost price of 10 articles is equal to the selling price of 8 articles, then gain per cent is

(1) 10%

(2) 8%

(3) 50%

(4) 25%

Solution : 4

(4) Profit percent

$$= \frac{10 - 8}{8} \times 100 = 25\%$$

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34. An article is marked 40% above the cost price and a discount of 30% is allowed. What is the gain or loss percentage ?

(1) 10% gain

(2) 5% gain

(3) 2% loss

(4) 12% loss

Solution : 3

(3) Let the C.P. of article be Rs. 100.

$\therefore$ Marked price = Rs. 140

S.P. = 70% of 140 = Rs. 98

Loss percent

$= \frac{100-98}{100} \times 100 = 2\%$

35. A man bought oranges at the rate of 8 for 34 and sold them at the rate of 12 for 57. How many oranges should be sold to earn a net profit of 45 ?

(1) 90

(2) 100

(3) 135

(4) 150

Solution : 1

(1) Let the man buy 24 (LCM of 8 and 12) oranges.

$\therefore$ C.P. of 24 oranges $= \frac{34}{8} \times 24$

= Rs. 102

S.P. of 24 oranges

$= \frac{57}{12} \times 24$ = Rs.114

Gain = 114 – 102 = Rs. 12

$\because$ Rs. 12 ≡ 24 oranges

Rs. 45 $\equiv \frac{24}{12} \times 45 = 90$ oranges

36. A man sells two articles for Z 5000 each neither losing nor gaining in the deal. If he sold one of them at a gain of 25%, the other article is sold at a loss of

(1) $15\frac{2}{3}\%$

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

(3) $17\frac{1}{3}\%$

(4) $18\frac{1}{3}\%$

Solution : 2

(2) CP of first article

$= 5000 \times \frac{100}{125} = \text{Rs. } 4000$

$\therefore$ Loss on second article

$= \text{Rs. } 1000$

$\therefore$ CP of second article

$= \text{Rs. } 6000$

$\therefore$ If the loss percent be $x\%$, then

$$\frac{6000 \times x}{100} = 1000$$

$$\Rightarrow x = \frac{50}{3} = 16\frac{2}{3}\%$$

37. By selling an article for 144, a person gained such that the percentage gain equals the cost price of the article. The cost price of the article is

(1) 90

(2) 80

(3) 75

(4) 60

Solution : 2

(2) Let the CP of article be Rs. x.

Then,

$$\frac{144 - x}{x} \times 100 = x$$

$\Rightarrow (144 - x) \times 100 = x^2$

$\Rightarrow x^2 + 100x - 14400 = 0$

$\Rightarrow x^2 + 180x - 80x - 14400 = 0$

$\Rightarrow x(x + 180) - 80(x + 180) = 0$

$\Rightarrow (x - 80)(x + 180) = 0$

$\therefore x = \text{Rs. } 80$

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38. The average age of 11 players of a cricket team is increased by 2 months when two of them aged 18 years and 20 years are replaced by two new players. The average age of the new players is

(1) 19 years 1 month

(2) 19 years 6 months

(3) 19 years 11 months

(4) 19 years 5 months

Solution : 3

(3) Total increase = 11 × 2
= 22 months
∴ Sum of the ages of both cricketers
= (18 + 20) years 22 months
= 38 years 22 months
Average age =19 years 11 months

39. A reduction of 20% in the price of an apple enables a man to buy 10 apples more for 54. The reduced price of apples per dozen is

(1) 4.32

(2) 12.96

(3) 10.80

(4) 14.40

Solution : 2

(2) Let the original price of apples be Rs. x/ dozen

$\therefore$ New price = Rs. $\frac{4x}{5}$ /dozen

$$\therefore \frac{54}{\frac{4x}{5}} - \frac{54}{x} = \frac{10}{12}$$

$$\Rightarrow 54\left(\frac{5}{4x} - \frac{1}{x}\right) = \frac{5}{6}$$

$$\Rightarrow 54\left(\frac{5-4}{4x}\right) = \frac{5}{6}$$

$$\Rightarrow \frac{54}{4x} = \frac{5}{6} \Rightarrow 4x = \frac{54 \times 6}{5}$$

$$\therefore \frac{4x}{5} = \frac{54 \times 6}{5 \times 5} = \text{Rs. } 12.96$$

Note: The Information Provided here is only for reference. It May vary the Original.

40. Price of a commodity has increased by 60%. By what per cent must a consumer reduce the consumption of the commodity so as not to increase the expenditure ?

(1) 37

(2) 37.5

(3) 40.5

(4) 60

Solution : 2

(2) If the reduction in consumption be x%, then

$$60 - x - \frac{60x}{100} = 0$$

$$\Rightarrow 60 - x - \frac{3x}{5} = 0$$

$$\Rightarrow 300 - 5x - 3x = 0$$

$$\Rightarrow 8x = 300$$

$$\Rightarrow x = \frac{300}{8} = 37.5\%$$

41. The cost of an apple is twice that of a banana and the cost of a banana is 25% less than that of a guava. If the cost of each type of fruit increases by 10%, then the percentage increase in the cost of 4 bananas, 2 apples and 3 guavas is

(1) 10%

(2) 12%

(3) 16%

(4) 18%

Solution : 1

(1) Let the cost price of 1 guava = Re. 1.

$\therefore$ C.P. of 1 banana = Res. $\frac{3}{4}$

and CP of 1 apple = Rs. $\frac{3}{2}$

New prices :

1 guava = Rs. 1.1

1 banana = $\frac{3}{4} \times \frac{110}{100}$ = Rs. 0.825

1 apple = $\frac{3}{2} \times \frac{110}{100}$ = Rs. 1.65

Original price of (4 bananas + 2 apples + 3 guavas)

= Rs. (3 + 3 + 3) = Rs. 9

New price of (4 banana + 2 apples + 3 guavas)

= Rs. (4 × 0.825 + 2 × 1.65 + 3 × 1.1)

= Rs. (3.3 + 3.3 + 3.3) = 9.9

$\therefore$ Percentage increase

$$= \frac{9.9 - 9}{9} \times 100 = 10\%$$

42. Walking 6/7 th of his usual speed, a man is 12 minutes too late. The usual time taken by him to cover that distance is

(1) 1 hour

(2) 1 hour 12 minutes

(3) 1 hour 15 minutes

(4) 1 hour 20 minutes

Solution : 2

(2) Time and speed are inversely proportional.

$\therefore$ Usual time $\times \frac{7}{6}$ – usual time

= 12 minutes

$\Rightarrow$ Usual time $\times \frac{1}{6}$ = 12 minutes

$\therefore$ Usual time = 72 minutes

= 1 hour 12 minutes

43. If I walk at 5 km/hour, I miss a train by 7 minutes. If, however, I walk at 6 km/hour, I reach the station 5 minutes before the departure of the train. The distance (in km)

between my house and the station is

(1) 6

(2) 5

(3) 4

(4) 3

Solution : 1

(1) If the required distance be x km, then

$$\frac{x}{5}-\frac{x}{6}=\frac{12}{60}=\frac{1}{5}$$

$$\Rightarrow \frac{6x-5x}{30}=\frac{1}{5}\Rightarrow\frac{x}{30}=\frac{1}{5}$$

$$\Rightarrow x=6 \text{ km.}$$

44. 800 becomes 956 in 3 years at a certain rate of simple interest. If the rate of interest is increased by 4%, what amount will I' 800 become in 3 years ?

(1) 1020.80

(2) 1025

(3) 1052

(4) 1050

Solution : 3

(3) S.I. = 956 – 800 = Rs. 156

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

$$=\frac{156\times 100}{800\times 3}=6.5\% \text{ per annum}$$

$\therefore$ New rate = 10.5%

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

$$=\frac{800\times 3\times 10.5}{100}=\text{Rs. } 252$$

$\therefore$ Amount = 800 + 252

= Rs. 1052

45. Simple interest on a certain sum is 16/25 of the sum. The rate percent if the rate per cent and time (in years) are equal, is

(1) 6%

(2) 8%

(3) 10%

(4) 12%