E-Book of FCI AG III Examination 2012

Free Guide for Food Corporation of India (FCI) Examination- 2012

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Food Corporation of India Examination, 2012 Notification

Staff Selection Commission
Food Corporation Of India Examination, 2012

Combined Recruitment for Assistant Grade III in General, Depot, Technical and Account Cadres in the FCI - 2013

The Staff Selection Commission will hold an open competitive examination for recruitment to Category –III posts in Food Corporation of Indian in General, Accounts, Depot and Technical cadres in the pay scale of Rs.9300-22940/- (IDA pattern. The posts are located at five zones of FCI i.e. North, South, East, West and North East.

The Staff Selection Commission is holding the examination under a special dispensation given by the Government of India. The candidates selected through this recruitment for posts in FCI will NOT have the status of Central Government Civilian Employees. As such they will not be eligible for benefit of age relaxation, etc., admissible to Central Government Civilian Employees in recruitments made by the Staff Selection Commission for Ministries/Departments/Attached and Subordinate offices under Government of India and will not be entitled to claim parity with Central Government Employees in any matter whatsoever.

After the examination, the results will be declared and offer of appointment given by Food Corporation of India (FCI). The selected candidates will be full time employees of FCI and will be governed by terms, conditions and service rules of FCI.

The tentative number of vacancies is 6545 which may vary at the discretion of FCI. Allotment of the candidates will initially be made zone-wise following merit-cum-option and allotment of posts within the zone will also follow the same criterion.

AG III (General)

Total Posts: 516 + 85 + 156 + 62 + 39

Pay Scale: Rs.9300-22940

Age Limit : 27 Years

Education Qualification: Graduate Degree in any discipline from a recognized University with proficiency in use of computers.

AG III (Accounts)

Total Posts: 238 + 142 + 134 + 47 + 89

Pay Scale: Rs.9300-22940

Age Limit : 27 Years

Education Qualification: Bachelor of Commerce from a recognized University with proficiency in use of computers.

AG III (Technical)

Total Posts: 1652 + 411 + 631 + 474 + 113

Pay Scale: Rs.9300-22940

Age Limit : 27 Years

Education Qualification:

- B.Sc. in Agriculture from a recognized University
- B.Sc. with any of the following subjects from a recognized University Botany/Zoology/Bio-Technology/Bio-Chemistry/Microbiology/Food Science
- B.Tech./BE in Food Science/Food Science & Technology/Agricultural Engineering/Bio-Technology from a recognized University/an institution approved by AICTE.
- Proficiency in use of Computers

AG III (Depot)

Total Posts: 617 + 115 + 738 + 282

Pay Scale: Rs.9300-22940

Age Limit : 27 Years

Education Qualification: Graduate Degree in any discipline from a recognized University with proficiency in use of computers.

Selection Process

Selection for the posts will be based on a Written Examination which will be conducted by Staff Selection Commission. The examination will consist of two papers as detailed below for Post Codes A, B and D for General, Depot and Accounts Cadres. Candidates applying for Post Code C for [Technical Cadre] will

appear in Paper-I and Paper-III. The examination in paper III will be of degree level. Paper I and II will be of Higher Secondary Level.

How To Apply

1. Application can be made only on-line. Online applications may be filed at **http://ssconline.nic.in** and **http://ssconline2.gov.in** Candidates are required to submit only one application irrespective of the number of posts opted for.
2. Candidates may pay the application fee of **Rs. 200/-** (Rupees Two Hundred) only through State Bank of India SBI either in the form of Challan or net banking.
3. Application fee is not required for SC/ST /Ex-Servicemen and PH and all women candidates, subject to submission of Caste/Disability/Discharge Certificate in the prescribed form from Appropriate Authority in support of his/her claim.
4. No documents are required to be sent to SSC alongwith the application. Therefore, the candidate should satisfy himself/herself that he/she is eligible for the post(s) for which option is exercised and that they possess the required qualifications.
5. Option should be exercised by the candidates carefully keeping in view fulfillment of eligibility conditions, educational qualification etc. prescribed for the posts. OPTION ONCE EXERCISED SHALL BE FINAL AND NO CHANGE WILL BE ALLOWED UNDER ANY CIRCUMSTANCE.
6. Qualification in the written examination for any post without fulfillment of eligibility conditions will not confer any claim to the candidate for final selection for the post.
7. If any of the particulars provided in the application is found to be false on scrutiny of the documents, the candidature of such candidate will be cancelled forthwith.
8. Scrutiny of documents will be undertaken at the time of Computer Proficiency Test.

Important Dates:

- **Closing Date: 21.9.2012**
- **Date of Examination : 11.11.2012**

Important Links:

Food Corporation Of India Examination: Syllabus of Examination
Click Here: http://sscportal.in/community/syllabus/fci-ag-iii-exam-syllabus

Apply Online:

Ø **PART-I Registration**   http://ssconline.nic.in
Ø **PART-II Registration** http://ssconline2.gov.in
Ø **Application Form (OFFLINE)** http://sscportal.in/community/forms/fci-ag-iii-exam

TOPIC WISE SAMPLE PRACTICE QUESTIONS

GENERAL INTELLIGENCE
&
REASONING (VERBAL)

ALPHABET TEST

Directions (Q. No. 1-10): In each of the following Questions, five words are given which of them will come in the middle it all of them are arranged alphabetically as in a distionary?

1. (a) Bishop   (b) Bifocal
   (c) Bicycle   (d) Bitter
2. (a) Parasite   (b) Party
   (c) Petal   (d) Paste
3. (a) Research   (b) Rational
   (c) Round   (d) Rustic
3. (a) Nature   (b) Native
   (c) Narrate   (d) Diastole
5. (a) Didactic   (b) Dictum
   (c) Dictionary   (d) Diastole

ANSWERS

1. (a)   2. (d)   3. (c)   4. (b)   5. (c)

Logical Sequence of Words

Direction (Q. No. 1-20): Sequence of occurrence of events or various stages in a process:

1. 1. Curd   2. Grass
   3. Butter   4. Milk
   (a) 2, 5, 4, 3, 1   (b) 4, 2, 5, 3, 1
   (c) 5, 2, 3, 4, 1   (d) 5, 2, 4, 1, 3
2. 1. Heel   2. Shoulder
   3. Skull   4. Neck
   5. Knee   6. Chest
   7. Thigh   8. Stomach
   9. Face   10. Hand
   (a) 2, 4, 7, 10, 1, 5, 8, 9, 6, 3
   (b) 3, 4, 7, 9, 2, 5, 8, 10, 6, 1
   (c) 4, 7, 10, 1, 9, 6, 3, 2, 5, 8
   (d) 3, 9, 4, 2, 10, 6, 8, 7, 5, 1
3. 1. Butterfly   2. Cocoon
   3. Egg   4. Work
   (a) 1, 3, 4, 2   (b) 1, 4, 3, 2
   (c) 2, 4, 1, 3   (d) 3, 4, 2, 1
4. 1. Rainbow   2. Rain
   3. Sin   4. Happy
   5. Child
   (a) 2, 1, 4, 3, 5   (b) 2, 3, 1, 5, 4
   (c) 4, 2, 3, 5, 1   (d) 4, 5, 1, 2, 3

ANSWERS

1. (d)   2. (d)   3. (d)   4. (b)   5. (a)

Classification Test

Directions (Q. No. 1-10) : Choose the word which is look like the other words in the group

1. (a) House   (b) Cottage
   (c) School   (d) Palace
2. (a) Tamato   (b) Cucumber
   (c) Brinjal   (d) Carrot
3. (a) Brick   (b) Heart
   (c) Bridge   (d) Spade
4. (a) Hostel   (b) Hotel
   (c) Inn   (d) Club
5. (a) Kennel   (b) House
   (c) Stable   (d) Aviary

ANSWERS

1. (c)   2. (d)   3. (a)   4. (d)   5. (b)

Analogy

Directions (Q. No. 1-20) : In each of the following Questions, there is a certain relationship between two given words on one side of : : and one word is given on another side of : : while another word is to be found from the given alternatives, having the same relation with this word as the words of the given pair bear : choose the correct alternatives.

1. Aeroplane : Cockpit : : Train : ?
   (a) Wagon   (b) Coach
   (c) Compartment   (d) Engine
2. Amnesia : Memory : : Paralysis : ?
   (a) Movement   (b) Limbs
   (c) Handicapped   (d) Legs
3. Meningitis : Brain : : Cirrhosis : ?
   (a) Lungs   (b) Brain
   (c) Liver   (d) Heart
4. Book : Publisher : : Film : ?
   (a) Producer   (b) Director
   (c) Editor   (d) Writer
5. Forecast : Future : : Regret : ?

(a) Present   (b) Atone
(c) Past   (d) Sins

ANSWERS

1. (d)	2. (a)	3. (c)	4. (a)	5. (c)

Series Completion

Directions (Q. No. 1-10) : Find the missing term in each of the following series :

1. 625, 5, 125, 25, 25, ?, 5
   (a) 5   (b) 25
   (c) 125   (d) 625
2. 3, 4, 7, 7, 13, 13, 21, 22, 31, 34, ?
   (a) 42   (b) 43
   (c) 51   (d) 52
3. 11, 10, ?, 100, 1001, 1000, 10001
   (a) 101   (b) 110
   (c) 111   (d) 113
4. 13, 32, 24, 43, 35, ?, 46, 65, 57, 76
   (a) 45   (b) 52
   (c) 54   (d) 55
5. 0, 4, 6, 3, 7, 9, 6, ?, 12
   (a) 8   (b) 10
   (c) 11   (d) 14

ANSWERS

1. (c)	2. (b)	3. (a)	4. (c)	5. (b)

Coding-Decoding

1. In a certain code LAWN is written as JCUP. How will SLIT be coded in that code?
   (a) QNGV   (b) QJGV
   (c) QNVG   (d) NJGV
2. In a certain code SATELLITE is written as FUBHTLDSHK. How is LAUNCHING written in that code?
   (a) DOUBFMGHO   (b) OVBMCFMHG
   (c) OVMBCFMGH   (d) DOUBCFMGH
3. In a certain code LOUD is written as JOSF then which of the following English words shall be coded as PKQG?
   (a) RISE   (b) ROPE
   (c) ROAD   (d) RICE
4. In a certain code BREAKDOWN is written as BFSCJMVNC. How is ORGANISED written in that code?
   (a) PSHBMCDRH   (b) BHSPMCDRH
   (c) BHSPOCDRH   (d) BHSPNHRDC
5. In a certain code CONCISE is written as

FTJBBNM. How is FISHERY written in that code?
(a) ZSFIGJT   (b) ZSFGIHR
(c) ZSFGEHR   (d) ZSFEHGR

ANSWERS

1. (a)	2. (b)	3. (a)	4. (b)	5. (c)

Blood Relation

1. Pointing to a woman, Naman said, "She is the daughter of the only child of my grandmother." How is the woman related to Naman?
   (a) Sister   (b) Niece
   (c) Cousin   (d) Data inadequate
2. Pointing to a photograph, a person tells his friend, "She is the grand daughter of the elder brother of my father." How is the girl in the photograph related to this man?
   (a) Niece   (b) Sister
   (c) Aunt   (d) Sister-in-law
3. A man said to a lady, "Your mother's husband's sister is my aunt." How is the lady related to the man?
   (a) Daughter   (b) Grand daughter
   (c) Mother   (d) Sister
4. If Neena says, "Anita's father Raman is the only son of my father-in-law Mahipal", then how is Bindu, who is the sister of Anita, related to Mahipal?
   (a) Niece   (b) Daughter
   (c) Wife   (d) None of these
5. Pointing to the woman in the picture, Rajiv said, "Her mother has only one grandchild whose mother is my wife." How is the woman in the picture related to Rajiv?
   (a) Cousin   (b) Wife
   (c) Sister   (d) Data inadequate

ANSWERS

1. (a)	2. (a)	3. (d)	4. (d)	5. (b)

Direction Sense Test

1. A man walks 1 km towards East and then he turns to South and walks 5 km. Again he turns to East and walks 2 km, after this he turns to North and walks 9 km. Now, how far is he from his starting point?
   (a) 3 km   (b) 4 km
   (c) 5 km   (d) 7 km
2. Raj travelled from a point X straight to Y at a distance of 80 metres. He turned right and walked 50 metres, then again turned right and

walked 70 metres. Finally, he turned right and walked 50 metres. How far is he from the starting point?

(a) 10 metres   (b) 20 metres

(c) 50 metres   (d) 70 metres

3. Laxman went 15 kms to the west from my house, then turned left and walked 20 kms. He then turned East and walked 25 kms and finally turning left covered 20 kms. How far was he from his house?

(a) 5 kms   (b) 10 kms

(c) 40 kms   (d) 80 kms

4. From his house, Lokesh went 15 kms to the North. Then he turned West and covered 10 kms. Then, he turned South and covered 5 kms. Finally, turning to East, he covered 10 kms. In which direction is he from his house?

(a) East   (b) West

(c) North   (d) South

5. Going 50 m to the South of her house, Radhika turns left and goes another 20 m. Then, turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now?

(a) North-west   (b) North

(c) South-east   (d) East

ANSWERS

1. (c)	2. (a)	3. (b)	4. (c)	5. (a)

Alpha-Numeric Sequence Test

Directions (Q. No. 1 to 5) : *These questions are based on the following arrangement;*

J Y 2 = S £ ξ E G M ¤ 7 $ H P 9 K L β @ W Q 1 3 # C D Ó

1. How many such symbols are there in the above arrangement each of which is either immediately followed by a number or immediately preceded by a letter, but not both?

(a) Nil   (b) One

(c) Two   (d) Three

2. How many such letters are there in the above arrangement each of which is either immediately followed by a number or immediately preceded by a symbol, but not both?

(a) Four   (b) Five

(c) Six   (d) None of these

3. How many such letters are there in the above arrangement each of which is either immediately followed by a number or immediately preceded by a symbol, but not both?

(a) Two   (b) Three

(c) Four   (d) Five

4. Four of the following five are alike in a certain way based on the positions of the elements in the above arrangement and hence form a group. Which one does not belong to the group?

(a) 2 Y C D   (b) £ S 1 3

(c) J S © 3   (d) = # 2 C

5. 2 Y S is to E G £ in the same way as P H K is to?

(a) W Q β   (b) @ W L

(c) @ β Q   (d) @ W K

ANSWERS

1. (d)	2. (d)	3. (c)	4. (d)	5. (b)

Number, Ranking and Time Sequence Test

1. If the positions of the first and the sixth digits of the number 2796543018 are interchanged, similarly the positions of the second and the seventh digits are interchanged and so on, which of the following will be the third to the left of seventh digit from the left end?

(a) 0   (b) 1

(c) 7   (d) 8

2. What will be the difference between the sum of the odd digits and the sum of the even digits in the number 857423?

(a) 0   (b) 1

(c) 2   (d) None of these

3. If each of the odd digits in the number 54638 is decreased by 1 and each of the even digits is increased by 1, then which of the following will be the sum of the digits of the new number?

(a) 25   (b) 26

(c) 28   (d) 29

4. How many times will you write even numerals if you write all the numbers from 291 to 300?

(a) 11   (b) 13

(c) 15   (d) 17

5. A number is greater than 3 but less than 8. Also, it is greater than 6 but less than 10. The number is?

(a) 5   (b) 6

(c) 7   (d) 8

ANSWERS

1. (b)	2. (b)	3. (d)	4. (b)	5. (c)

Mathematical Operations

1. If $+$ means $\div$, $\div$ means $-$, $-$ means $\times$, $\times$ means $+$, then $12 + 6 \div 3 - 2 \times 8 = ?$

(a) -2 (b) 2

(c) 4   (d) 8

2. If + means –, – means ×, ÷ means + and × means ÷, then $15 - 3 + 10 \times 5 \div 5 = ?$
(a) 5   (b) 22
(c) 48   (d) 52

3. If × means ÷, – means ×, ÷ means + and + means –, then $(3 - 15 \div 19) \times 8 + 6 = ?$
(a) – 1   (b) 2
(c) 4   (d) 8

4. If × means +, + means ÷, – means × and ÷ means –, then $8 \times 7 - 8 + 40 \div 2 = ?$
(a) 1   (b) $7\dfrac{2}{5}$

(c) $8\dfrac{3}{5}$ (d) 44

5. If × means –, + means ÷, – means × and ÷ means +, then $15 - 2 \div 900 + 90 \times 100 = ?$
(a) 190   (b) 180
(c) 90   (d) None of these

ANSWERS

1. (c)   2. (c)   3. (b)   4. (b)   5. (d)

Puzzle Test

Directions (Q. No. 1-5): Study the given information carefully and answer the questions that follow :

(*i*) A, B, C, D, E, F and G are sitting on a wall and all of them are facing east.
(*ii*) C is on the immediate right of D.
(*iii*) B is at an extreme end and has E as his neighbour.
(*iv*) G is between E and F.
(*v*) D is sitting third from the south end.

1. Who is sitting to the right of E?
(a) A   (b) C
(c) D   (d) F

2. Which of the following pairs of people are sitting at the extreme ends?
(a) AB   (b) AE
(c) CD   (d) FB

3. Name the person who should change place with C such that he gets the third place from the north end.
(a) E   (b) F
(c) G   (d) D

4. Immediately between which of the following pairs of people is D sitting?
(a) AC   (b) AF
(c) CE   (d) CF

5. Which of the conditions (*i*) to (*v*) given above is not required to find out the place in which A is sitting?
(a) (*i*)   (b) (*ii*)

(c) (*iii*)
(d) All are required

ANSWERS

1. (d)   2. (a)   3. (c)   4. (d)   5. (d)

Logical Venndiagram

Directions (Q. No. 1-5) : In the following diagram, the circle represents College Professors, the triangle stands for Surgical Specialists, and Medical Specialists are represented by the rectangle.
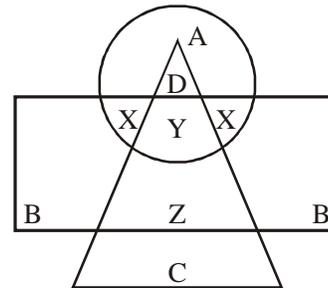
1. College Professors who are also Surgical Specialists are represented by
(1) A   (b) B
(c) C   (d) D

2. Surgical Specialists who are also Medical Specialists but not Professors are represented by
(a) B   (b) X
(c) X   (d) Z

3. C represents
(a) Medical Specialists
(b) College Professors
(c) Surgical Specialists
(d) Mecial and Surgical Specialists

4. B represents
(a) Professors who are neither Medical nor Surgical Specialists
(b) Professors who are not Surgical Specialists
(c) Medical Specialists who are neither Professors nor Surgical Specialists
(d) Professors who are not Medical Specialists

5. College Professors who are also Medical Specialists are represented by
(a) A   (b) X
(c) Y   (d) Z

ANSWERS

1. (d)   2. (d)   3. (c)   4. (c)   5. (b)

Syllogism

Directions (Q. No. 1-20) : In each of the questions below are given three statements followed by three conclusions numbered I, II and III. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

1. Statements: All dolls are windows.
                    All bottles are windows.
                    All cars are bottles.
   Conclusions: I. All cars are windows.
                II. Some cars are dolls.
                III. Some windows are cars.
   (a) Only I and II follow
   (b) Only II and III follow
   (c) Only I and III follow
   (d) All follow

2. Statements: All fruits are vegetables.
                    All pens are vegetables.
                    All vegetables are rains.
   Conclusions: I. All fruits are rains.
                II. All pens are rains.
                III. Some rains are vegetables.
   (a) None follows
   (b) Only I and II follow
   (c) Only II and III follow
   (d) All follow

3. Statements: All snakes are trees.
                    Some trees are roads.
                    All roads are mountains.
   Conclusions: I. Some mountains are snakes.
                II. Some roads are snakes.
                III. Some mountains are trees.
   (a) Only I follows
   (b) Only II follows
   (c) Only III follows
   (d) Both I and II follow

4. Statements: Some saints are balls.
                    All balls are bats.
                    Some tigers are balls.
   Conclusions: I. Some bats are tigers.
                II. Some saints are bats.
                III. All bats are balls.
   (a) Only I and II follow
   (b) Only II follows
   (c) Only I and III follow
   (d) Only III follows

5. Statements: Some hills are rivers.
                    Some rivers are deserts.
                    All deserts are roads.
   Conclusions: I. Some roads are rivers.
                II. Some roads are hills.

III. Some deserts are hills.
   (a) None follows
   (b) Only I follows
   (c) Only I and II follow
   (d) Only II and III follow

ANSWERS

1. (c)	2. (d)	3. (c)	4. (a)	5. (b)

Inserting the Missing Character

Directions (Q. No. 1-20): In each of the following questions, a set of figures carrying certain characters, is given. Assuming that the characters in each set follow a similar pattern, find the missing character in each case.

1.
   (a) 21   (b) 25
   (c) 35   (d) 45

2.
   (a) 49   (b) 76
   (c) 89   (d) 94

3.
   (a) 12   (b) 21
   (c) 24   (d) 35

4.
   (a) 20   (b) 25
   (c) 50   (d) 75

5.

4   3 11   9 15   6

144   9801   ?

(a) 1216　　　　(b) 2250
(c) 8100　　　　(d) 11036

ANSWERS

1. (b)　　2. (a)　　3. (b)　　4. (c)　　5. (c)

Data Sufficiency

Directions (Q. No. 1-10) : Each of the Questions below consists of a Question and two statements numbered I and II given below it. You have to decide whether the data Provided in the statements are sufficient to answer the Questions.

Read both statements and give answer.
 (a) If the data in statement I alone are sufficient to answer the Question, while the data in statement II alone are not dufficient to answer the Question.
 (b) If the data in statement II alone are sufficient to answer the Question, while the data in statement I alone are not sufficient to answer the Question.
 (c) If the data either in statement I alone or in statement II alone are sufficient to answer the Question.
 (d) If the data given in both statements I and II together are not sufficient to answer the Question; and
 (d) If the data in both statements I and II together are necessary to answer the Question.

1. Among A, B, C, D, E and F, who is the heaviest?
   I. A and D are heavier than B, E and F but none of them is the heaviest.
   II. A is heavier than D but lighter than C.
2. Madan is taller than Kamal and Sharad is younger than Arvind. Who among them is the youngest?
   I. Sharad is younger than Madan.
   II. Arvind is younger than Kamal.
3. Among five friends, who is the tallest?
   I. D is taller than A and C.
   II. B is shorter than E but taller than D.
4. Manoj, Prabhakar, Akash and Kamal are four friends. Who among them is the heaviest?
   I. Prabhakar is heavier than Manoj and Kamal but lighter than Akash.
   II. Manoj is lighter than Prabhakar and Akash

but heavier than Kamal.
5. On a T.V. channel, four serials A, B, C and D were screened, one on each day, on four consecutive days but not necessarily in that order. On which day was the serial C screened?
   I. The first serial was screened on 23rd, Tuesday and was followed by serial D.
   II. Serial A was not screened on 25th and one serial was screened between serials A and B.
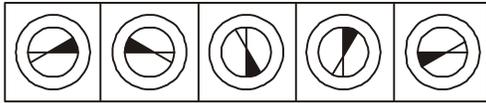
ANSWERS

1. (a)　　2. (b)　　3. (d)　　4. (a)　　5. (d)

GENERAL INTELLIGENCE
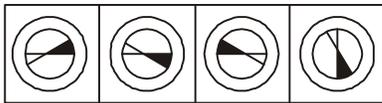# &
REASONING (NON - VERBAL)

Series

Directions (Q. No. 1-40): Each of the following questions consists of five figures called the problem figures followed by five other figures marked a, b, c, d . Select a figure from amongst the answer figures. which will continue the same series as established by the five problem figures.
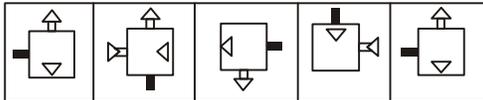
1. Problem figures

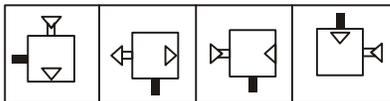Answer figures

   (a)   (b)   (c)   (d)

2. Problem figures
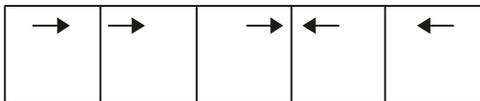
Answer figures

   (a)   (b)   (c)   (d)

3. Problem figures
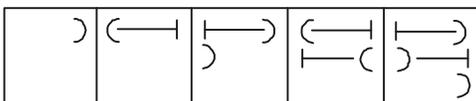
Answer figures

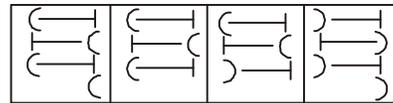   (a)   (b)   (c)   (d)

4. Problem figures

Answer figures

   (a)   (b)   (c)   (d)

5. Problem figures

Answer figures

   (a)   (b)   (c)   (d)

ANSWERS

1. (b)	2. (c)	3. (b)	4. (b)	5. (d)

Analogy

Directions (Q. No. 1-40): Each of the following questions consists of two sets of figures. Figures A, B, C and D constitute the problem set while figures a, b, c, d .There is a difinite relationship between figures A and B. Establish a similar relationship between figures C and D by selecting a suitable figure from the answer set that would replace the question mark (?) in figure (D)

1. Problem figures

   (A)   (B)   (C)   (D)

Answer figures
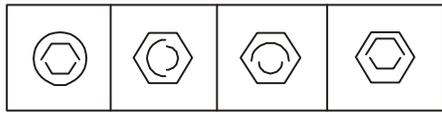
   (a)   (b)   (c)   (d)

2. Problem figures

   (A)   (B)   (C)   (D)

Answer figures

(a)   (b)   (c)   (d)
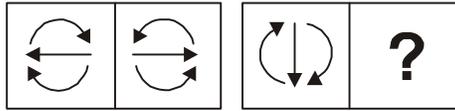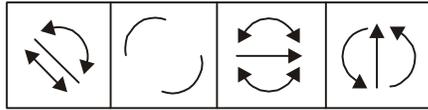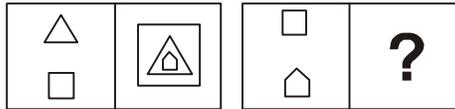
3. Problem figures

(A)   (B)   (C)   (D)

Answer figures
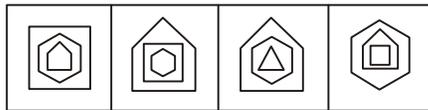

(a)   (b)   (c)   (d)

4. Problem figures

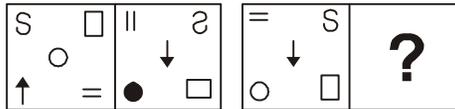(A)   (B)   (C)   (D)

Answer figures
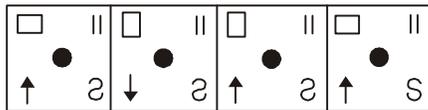

(a)   (b)   (c)   (d)

5. Problem figures

(A)   (B)   (C)   (D)

Answer figures

(a)   (b)   (c)   (d)

ANSWERS

1. (a)   2. (d)   3. (d)   4. (b)   5. (a)

QUANTITATIVE APTITUDE

Number System

1. Evaluate: $\dfrac{9|3 - 5| - 5|4| \div 10}{-3(5) - 2 \times 4 \div 2}$

   (a) 9/10　　　　　　(b) −8/17
   (c) −16/19　　　　　(d) 4/7

2. The sum of three consecutive natural numbers each divisible by 3 is 72. What is the largest among them?
   (a) 25　　　　　　　(b) 26
   (c) 27　　　　　　　(d) 30

3. 55% of a number is more than one-third of that number by 52. What is two-fifth of that number?
   (a) 96　　　　　　　(b) 240
   (c) 144　　　　　　　(d) 142

4. The digits of a two-digit number are in the ratio of 2 : 3 and the number obtained by interchanging the digits is bigger than the original number by 27.
   What is the original number?
   (a) 63　　　　　　　(b) 48
   (c) 96　　　　　　　(d) 69

5. What least number would be subtracted from 427398 so that the remaining number is divisible by 15?
   (a) 13　　　　　　　(b) 3
   (c) 16　　　　　　　(d) 11

ANSWERS

1. (c)　　2. (c)　　3. (a)　　4. (d)　　5. (b)

Squares, Cubes and Indices

1. The expression $\sqrt{\dfrac{.85 \times (.105 + .024 - .008)}{.022 \times .25 \times 1.7}}$

   simplifies to:

   (a) $\sqrt{11}$　　　　　(b) $\sqrt{1.1}$

   (c) $\sqrt{0.11}$　　　　(d) $\sqrt{.011}$

2. The value of $\sqrt{\dfrac{16}{36} + \dfrac{1}{4}}$ is:

   (a) 4/5　　　　　　　(b) 1/3

   (c) 5/6　　　　　　　(d) 8/15

3. A decimal number has 16 decimal places. The number of decimal places in the square root of this number will be:
   (a) 7　　　　　　　　(b) 4
   (c) 8　　　　　　　　(d) 16

4. Consider the following values of three given numers:

   $\sqrt{103}, \sqrt{99.35}, \sqrt{102.20}$
   (a) 10.1489 (Approx.)
   (b) 10.109 (Approx.)
   (c) 9.967 (Approx.)
   The correct sequence of these values matching with the above number is:
   (a) 3, 2, 1　　　　　(b) 1, 3, 2
   (c) 2, 3, 1　　　　　(d) 3, 1, 2

5. If a four-digited perfect square number is such that the number formed by the first two digits and the number formed by the last two digits are also perfect squares, then the four digited number is:
   (a) 5625　　　　　　(b) 3616
   (c) 1681　　　　　　(d) 1024

ANSWERS

1. (a)　　2. (c)　　3. (c)　　4. (b)　　5. (c)

Decimal Fractions

1. If $\sqrt{2025} = 45$, then the value of

   $\sqrt{0.00002025} + \sqrt{0.002025} + \sqrt{2025} +$

   $\sqrt{20.25} =$
   (a) 49.95　　　　　　(b) 49.5495
   (c) 4.9995　　　　　(d) 499.95

2. If $\sqrt{15} = 3.88$, the the value of $\sqrt{\dfrac{5}{3}}$ is:

   (a) 1.39　　　　　　(b) 1.29
   (c) 1.89　　　　　　(d) 1.63

3. If $2805 \div 2.55 = 1100$, then $280.5 \div 25.5$ is:
   (a) 111　　　　　　(b) 1.1
   (c) 0.11　　　　　　(d) 11

4. The value of 213 + 2.013 + 0.213 + 2.0013 is:
   (a) 217.2273
   (b) 21.8893
   (c) 217.32

(d) 3.217.32

5. $\dfrac{0.05 \times 0.05 \times 0.05 + 0.04 \times 0.04 \times 0.04}{0.05 \times 0.05 - 0.05 \times 0.04 + 0.04 \times 0.04} = ?$

(a) 0.09   (b) 0.9
(c) 0.009   (d) 0.001

ANSWERS

1. (b)   2. (b)   3. (d)   4. (a)   5. (a)

HCF & LCM

1. How many numbers less than 10,000 are there which are divisible by 21, 35 and 63?
   (a) 33   (b) 32
   (c) 38   (d) 37
2. Find the side of the largest possible square slabs which can be paved on the floor of a room 2m 50 cm long and 1 m 50 cm broad. Also find the number of such slabs to pave the floor.
   (a) 40, 18   (b) 30, 15
   (c) 50, 15   (d) 20, 25
3. What is the largest number which when divides 1475, 3155 and 5255 leaves the same remainder in each case?
   (a) 220   (b) 420
   (c) 350   (d) 540
4. A florist has 200 roses and 180 jasmines with him. He was asked to make garlands of flowers with only roses or only jasmines each containing the same number of flowers. What will be the largest number of flowers, he can join together without leaving a single flower?
   (a) 16   (b) 17
   (c) 20   (d) 19
5. The HCF and LCM of a pair of numbers are 12 and 926 respectively. How many such distinct pairs are possible?
   (a) 3   (b) 7
   (c) 1   (d) 0

ANSWERS

1. (d)   2. (c)   3. (b)   4. (c)   5. (d)

Average

1. The average weight of 8 persons increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?
   (a) 82 kg   (b) 85 kg
   (c) 76.5 kg   (d) 80 kg
2. Sumitra has an average of 56% on her first 7 examinations. How much she should make on her eighth examination to obtain an average of 60% on 8 examinations?
   (a) 88%   (b) 78%
   (c) 92%   (d) 68%
3. Ages of 'A' and 'B' are in the ratio of 2 : 3 respectively. Six years hence the ratio of their ages will become 8 : 11 respectively. What is B's present age?
   (a) 18 years   (b) 28 years
   (c) 27 years   (d) 25 years
4. The total age of A and B is 12 years more than that of total age of B and C. C is how many years younger than A?
   (a) C is elder than A   (b) 26
   (c) 12   (d) 25
5. The average marks fetched by Mohan in History, Geography, Science and Mathematics is 10 more than the marks fetched in Mathematics. If he has got 110 marks aggregate in History and Geography, what will be the aggregate marks fetched in Science and Mathematics?
   (a) 90   (b) 70
   (c) 75   (d) 85

ANSWERS

1. (b)   2. (a)   3. (c)   4. (c)   5. (d)

Ratio & Proportion

1. In a school the number of boys and that of the girls are in the respective ratio of 2 : 3 If the number of boys is increased by 20% and that of girls is increased by 10%, what will be the new ratio of number of boys to that of the girls?
   (a) 13 : 7   (b) 7 : 9
   (c) 13 : 4   (d) 8 : 11
2. Income of two companies A and B are in the ratio of 5 : 8. Had the income of company A been more by Rs. 25 lakhs, the ratio of their incomes would have been 5 : 4 respectively. What is the income of company B?
   (a) Rs. 45 lakhs   (b) Rs. 80 lakhs
   (c) Rs. 40 lakhs   (d) Rs. 65 lakhs
3. The ratio of males and females in a city is 7 : 8 respectively and the percentage of children among males and females is 25% and 20% respectively. If the number of adult females in the city is 1,56,800, what is the total population?
   (a) 3,00,000   (b) 3,67,500
   (c) 3,96,000   (d) 2,71,500
4. A sum of money is to be distributed among P, Q and R in the ratio 6: 19:7. If R gives Rs. 200 from his share to Q, the ratio of P, Q and R becomes 3 : 10 3 what is the total sum?
   (a) Rs. 6400   (b) Rs. 4800
   (c) Rs. 3200   (d) Rs. 3600

5. A total of 91 boys are seated in three rows. The ratio between the number of boys seated in the first and the second row is 5 : 2 respectively and the ratio between the number of boys seated in the second and the third row is 1 : 3 respectively. How many boys were there in the second row?
(a) 24 (b) 14
(c) 42 (d) 60

ANSWERS

1. (d)　2. (c)　3. (b)　4. (a)　5. (b)

Partnership,

1. Avinash invested an amount of Rs. 25,000 and started a business. Jitendra joined him after one year with an amount of Rs. 30,000. After two years from starting the business they earned the profit of Rs. 46,000. What will be Jitendra's share in the profit?
(a) Rs. 16,000 (b) Rs. 13,000
(c) Rs. 7,66.67 (d) 17,250

2. Mr. Nilesh Agrawal opened a workshop investing Rs. 40,000. He invested additional amount of Rs. 10,000 every year. After two years his brother Suresh joined him with an amount of Rs. 85,000. Thereafter Suresh did not invest any additional amount. On completion of four years from the opening of workshop they earned an amount of Rs. 1,95,000. What will be Nilesh's share in the earning?
(a) Rs. 96,000 (b) Rs. 1,10,000
(c) Rs. 1,35,000 (d) Rs. 98,000

3. A invests Rs. 3000 for one year in a business. How much B should invest in order that the profit after 1 year may be divided into ratio of 2 : 3?
(a) Rs. 3,000 (b) Rs. 1800
(c) Rs. 3600 (d) Rs. 9,000

4. A can contains a mixture of two liquids A and B in the ratio 7 : 5. When 9 litres of mixture are drawn off and can is filled with B, the ratio of A and B becomes 7 : 9. How many litres of liquid A was contained by the can initially?
(a) 28 (b) 21 (c) 25 (d) 23

5. Three friends A, B and C started a business by investing amount in the ratio of 5 : 7 : 6 respectively. After a period of six months C withdrew half of the amount invested by him. If the amount invested by A is Rs. 40,000 and the total profit earned at the end of one year is Rs. 33,000, what, is C's share in profit?
(a) Rs. 9,000 (b) Rs. 15,000
(c) Rs. 11,000 (d) Rs. 12,000

ANSWERS

1. (d)　2. (b)　3. (d)　4. (b)　5. (a)

Problems on Ages

1. Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present?
(a) 16 years (b) 19 years
(c) 22 years (d) 25 years

2. The total of the ages of Jayant, Prem and Saransh is 93 years. Ten years ago, the ratio of their ages was 2 : 3 : 4. What is the present age of Saransh?
(a) 44 years (b) 36 years
(c) 33 years (d) 38 years

3. The ratio of the present ages of two brothers is 1 : 2 and 5 years back, the ratio was 1 : 3. What will be the ratio of their ages after 5 years?
(a) 3 : 4 (b) 3 : 2
(c) 3 : 5 (d) 5 : 6

4. Hitesh is 40 years old and Ronnie is 60 years old. How many years ago was the ratio of their ages 3 : 5?
(a) 2 years (b) 10 years
(c) 30 years (d) 47 years

5. The ratio of the father's age to his son's age is 7 : 3. The product of their ages is 756. The ratio of their ages after 6 years will be:
(a) 6 : 7 (b) 2 : 1
(c) 10 : 9 (d) 3 : 2

ANSWERS

1. (a)　2. (d)　3. (b)　4. (b)　5. (b)

Percentage

1. The difference of two numbers is 20% of the larger number. If the smaller number is 20, then the larger number is:
(a) 25 (b) 46
(c) 27 (d) 82

2. When any number is divided by 12, then dividend becomes 1/4th of the other number. By how much percent first number is greater than the second number?
(a) 165 (b) 200
(c) 300 (d) 400

3. If one number is 80% of the other and 4 times the sum of their squares is 656, then the numbers are:
(a) 6,8 (b) 8, 10

(c) 16, 20   (d) 10, 15

4. Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A : B.
  (a) 1 : 2   (b) 3 : 1
  (c) 3 : 4   (d) 4 : 3

5. Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?
  (a) 57%   (b) 77%
  (c) 80%   (d) 90%

ANSWERS

1. (a)   2. (b)   3. (b)   4. (d)   5. (a)

Profit & Loss

1. A man purchased a box full of pencils at the rate of 7 for Rs. 9 and sold all of them at the rate of 8 for Rs. 11. In this transaction, he gained Rs. 10. How many pencils did the box contain?
  (a) 111   (b) 112
  (c) 114   (d) 116

2. A man bought a number of clips at 3 for a rupee and an equal number at 2 for a rupee. At what price per dozen should he sell them to make a profit of 20%?
  (a) Rs. 9   (b) Rs. 10
  (c) Rs. 6   (d) Rs. 7

3. A man buys eggs at 2 for Re. 1 and an equal number at 3 for Rs. 2 and sells the whole at 5 for Rs. 3. His gain or loss percent is:
  (a) $2\frac{2}{7}$ % loss   (b) $3\frac{6}{7}$ % gain
  (c) $3\frac{2}{7}$ % loss   (d) $2\frac{6}{7}$ % loss

4. A man bought some oranges at Rs. 10 per dozen and bought the same number of oranges at Rs. 8 per dozen. He sold these oranges at Rs. 11 per dozen and gained Rs.120. The total number of oranges bought by him was:
  (a) 55 dozens   (b) 80 dozens
  (c) 90 dozens   (d) 60 dozens

5. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?
   1 8   (b) 9
  (c) 5   (d) 2

ANSWERS

1. (b)   2. (c)   3. (d)   4. (d)   5. (c)

Time and Work

1. A and B together can do a piece of work in 12 days, which B and C together can do in 16 days. After A has been working at it for 5 days and B for 7 days, C finishes it in 13 days. In how many days C alone will do the work?
  (a) 16   (b) 24
  (c) 37   (d) 48

2. A and B can do a piece of work in 45 days and 40 days respectively. They began to do the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days after which A left the work was:
  (a) 11   (b) 7
  (c) 9   (d) 12

3. A can do a piece of work in 14 days which B can do in 21 days. They begin together but 3 days before the completion of the work, A leaves off. The total number of days to complete the work is:
  (a) $6\frac{3}{5}$ (b) $8\frac{1}{2}$
  (c) $10\frac{1}{5}$ (d) $13\frac{1}{2}$

4. A, B and C can complete a work separately in 24, 36 and 48 days respectively. They started together but C left after 4 days of start and A left 3 days before the completion of the work. In how many days will the work be completed?
  (a) 15 days   (b) 24 days
  (c) 25 days   (d) 38 days

5. A, B and C together earn Rs. 300 per day, while A and C together earn Rs. 188 and B and C together earn Rs. 152. The daily earning of C is:
  (a) Rs. 40   (b) Rs. 70
  (c) Rs. 112   (d) Rs. 160

ANSWERS

1. (b)   2. (c)   3. (c)   4. (a)   5. (a)

Pipes and Cisterns

1. A pump can fill a tank with water in 2 hours. Because of a leak, it took $2\frac{1}{3}$ hours to fill the tank. The leak can drain all the water of the tank in:
  (a) 43 hrs   (b) 9 hrs

(c) 10 hrs   (d) 14 hrs

2. Two taps *A* and *B* can fill a tank in 5 hours and 20 hours respectively. If both the taps are open then due to a leakage, it took 30 minutes more to fill the tank. If the tank is full, how long will it take for the leakage alone to empty the tank?
   (a) 44 hrs   (b) 12 hrs
   (c) 18 hrs   (d) 36 hrs

3. Two pipes *A* and *B* together can fill a cistern in 4 hours. Had they been opened separately, then *B* would have taken 6 hours more than *A* to fill the cistern. How much time will be taken by *A* to fill the cistern separately?
   (a) 10 hr   (b) 4 hrs
   (c) 6 hrs   (d) 8 hrs.

4. One pipe can fill a tank three times as fast as another pipe. If together the two pipes can fill the tank in 36 minutes, then the slower pipe alone will be able to fill the tank in:
   (a) 92 min   (b) 112 min
   (c) 144 min   (d) 192 min

5. A tank is filled in 5 hours by three pipes *A*, *B* and *C*. The pipe *C* is twice as fast as *B* and *B* is twice as fast as *A*. How much time will pipe *A* alone take to fill the tank?
   (a) 22 hrs   (b) 27 hrs
   (c) 35 hrs
   (d) cannot be determined

ANSWERS

1. (d)   2. (d)   3. (6)   4. (c)   5. (c)

Time and Distance

1. Mac travels from *A* to *B* a distance of 250 miles in $5\frac{1}{2}$ hours. He returns to *A* in 4 hours 30 minutes. His average speed is:
   (a) 42 mph   (b) 49 mph
   (c) 48 mph   (d) 50 mph

2. A boy goes to his school from his house at a speed of 3 km/hr and returns at a speed of 2 km/hr. If he takes 5 hours in going and coming, the distance between his house and school is:
   (a) 8.5 km   (b) 5.5 km (c) 6 km   (d) 9 km

3. The average speed of a train in the onward journey is 25% more than that in the return journey. The train halts for one hour on reaching the destination. The total time taken for the complete to and for journey is 17 hours, covering a distance of 800 km. The speed of the train in the onward journey is:
   (a) 50 km/hr   (b) 53 km/hr
   (c) 52 km/hr   (d) 56.25 km/hr

4. I started on my bicycle at 7 a.m. to reach a certain place. After going a certain distance, my bicycle went out of order. Consequently, I rested for 35 minutes and came back to my house walking all the way. I reached my house at 1 p.m. If my cycling speed is 10 kmph and my walking speed is 1 kmph, then on my bicycle I covered a distance of:
   (a) $4\frac{61}{66}$ km   (b) $13\frac{4}{3}$ km
   (c) $5\frac{3}{6}$ km   (d) $15\frac{7}{8}$ km

5. *A*, *B* and *C* are on a trip by a car. *A* drives during the first hour at an average speed of 50 km/hr. *B* drives during the next 2 hours at an average speed of 48 km/hr. *C* drives for the next 3 hours at an average speed of 52 km/hr. They reached their destination after exactly 6 hours. Their mean speed was:
   (a) 50 km/hr   (b) $50\frac{1}{3}$ km/hr
   (c) 51 km/hr   (d) 52 km/hr

ANSWERS

1. (d)   2. (c)   3. (d)   4. (a)   5. (b)

Problems on Train

1. A train moves past a telegraph post and a bridge 264 m long in 8 seconds and 20 seconds respectively. What is the speed of the train?
   (a) 75 km/hr   (b) 82 km/hr
   (c) 79 km/hr   (d) 79.2 km/hr

2. A train takes 18 seconds to pass completely through a station 162 m long and 15 seconds through another station 120 m long. The length of the train is:
   (a) 73 m   (b) 92 m
   (c) 90 m   (d) 100 m

3. How many seconds will a 500 metre long train take to cross a man walking with a speed of 3 km/hr in the direction of the moving train if the speed of the train is 63 km/hr?
   (a) 32   (b) 30
   (c) 40   (d) 48

4. A jogger running at 9 kmph alongside a railway track is 240 metres ahead of the engine of a 120 metre long train running at 45 kmph in the same direction. In how much time will the train pass the jogger?
   (a) 38 sec   (b) 20 sec
   (c) 36 sec   (d) 72 sec

5. A train 110 metres long is running with a speed of 60 kmph. In what time will it pass a man who is running at 6 kmph in the direction

opposite to that in which the train is going?

(a) 8 sec   (b) 6 sec

(c) 7 sec   (d) 12 sec

ANSWERS

1. (d)   2. (c)   3. (b)   4. (c)   5. (b)

Alligation or Mixture

1. In what ratio must a grocer mix two varieties of tea worth Rs. 60 a kg and Rs. 65 a kg so that by selling the mixture at Rs. 68.20 a kg he may gain 10%?

   (a) 3 : 2   (b) 6 : 7

   (c) 3 : 5   (d) 4 : 5

2. How many kilograms of sugar costing Rs. 9 per kg must be mixed with 27 kg of sugar costing Rs. 7 per kg so that there may be a gain of 10% by selling the mixture at Rs. 9.24 per kg?

   (a) 38 kg   (b) 43 kg

   (c) 54 kg   (d) 63 kg

3. In what ratio must water be mixed with milk to gain $16\frac{2}{3}$ on selling the mixture at cost price?

   (a) 1 : 6   (b) 7 : 1

   (c) 7 : 3   (d) 4 : 3

9. A dishonest milkman professes to sell his milk at cost price but he mixes it with water and thereby gains 25%. The percentage of water in the mixture is:

   (a) 4%   2. 35%   (c) 20%   (d) 30%

4. Two vessels A and B contain spirit and water mixed in the ratio 5 : 2 and 7 : 6 respectively. Find the ratio in which these mixture be mixed to obtain a new mixture in vessel C containing spirit and water in the ratio 8 : 5?

   (a) 5 : 3   (b) 9 : 4   (c) 5 : 6   (d) 7 : 9

ANSWERS

1. (a)   2. (d)   3. (a)   4. (c)   5. (d)

Probability

1. Two dice are thrown simultaneusly. What is the probility of getting two numbers whose product is even?

   (a) $\dfrac{3}{5}$ (b) $\dfrac{3}{4}$ (c) $\dfrac{3}{8}$ (d) $\dfrac{7}{9}$

2. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is a multiple of 3?

   (a) $\dfrac{3}{10}$ (b) $\dfrac{5}{11}$ (c) $\dfrac{5}{2}$ (d) $\dfrac{3}{5}$

3. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears has a number which is a multiple of 3 or 5?

   (a) $\dfrac{6}{7}$ (b) $\dfrac{9}{11}$ (c) $\dfrac{8}{15}$ (d) $\dfrac{9}{20}$

4. In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What ist he probability of getting a prize?

   (a) $\dfrac{11}{13}$ (b) $\dfrac{7}{9}$ (c) $\dfrac{2}{7}$ (d) $\dfrac{5}{7}$

5. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card?

   (a) $\dfrac{5}{7}$ (b) $\dfrac{4}{13}$

   (c) $\dfrac{1}{4}$ (d) $\dfrac{11}{52}$

ANSWERS

1. (b)   2. (c)   3. (d)   4. (d)   5. (c)

Boats and Streams

1. Speed of a boat in standing water is 9 kmph and the speed of the stream is 1.5 kmph. A man rows to a place at a distance of 105 km and comes back to the starting point. The total time taken by him is:

   (a) 22 hours   (b) 27 hours

   (c) 20 hours   (d) 24 hours

2. The speed of a boat in still water is 15 km/hr and the rate of current is 3 km/hr. The distance travelled downsteam in 12 minutes is:

   (a) 3.3 km   (b) 2.9 km

   (c) 2.4 km   (d) 3.6 km

3. A man can row at 5 kmph in still water. If the velocity of current is 1 kmph and it takes him 1 hour to row to a place and come back, how far is the place?

   (a) 2.4 km   (b) 2.5 km

   (c) 3 km   (d) 3.1 km

4. A boat takes 19 hours for travelling downstream from point *A* to point *B* and coming back to a point *C* midway between *A* and *B*. If the velocity of the stream is 4 kmph and the speed of the boat in still water is 14 kmph, what is the distance between *A* and *B*?

   (a) 162 km   (b) 180 km

(c) 223 km   (d) 220 km

5. A man can row $9\frac{1}{3}$ kmph in still water and finds that it takes him thrice as much time to row up than as to row down the same distance in the river. The speed of the current is:

(a) $2\frac{1}{3}$ km/hr   (b) $4\frac{1}{9}$ km/hr

(c) $4\frac{2}{3}$ km/hr   (d) $4\frac{1}{2}$ km/hr

ANSWERS

1. (d)   2. (d)   3. (a)   4. (b)   5. (c)

Simple Interest

1. If Rs. 64 accounts to Rs. 83.20 in 2 years, what will Rs. 86 amount to in 4 years at the same rate per cent pr annum?
   (a) Rs. 115.80   (b) Rs. 127.70
   (c) Rs. 127.40   (d) Rs. 51.60

2. The simple interest on a certain sum of money at the rate of 5% p.a. for 8 years is Rs. 840. At what rate of interest the same amount of interest can be received on the same sum after 5 years?
   (a) 10%   (b) 8%
   (c) 9%   (d) 12%

3. The interest on a certain deposit at 4.5% p.a. is Rs. 202.50 in one year. How much will the additional interest in one year be on the same deposit at 5% p.a.?
   (a) Rs. 30.25   (b) Rs. 22.50
   (c) Rs. 25   (d) Rs. 52.75

4. A sum invested at 5% simple interest per annum grows to Rs. 504 in 4 years. The same amount at 10% simple interest per annum in

   $2\frac{1}{2}$ years will grow to:

   (a) Rs. 530   (b) Rs. 555
   (c) Rs. 525   (d) Rs. 650

5. What will be the ratio of simple interest earned by certain amount at the same rate of interest for 6 years and that for 9 years?
   (a) 5 : 3   (b) 4 : 7
   (c) 2 : 3   (d) data inadequate

ANSWERS

1. (d)   2. (b)   3. (b)   4. (c)   5. (c)

Compound Interest

1. The difference between compound interest and simple interest on an amount of Rs. 15,000 for 2 years is Rs. 96. What is the rate of interest per annum?
   (a) 8   (b) 11
   (c) 12   (d) None of these

2. The difference between simple and compound interests and compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. The sum (in Rs.) is:
   (a) 625   (b) 620
   (c) 640   (d) 660

3. The compound interest on a sum of money for 2 years is Rs. 832 and the simple interest on the same sum for the same period is Rs. 800. The difference between the compound interest and the simple interest for 3 years will be:
   (a) Rs. 50   (b) Rs. 67
   (c) Rs. 98.56   (d) Rs. 75.45

4. The difference between the simple interest on a certain sum at the rate of 10% per annum for 2 years and compound interest which is compounded every 6 months is Rs. 124.05. What is the principal sum?
   (a) Rs. 9000   (b) Rs. 8000
   (c) Rs. 10,000   (d) Rs. 13,000

5. The difference between compound interest and simple interest on a sum for 2 years at 10% per annum, when the interest is compounded annually is Rs. 16. If the interest were compounded half-yearly, the difference in two interests would be:
   (a) Rs. 24.81   (b) Rs. 30
   (c) Rs. 31.61   (d) Rs. 35

ANSWERS

1. (a)   2. (a)   3. (c)   4. (b)   5. (a)

Area

1. The diagonal of a rectangle is thrice its smaller side. The ratio of the length to the breadth of the rectangle is:

   (a) 4 : 1   (b) $\sqrt{3}:1$

   (c) $\sqrt{2}:1$ (d) $2\sqrt{2}:1$

2. A rectangular carpet has an area of 120 sq. metres and a perimeter of 46 metres. The length of its diagonal is:
   (a) 15 m   (b) 19 m
   (c) 17 m   (d) 22 m

3. The diagonal of a rectangle is $\sqrt{41}$ cm and its area is 20 sq. cm. The perimeter of the rectangle must be:
   (a) 10 cm
   (b) 18 cm
   (c) 22 cm
   (d) 42 cm

4. A took 15 seconds to cross a rectangular field diagonally walking at the rate of 52 m/min and B took the same time to cross the same field along its sides walking at the rate of 68 m/min. The area of the field is:
   (a) 52 m²
   (b) 40 m²
   (c) 61 m²
   (d) 60 m²

5. A rectangular carpet has an area of 60 sq. m. If its diagonal and longer side together equal 5 times the shorter side, the length of the carpet is:
   (a) 8 m
   (b) 12 m
   (c) 15 m
   (d) 14.5 m

ANSWERS

1. (d)   2. (c)   3. (b)   4. (d)   5. (b)

Volume and Suface Area

1. A rectangular water tank is 80 m × 40 m. Water flows into it through a pipe 40 sq. cm at the opening at a speed of 10 km/hr. By how much, the water level will rise in the tank in half an hour?

   (a) $\dfrac{4}{11}$ cm
   (b) $\dfrac{5}{9}$ cm

   (c) $\dfrac{5}{8}$ cm
   4. $\dfrac{4}{5}$ cm

2. A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of areas of the four walls, the volume of the hall is:
   (a) 720
   (b) 800
   (c) 1200
   (d) 2000

3. The sum of the length, breadth and depth of a cuboid is 19 cm and its diagonal is $5\sqrt{5}$ cm. It surface area is:
   (a) 127 cm²
   (b) 236 cm²
   (c) 361 cm²
   (d) 480 cm²

4. A swimming pool 9 m wide and 12 m long is 1 m deep on the shallow side and 4 m deep on the deeper side. Its volume is:
   (a) 309 m³
   (b) 270 m³
   (c) 360 m³
   (d) 607 m³

5. A metallic sheet is of rectangular shape with dimensions 48 m × 36 m. From each of its corners, a square is cut off so as to make an open box. If the length of the square is 8 m, the volume of the box (in m³) is:

(a) 5835
(b) 6400
(c) 6420
(d) 9260

ANSWERS

1. (c)   2. (c)   3. (b)   4. (b)   5. (d)

Stock and Shares

1. A 9% stock yields 8%. The market value of the stock is:
   (a) Rs. 72
   (b) Rs. 94
   (c) Rs. 112.50
   (d) Rs. 118.50

2. A 12% stock yielding 10% is quoted at:
   (a) Rs. 87
   (b) Rs. 112
   (c) Rs. 112
   (d) Rs. 120

3. By investing Rs. 1620 in 8% stock, Michael earns Rs. 135. The stock is then quoted at:
   (a) Rs. 90
   (b) Rs. 96
   (c) Rs. 106
   (d) Rs. 110

4. To produce an annual income of Rs. 1200 from a 12% stock at 90, the amount of stock needed is:
   (a) Rs. 10,000
   (b) Rs. 12,800
   (c) Rs. 13,000
   (d) Rs. 16,000

5. In order to obtain an income of Rs. 650 from 10% stock at Rs. 96, one must make an investment of:
   (a) Rs. 6200
   (b) Rs. 6240
   (c) Rs. 6500
   (d) Rs. 9800

ANSWERS

1. (c)   2. (d)   3. (b)   4. (a)   5. (b)

ENGLISH COMPREHENSION

Narration (Direct and Indirect)

Directions: Pick out the correct alternative that complete sentence which is changed into indirect narration.

1. The thief said to the policeman, "Why did you beat me so mercilessly?"
   The thief:
   (a) asked the policeman why he had beaten him so mercilessly.
   (b) said the policeman that why he had beaten him mercilessly.
   (c) asked the policeman that why he had beaten him so mercilessly.
   (d) None of these.

2. The saint said to me, "Why do you not go to the temple daily?"
   The saint:
   (a) said to me that why I did not go to the temple daily.
   (b) asked me that why I did not go to the temple daily.
   (c) asked me that why I do not go to the temple daily.
   (d) enquired of me why I did not go to the temple daily.

3. My friend said to me, "Where do you go daily?"
   My friend:
   (a) asked me where I went daily.
   (b) said to me that where I went daily.
   (c) told me that where I went daily.
   (d) asked me that where I go daily.

4. The teacher said to me, "Have you read this book?" The teacher
   (a) told to me that had I read this book.
   (b) said to me that had I read this book.
   (c) asked me if I had read that book.
   (d) told me that I had read that book.

5. The milk man says, "My cow does not give much milk."
   The milk man :
   (a) said that his cow does not give much milk.
   (b) told that his cow does not give much milk.
   (c) says that his cow does not give much milk.
   (d) told that his cow do not give much milk.

ANSWERS

1. (b)   2. (b)   3. (b)   4. (c)   5. (b)

Common Error

Directions: In each of the following sentences four words or phrases have been underlined. Only one underlined part in each sentence is not acceptable in standard English. Pick up the part 1, 2, 3, 4.

1. I have seen as bad or (1) worse scenes of disorder (2) at the English fair than (3) the ones in any other (4) Australian mining town.

2. This is the third communication (1) we have sent (2) and we are (3) surprised that we have received (4) no answer.

3. The officers are now (1) perfectly (2) happy fishing, boating, shooting, playing cricket (3) and other sports (4).

4. While in conversation with a (1) high ranking military officer he told me (2) that at the (3) head-quarters nothing was known (4).

5. The fear (1) of an impending invasion (2) has more to do than even the debasing of the coinage (3) with the financial (4) difficulties.

ANSWERS

1. (a)   2. (d)   3. (d)   4. (b)   5. (c)

One-Word Substitution

Directions: In each of these questions, out of the four lternatives, choose the one which can be substituted for the given sentence, group of words or clauses.

1. Parts of a country behind the coast or a river's banks.
   - (a) Swamps
   - (b) Archipelago
   - (c) Hinterland
   - (d) Isthmus
2. A lower-area storm with high winds rotating about a centre of low atmospheric pressure
   - (a) Cyclone
   - (b) Tornado
   - (c) Typhoon
   - (d) Hurricane
3. One who promotes the idea of absence of government of any kind, when every man should be a law unto himself
   - (a) Anarchist
   - (b) Belligerent
   - (c) Iconoclast
   - (d) Agnostic
4. Something which is not through or profound
   - (a) Superficial
   - (b) Superstitious
   - (c) Superfluous
   - (d) Supernatural
5. Indifference to pleasure or pain
   - (a) Docility
   - (b) Stoicism
   - (c) Patience
   - (d) Reticence

ANSWERS

| 1. (c) | 2. (a) | 3. (a) | 4. (a) | 5. (b) |

Synonyms and Antonyms

Directions (Q. No. 1-30): In this section you find a number of sentences, parts of which are bold. For each bold part, four or five words/phrases are listed below. Choose the word/phrase nearest in meaning to the bold part.

1. Indians are likely to be parochial.
   - (a) Generous
   - (b) Narrow-minded.
   - (c) Brave
   - (d) Short-sighted
2. I was discomfited to find the boss in the disco.
   - (a) irritated
   - (b) uncomfortable
   - (c) embarrassed
   - (d) displeased
3. He spent most of his years debunking politicians.
   - (a) Exposing
   - (b) Cheating
   - (c) Threatening
   - (d) Pacifying
4. We arrived safely at the quay and went ashore.
   - (a) Peninsula
   - (b) Wharf
   - (c) Target
   - (d) Island
5. Editors are known to be pernickety about grammar.

- (a) Spiteful
- (b) Careless
- (c) Fussy
- (d) Ignorant

ANSWERS

| 1. (b) | 2. (c) | 3. (a) | 4. (d) | 5. (c) |

Idioms and Phrases

Directions (Q. No. 1-30): Select the meaning of the bold Idiom or phrase from the given alternatives.

1. In the organised society of today no individual or nation can plough a lonely furrow.
   - (a) remain unaffected
   - (b) do without the help of others
   - (c) survive in isolation
   - (d) remain non-aligned
2. To flog a dead horse
   - (a) to do interesting things
   - (b) to try to take work from a weak horse
   - (c) to beat a horse that is dead
   - (d) to revive interest in a subject which is out of date
3. To bait the hook to suit the fish
   - (a) to look at things from other person's point of veiw
   - (b) to catch fish by providing suitable food
   - (c) to do things to please others
   - (d) to prepare a box to pack the fish
4. Bed of roses
   - (a) very soft bed
   - (b) dull life
   - (c) belong to
   - (d) full of joys
5. Black and blue
   - (a) painting
   - (b) severely
   - (c) together
   - (d) intermix

ANSWERS

| 1. (b) | 2. (d) | 3. (a) | 4. (d) | 5. (b) |

Sentence Correction

Directions: Each of the following question is in the form of a sentence with four underlined portions marked a, b, c and d, respectively. Choose the marked portion that carries errors. If no error required then your answer is 5.

1. A tapestry consists of a foundation weave,
   a
   called the wrap, which across are passed
   b
   several coloured threads, called wefts,
   c
   forming decorative patterns.
   d

2. The fossil remains of much extinct
                                   a
   mammals have   been found in the tar pits
       b   c
   or Rancho Brea in Los Angles.
                     d

3. Chemical engineering is based on the
                                        a
   principles of physics, chemists, and
       b   c
   mathematics.
       d

4. The salesman refused to show the family
                                   a
   around the showroom, till they told him
       b   c
   what kind of a carthey were looking for.
           d   e

5. Despite the manager's comprehensive and
   a
   enthusiastic explanation of the scheme, we
                          b
   were completely disinterested in the matter.
                     d

ANSWERS

1. (b)	2. (a)	3. (c)	4. (c)	5. (c)

Sentence Arrangements

Direction (Q. No. 1-30) : Sentences given in each question, when properly sequenced form a coherent paragraph. Each sentence is labelled with letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.

1. A. 'Electricity' is a subject enumerated in the Concurrent list, meaning that the Federal and State legislatures are competent to enact laws on the subject.
   B. The Constitution of India has demarcated the legislative competence of the Federal and State legislatures in three different lists.
   C. However, a State law cannot override, or be inconsistent with, a Federal law and in case of inconsistency, the Federal law will override the State law.
   D. The Union list contains matters within the exclusive domain of the Federal legislature, the State list contains matters within the exclusive domain of the State legislature, and the Concurrent list contains subjects on which both the Federal and the State legislatures are competent to enact laws.
   (a) ACBD   (b) BDAC
   (c) DABC   (d) BCDA

2. A. The Vikings were the terrorists whom Europe feared the most between the eighth and the twelfth centuries.
   B. They set out on these voyages of dangerous adventure because they felt an even more unbearable fear than did their neighbours who stayed behind.
   C. For they were tortured by the thought that their name and reputation might vanish into nothingness.
   D. They managed to brave the seas to pillage, ransom, and create havoc from Constantinople to Lisbon and Dublin, even though they carried inside them all the usual fears of poor peasants as well as the loneliness of Scandinavia's long nights.
   (a) CDAB   (b) CBAD
   (c) DABC   (d) ADBC

3. A. Deprived of livelihood and income, they face penury, and as families split up and spread out, their community bonds crumble.
   B. Oddly, all this happens in the name of development, and the victim are described as beneficiaries.
   C. Cut off from their most vital resources, those uprooted are then robbed of their history traditions and culture.
   D. Imagine the entire population of the continent of Australia turned out of their homes – eighteen million people losing their lands, evicted from their houses.
   (a) DACB   (b) DBAC
   (c) ACDB   (d) ABDC

4. A. This chemical compound finds wide usage in diversified industries such as refectories, ceramics, etc.
   B. Indal developed the requisite technology in-house at its Belgaum centre.
   C. In 1982-83, it started developing special alumina, an import substitute.
   D. In pursuit of its policy of adding value to the basic products, Indal has been adding value to alumina too.
   (a) BCDA   (b) CDAB
   (c) CBAD   (d) DCAB

5. A. India accorded Most Favoured Nation (MFN) status to Pakistan long ago.
   B. Matters have hardly improved since dialogue was broken off in early 1994.
   C. Pakistan is still only talking about giving India MFN status in trade, even though it is obliged to under the World Trade Organisation.
   D. In some ways, they have worsened.
   (a) CADB   (b) BDCA
   (c) CBDA   (d) ACBD

ANSWERS

1. (b)	2. (d)	3. (a)	4. (d)	5. (d)

Analogy

Direction (Q. No. 1-30): Each of the questions consists of two capitalised words which have a certain relationship to each other. Followed by four pairs of words. Choose the pair that is related to each other in the same way as the capitalised pair.

1. PEST : IRKSOME
   - (a) salesclerk : courteous
   - (b) expert : proficient
   - (c) enigma : unexpected
   - (d) leader : non-descript
2. PROLOGUE : NOVEL
   - (a) preamble : constitution
   - (b) sketch : drawing
   - (c) movement : symphony
   - (d) index : book
3. EXPAND : VOLUME
   - (a) ascent : flight
   - (b) proliferate : number
   - (c) bend : flexibility
   - (d) cool : temperature
4. RUST : CORROSION
   - (a) vapour : flammability
   - (b) dew : condensation
   - (c) crystal : purification
   - (d) solution : precipitation
5. CLAIM : LEGITIMATED
   - (a) hypothesis : confirmed
   - (b) verdict : appealed
   - (c) counter
     argument : doubted
   - (d) proposition : repeated

ANSWERS

1. (b) 2. (a) 3. (b) 4. (b) 5. (a)

Foreign Words & Phrases

Directions: Choose the correct meaning of the foreign words and phrases out of the four responses a, b, c and d.

1. vis-a-vis :
   - (a) similar
   - (b) face to face
   - (c) contrary to the fact
   - (d) in good faith
2. Modus operandi
   - (a) successful operation
   - (b) unsuccessful mission
   - (c) mode or manner of doing a thing
   - (d) a clandestine operation
3. Ad valorem
   - (a) according to the-value
   - (b) according to utility
   - (c) according to cost
   - (d) according to demand
4. Aide memoire
   - (a) hearing aid
   - (b) without memory
   - (c) with sound memory
   - (d) notes to aid memory
5. Ad interim :
   - (a) finally
   - (b) ultimately
   - (c) unanimously
   - (d) in the mean time

ANSWERS

1. (b) 2. (b) 3. (b) 4. (c) 5. (b)

Comprehension

Directions (Q.1–11): Read the following passage carefully and answer the questions given below it. Certain words are printed in bold in the passage to help you locate them while answering some of the questions.

What is immediately needed today is the establishment of a Wrold Government or an International Federation of mankind. It is the utmost necessity of the world today, and all those persons who wish to see all human beings happy and prosperous naturally feel it keenly. Of course, at times we feel that many of the problem of our political, social, linguistic and cultural life would come to an end if there were one Govenment all ovet the world. Travellers, businessmen, seekers of knowledge and teachers of **righteousness** know very well that great **impediments** and obstructions are faced by them when they pass from one country to another, exchange goods, get information, and make an efforts to spread their good gospel among their fellow-men. In the past, religious sects divided one set of people against another, colour of skin or shape of the body set one against the other. But today when philosophical light has exploded the darkness that was created by religious differences, and when scientific knowledge has flasified the superstitions, they have enabled human beings of all religious views and of all races and colours to come in frequent contact with one another . It is the governments of various countries that keep poeple of one country apart from, those of another. They create artificial barriers, unnatu-

ral distinctions, unhealthy isolation, unnecessary fears and dangers in the minds of common men who by their nature want to live in friendship with their fellow-men. But all these evils would cease to exist if there were one Government all over the world.

1. What divides people of a country against another?
   (a) Different religions
   (b) Different language
   (c) Different social and political systems of different people
   (d) Government of various countries

2. What is the urgent heed of the world today?
   (a) The establishment of an international economic order.
   (b) The establishment of a world government.
   (c) The creation of a cultural international social order.
   (d) The raising of an international spiritual army.

3. What will the world Government be expected to do?
   (a) it will arrange for interplanetary contacts
   (b) it will end all wars for all time to come
   (c) it will bring about a moral regeneration of mankind
   (d) it will kill the evil spirit in man

4. Choose the word which is SIMILAR in meaning as the word "righteousness" as used in the passage.
   (a) rectitude   (b) religiosity
   (c) requirement   (d) scrupulousness

ANSWERS

1. (d)	2. (d)	3. (c)	4. (a)	5. (d)

GENERAL KNOWLEDGE

Indian History

The Indian History is perhaps the oldest in the world, and the sources of Indian History are the verbal history, because our ancients never did bother about putting things down on paper and archaeological evidences. Based on the evidences available today, Indian History, like the history of every ancient culture in the world, is broadly divided into four periods as mentioned below:

Pre-History

From the big bang, the primeval swamp to the Indus Valley civilization. Though Indus Valley civilization is included in pre-historical period. However, technical evidences shows that Indus Valley civilization did have a script, although it has not been decoded yet. So, it is generally included in Ancient History nowadays.

Ancient History

It begins from the Indus Valley civilization (for which the date is a matter of hot debate, but historians have agreed to disagree on 3000 BC) to just after the king Harsha Vardhana, which is around 700-800 BC.

Medieval History

It begins from 800 BC to mid-18th century AD.

Modern History

From mid-18th century to the independence of India, which is on August 15, 1947. The history of Modern India is farther sub-divided into two major periods:

1. The British Period.
2. The India Freedom Struggle and Partition of India.

ANCIENT INDIA

The discovery of Mohenjodaro and Harappa by British archeologist: **Marshall** proved that Indian civilization is the oldest civilization in the world. Even India came before Greece, considered the oldest civilization before the discovery of Mohenjodaro and Harappa. The main features of Ancient Indian History are as follows:

Indus Valley Civilization

Discovery: In 1921, R.B. Dayaram Sahani, first discovered Harappa, in the Montgomery district of the Punjab. According to radio-carbon dating, it spread from the year 2350-1750.

Indus Valley Civilization

Dr. R. D. Banerjee found the ancient city Mohenjodaro (literally, 'city of the dead') in Larkana district of Sindh, now in Pakistan in 1922.

The Marvelous Town Planning *of* ***Mohenjodaro:*** A chief feature of Mohenjodaro is its superb town planning. The streets, which divided the city into neat rectangular or square blocks, varied in width but always intersected each other at right angles. The city had an elaborate drainage system, consisting of horizontal and vertical drains, street drains and so on. The architecture of the buildings was clearly intended to be functional and minimalist, and certainly not to please the aesthete. Mohenjodaro was obviously a cosmopolitan city, with people of different races mingling with the local populace-Proto-Austroloid, Mediterranean, Alpine and Mongoloid.

The Indus Valley Civilization

Before the coming of Aryans, there was a civilization that was not only well-developed, but actually far more sophisticated than that of the Aryans. The Indus Valley civilization said its last hurray roughly in 2200 BC. The beginning and end of the Indus Valley Civilization are both a matter of debate because people could not have emerged complete with their perfect town planning, neat houses, lovely jewellery and loads of make-up. So where did they come from? and then having come, just where did they disappear? Popular theory, which is most accepted is that the people of the Harappan civilization were chased out by the Aryans and went down south. The present South Indians are their descendants.

The Vedic Period (1500 Bc-600 Bc)

Initially, they settled in the area of Sapt-Sindhu, which included Punjab, Kashmir, Sindh, Kabul and Gandhara (Kandhar). The chief sources of this period are The Vedas and the Epics, the Mahabharata and the Ramayana, which through their stories PO and hymns tell us about the expansion of the Aryans. The epic Ramayana is a symbolic tale which tells of the Aryan expansion to the south-the good, almost godly, aryaputra (an Aryan's son) king Rama surging forth to finish off the evil Dasyu (that was what the Aryans called the natives) Ravana.

Aryans Political System

There was complex political system. They hung around together in small village settlements (which later grew to kingdoms) and the basis of their political and social organization was the clan or kula. It was very much a patriarchal society, with the man the house expected to keep his clan in control.

The King was the Supreme Power

The king was the supreme power though he had to work in tandem with the people's wishes. He had an elaborate court of many officials, including the chief queen (Mahishi) who was elected to help in the decision making process. Two Assemblies, Sabha and Samiti further assisted the king.

No Rigidity in Caste System

The caste system was a loose social system where people could move up and down the social scale. Aryan's worshipped nature gods-they prayed to the Usha (Dawn), Prajapati (The Creator), Rudra (Thunder), Indra (Rain), Surya (Sun) and so on. These gods and goddesses were appeased by prayers and sacrifices.

Growth of Buddhism and Jainism

Buddhism and Jainism were instant hits with the populace and became powerful clannish minorities while the bulk of the people remained with Aryanism. Not for long, however. As the two new religions which had extremely charismatic leaders and very zealous followers caught the people's imagination, the influence of both faiths spread enough for kings to profess and actively promote them.

Geography

SOLAR SYSTEM

Important Facts

Biggest planet	: Jupiter
Smallest plant	: Mercury
Satellite of Earth	: Moon
Nearest planet from Sun	: Mercury
Farthest planet from Sun	: Neptune
Nearest planet to Earth	: Venus
Brightest planet	: Venus
Brightest star	: Dog Star
Planet having maximum number of satellite	: Jupiter (63)
Coldest planet	: Neptune
Red planet (seen at night)	: Mars
Heaviest planet	: Jupiter
Biggest satellite of solar system	: Ganymede
Smallest satellite of solar system	: Demos
Blue planet	: Earth
Red planet	: Mars
Morning star	: Venus
Evening star	: Venus
Sister of Earth	: Venus
9th planet	: Karla

Sun

Distance from Earth: 149.6 million km (Approximately).

Critical value of absolute visual magnitude 4.83

Diameter: 13,92,000 km

Temperature of Code: 20-15 million Celsius Apparent surface temperature: 5778°C (6000°C approximately)

Rotational period: 25 days, 3 hrs., 21 minutes, 136 seconds (in reference of equator) 33 days (in reference to pole)

Chemical composition: Hydrogen-69.5%, Helium-28%. Carbon, Nitrogen and Oxygen-2%, Magnesium, Sulphur, Silicon and Iron 0.5%

Age: 5 billion years (approximately)

Possible life of normal star

10 billion years (approximately)

Equatorial radius: 6,95,500 km (approximately)

GALAXIES

Galaxy Name	Magnitude Visual
Milky way	—
Large Magellanic Cloud	0.9
Small Magellanic Cloud	2.5
Ursa Minor Dwarf	11.9
Sculptor Dwarf	80
Draco Dwarf	10.9

Formax Sysyem	8.3
Leo -II System	12.04
Leo -I System	12.0
N. G.C 6822	8.9
N.G.C. 147	9.73
N.G.C. 185	10.1
N .G.C. 205	8.17
N.G.C. 2 21 (M 32)	8.16
IC 1613	9.61
Andromeda Galaxy	3.47
N.G.C. 598 (M 33)	5.79
Maffel I	11.0

Moon

Average distance: 3,84,365 km Diameter: 3,474 km

Ratio of mass in reference to Earth: 1:81.30

Density (with reference to water): 3.3464 $kg/metre^3$

Density (with reference to Earth): 0.6058 Ratio in the gravitational force of Moon &

Sun: 0.116

Disappearing part of Moon: 0.41 Maximum distance of Earth from Sun 4,05,508 km

Minimum distance of Earth from Sun 3,63,300 km

Revolution period of the Moon round the Earth.

Sidereal Month: 27 days, 7 hrs, 43.25 minutes

Synodic Month: 29 days, 12 hrs, 44 minutes

Rotation on its own axis : 27 days, 7 hrs, 43 minutes, 11.47sec.

Atmosphere: Absent

Highest mts. Peak : 35,000 (Libtney, situated at Moon's south pole).

Time taken by light to reach the earth.: 1.3 seconds.

Speed of Rotation at its own axis: 2287 miles per hrs.

Earth

Approximate age of Earth: 4600,000,000, years,

Total surface area: 510,072,000 km^2

Total land area: 153,000,000 km^2

Water area: 71% of the total land surface 357,100,000 km^2

Average density: 5.52 gm per cub.cm.

Equatorial diameter: 12,756 km

Polar diameter: 12,714 km

Necessary escape velocity to cross the gravitational attraction of the Earth: 11.2 km/sec.

Velocity of a rocket to go against the gravitational attraction of the Earth 8 km /sec.

Distance from Moon: 3,84,365 km

Maximum height of the earth from M.S.L. 8848 m (Mount Everest)

Maximum depth of sea from M.S.L. : 11,033 metro (Mariana Trench)

Lowest part of the earth surface: 396 metre (Dead Sea)

Rotational period at its own axis: 23 hrs, 56 minutes 4.091 sec.

Revolution of earth round the Sun: 365 day, 5 hrs, 48 minutes, 45.51 second

Satellite of Earth: Moon

Inclination at its own axis: 23*-27.

Average distance from Sun: 149,597,887.5 km

Venus

Diameter: 11,102 km

Mass: 4.867×102^{24} kg

Volume: 92.843×10^{10} km^3

Mean Radius: 6052 km

Mean Density: 5204 $kg/metre^3$

Surface Gravity: 8.87 $metre/second^2$

Mean distance from the Sun: 108.2 million km

Greatest distance from the Sun (Aphelion): 108.9 million km

Least distance from the Sun: 107.5 million km (Perihelion)

Rotational period: 243.7 days

Revolutional period (Sidereal period): 224.7 days earth days

Inclination of orbit: 3.39°

Mean surface temperature: 464°C

Mean surface pressure: 92 bars

No. of Satellites: Nil

Mercury

Diameter: 4878 km

Mass: 3.64×10^{20} tons (3.3 10 kg) (About 5% of the earth)

Volume: 2.15×10^{21} cube metre (About 6% of the earth)

Average density: 340 pound/cubic feet

Surface gravity: 11.8 feet/sec. (3.6 metre)

Surface temperature: 280° to 800°F (–175 to 425°C)

Surface atmospheric pressure: 2×10^{12} millibar

Greatest distance from the earth: 142.6 million miles (229.4 million km)

Greatest distance from the Sun (Aphelion) 43 million miles (70 million km)

Least distance from the Sun (Perihelion) 29 million miles (46.5 million km)

Revolution period (Sidereal year): 87.97 earth days

Rotational period (Sidereal day): 58.65 earth days

No. of Satellites: Nil

Indian Polity

DIRRERENT SOURCES OF THE INDIAN CONSTITURION

Although the skeleton of the constitution was derived from Government of India Act 1935, many provisions were imported from other constitution,, of the world. Some of them are listed below:

Government of India Act 1935: Federal scheme, office of Governor, power of Federal judiciary, emergency powers etc.

Constitution of Britain: Law making procedures, rule of law, provision for single citizenship, Parliamentary system of government, office of CAG.

Constitution of USA: Independence of judiciary. judicial review, fundamental rights, removal of Supreme Court and High Court judges, preamble and functions of Vice-president.

Constitution of Canada: Federation with strong Centre, to provide residuary powers to the centre.

Constitution of Ireland: Directive Principles of State policy, method of presidential elections, and the nomination of members to Rajya Sabha by the President,

Constitution of Germany: Provisions concerning the suspension of fundamental rights during emergency.

Constitution of Australia: Idea of the Concurrent list.

Constitution of South Africa: Amendment with 2/3rd majority in Parliament and election of the Members of Rajya Sabha on the basis of proportional representation.

THE PREAMBLE

The 42nd Amendment (1976) added the words Secular' and 'Socialist' end now the Preamble reads as follows:
"We, the people of India having solemnly resolved to constitute India into a Sovereign, Socialist, Secular, Democratic Republic and to secure to all its citizens: Justice, social. economic and political; Liberty of thought, expression, belief, faith and worship Equality of status and of opportunity: and to promote among them all Fraternity assuring the dignity of the individual and the unity and integrity of the Nation. In our Constituent Assembly on this twenty-sixty day November, 1949, we do hereby, Adopt, Enact and Give Ourselves this Constitution."

PARTS AND ARTICLES OF THE CONSTITUTION

- Part I/Articles 1-4 : Territory of India, admission, establishment or formation of new states
- Part II/Articles 5-11 : Citizenship
- Part III/Articles 12-35 : Fundamental Rights
- Part I V/Articles 36-51 : Directive Principles of State Policy
- Part I V-A/Article 51A : Duties of a citizen of India
- Part V/Articles 52-151 : Government at the Union level
- Part VI/Articles 152-237 : Government at the State level
- Part VII/Article 238 : Repeated by 7th Amendment 1956
- Part VIII/Articles 239-241 : Administration of Union Territories
- Part IX/Articles 242-243 : The Panchayats
- Part IX-A/Articles 243P-243 ZG : The Municipalities
- Part X/Articles 244-244 : A Scheduled and tribal areas
- Part XI/Articles 245-263 : Relations between the Union and States
- Part XMI/Articles 263-300 : A Finance, property, contracts and suits
- Part XIII/Articles 301—307 : Trade, commerce and travel within territory of India
- Part XIV/Articles 308-323 : Services under the Union and States
- Part XIV-A/Articles 323A-323B : Deals with administrative tribunals
- Part XV/Articles 324-329 : A Election and Election Commission
- Part XVI/Articles 330-342 : Special provision to certain classes SCs/STs, OBCs and Anglo Indians
- Part XVII/Article 343-351 : Official languages
- Part XVIII/Articles 352-360 : Emergency provisions
- Part XIX/Article 361-367 : Miscellaneous provisions
- Part XX/Article,68 : Amendment of Constitution
- Part XXI/Articles X69-392 : Temporary, transitional and special provisions

SCHEDULES IN THE CONSTITUTION

First Schedule	• It deals with the territories of th, 28 states and 7 union, territories of the Indian Union.
Second Schedule	• Deals with salaries, allow a cesn etc., payable to the President of India, Governors of States, Chief Justice of India, judges of the Supreme Court and High Courts and

the Comptroller and editor General of India. There revised salaries now are:

President of India	Rs 1.50,000 pm
Vice-President	Rs 1.20.000 pm
Governor of a state	Rs 1,10,000 par (varies from state to state)
Chief Justice of India	Rs 1,00.000 pm
Judges of the Supreme Court	Rs 90,000 pm
Chief Justice of a High Court	Rs 90,000 put
Judges of a High Court	Rs. 80.000 put

Third Schedule
- It prescribes the various forms of oath or affirmation, which various incumbents have to take before assuming a public office.

Fourth Schedule
- Allocates seats to each state and union territory in the Rajya Sabha. Contains provisions as to the administration and control of Scheduled Areas.

Fifth Schedule
- It deals with the administration and control of the Scheduled Areas.

Sixth Schedule
- Deals with provisions regarding administration of tribal areas in the states of Assam, Meghalaya and Mizoram. This Schedule in the Constitution, amended in 1988 by the Act 67 of 1988, received the assent of the President on 16 December 1988, and was applied to the states of Tripura and Mizoram w.e.f. 16 December 1988.

Seventh Schedule
- Gives three lists of powers and subjects to be looked after by the Union and the states as follows:
  - (i) Union List—Comprises subjects of all-India importance like Defence. International Affairs. Railways. Post and Telegraph, Income tax, etc. The Parliament has the exclusive power to legislate on these subjects. It contains 97 subjects:
  - (ii) State List-Contains subjects of local importance. Normally, the State Legislature alone legislates on these subjects. It contains 66 subjects.
  - (iii) Concurrent List-Contains subjects on which the Parliament as well as the State Legislature enjoy authority. According to the 88th amendment, service tax is to be levied, collected and appropriated by the union and the states.

Eighth Schedule
- Gives a list of 22 regional languages recognised by the Constitution; Originally there were only 14 languages in the schedule and the l5th language 'Sindhi' was added by the list amendment in 1967, and three languages-Konkani, Manipuri and Nepali were added by the 71st amendment in 1992. In 2003, the 92nd amendment added four more languages to the list-'Bolo', 'Dogri' 'Maithali' and 'Santhali'. The language' are as follows:

  1. Assamese
  2. Bengali
  3. Bndo
  4. Dogri
  5. Gujarati
  6. Hindi,
  7. Kanada
  8. Kashmiri
  9. Malayalam
  10. Maithali
  11. Marathi
  12. O, it a,
  13. Punjabi
  14. Sanskrit
  15. Sindhi,
  16. Tamil
  17. Telugu
  18. Santhali
  19. Urdu
  20. Konkagi
  21. Manipuri
  22. Nepali.

Ninth Schedule
- Contains certain Acts and regulations of the State Legislature dealing with and reforms and abolition of the zamindari system. it contains 284 Acts. This Schedule was added to the Constitution in 1951, by the First Constitution (Amendment Act.

Tenth Schedule
- Contains certain provisions -regarding disqualification of members on grounds of defection.

Eleventh Schedule
- It lists 29 subjects on which the panchayats have been given administrative control. It was added to the Constitution on 20 April 1992, by the 73rd Amendment in 1992.

Twelfth Schedule
- It lists 18 subjects on which the municipalities are given administrative control. It was added to the Constitution on 20 April 1992 by the 74th Amendment in 1992.

Indian Economy

HISTORY OF PLANNING IN INDIA

- First attempt to initiate economic planning in India was made by Sir M.Visvesvarayya, a noted engineer and politician in 1934 through his book 'Planned Economy For India'.
- In 1938 'National Planning Commission' was set-up under the chairmanship of J.L. Nehru by the Indian National Congress. Its recommendations could not be implemented because of the beginning of the Second World War and changes in the Indian political situation.
- In 1944 'Bombay Plan' was presented by 8 leading industrialists of Bombay.
- In 1944 'Gandhian Plan' was given by S. N. Agarwal.
- In 1945 'People's Plan' was given by M. N. Roy.
- In 1950 'Sarvodaya Plan' was given by J. P. Narayan. A few points of this plan were accepted by the Government.

THE PLANNING COMMISSION

- The Planning Commission was set up on March 15, 1950 under the chairmanship J.L. Nehru, by a resolution of Union Cabinet.
- It is an extra-constitutional, non-statutory body.
- It consists of Prime Minister as the ex-officio Chairman, one deputy-Chairn appointed by the PM and some full time members.
- The tenure of its members and deputy chairman is not fixed. There is no defi definition of its members also. They are appointed by the Government on its c discretion. The number of members can also change according to the wishes of Government.

Functions

- Assessment of material, capital & human resources of the country.
- Formulation of plans for the most effective & balanced utilization of country's resources.
- To determine the various stages of planning and to propose the allocation of resources on the priority basis.
- To act as an advisory body to the Union Government.
- To evaluate from time to time the progress achieved in every stage of the plan and also to suggest remedial measures.
- To advise the Centre and the State Governments from time to time on special matters referred to the Commission.

NATIONAL DEVELOPMENT COUNCIL

- All the plans made by the Planning Commission have to be approved by National Development Council first. It was constituted to build co-operation between the States and the Planning Commission for economic planning.
- It is an extra-constitutional and extra-legal body.
- It was set up on August 6, 1952, by a proposal of the Government. The PM is the ex-officio chairman of NDC. Other members are Union Cabinet ministers, Chief' Ministers & Finance Ministers of all States, Lt. Governors of Union Territories and Governors of Centrally Ruled States.

State Planning Boards

- Apex planning body at State level is generally a State Planning Body comprising the Chief Minister as Chairman, Finance and Planning ministers of that State and some technical experts.
- District Planning Committee is also there comprising both official and non-official members.

FIVE YEAR PLANS

First Five Year Plan (1951-56)

- It was based on Harrod-Domar Model.
- Community Development Program was launched in 1952.
- Two- fold objectives were there:
  o To correct the disequilibrium in the economy caused by 3 main problems- influx of refugees, severe food shortage and mounting inflation.
  o To initiate a process of all-round balanced development to ensure a rising national income and a steady improvement in living standards.
- Emphasized on agriculture, price stability, power & transport.
- It was more than a success, because of good harvests in the last two years.

Second Five Year Plan (1956-61)

- Also called Mahalanobis Plan after its chief architect. It was based on 1928 Soviet Model of Feldman.
- Its emphasis was on economic stability. Agriculture target fixed in the first plan was almost achieved. Consequently, the agriculture sector got low priority in the second five year plan.
- Its objective was rapid industrialization, particularly basic and heavy industries such as iron and steel, heavy chemicals like

nitrogenous fertilizers, heavy engineering and machine building industry.

- Besides, the Industrial Policy of 1956 emphasized the role of Public Sector and accepted the establishment of a socialistic pattern of the society as the goal of economic policy.

- Advocated huge imports which led to emptying of funds leading to foreign loans. It shifted basic emphasis from agriculture to industry far too soon. During this plan, price level increased by 30%, against a decline of 13% during the First Plan.

Third Five Year Plan (1961-66)

- At its conception time, it was felt that Indian economy has entered a take-off stage. Therefore, its aim was to make India a 'self-reliant' and 'self-generating' economy.

- Also, it was realized from the experience of first two plans that agriculture should be given the top priority to suffice the requirements of export and industry.

- The other objectives of the plan included the expansion of basic industries, optimum utilization of country's labour power and reducing the inequalities of income and

wealth.

- Relied heavily on foreign aid (IMF).

- Complete failure due to unforeseen misfortunes, viz. Chinese aggression (1962), Indo-Pak war (1965), severest drought in 100 years (1965-66).

Three Annual Plans (1966-69)

- Plan holiday for 3 years. The prevailing crisis in agriculture and serious food shortage necessitated the emphasis on agriculture during the Annual Plans.

- During these plans a whole new agricultural strategy involving wide-spread distribution of High-Yielding Varieties of seeds, the extensive use of fertilizers, exploitation of irrigation potential and soil conservation was put into action to tide-over the crisis in agricultural production.

- During the Annual Plans, the economy basically absorbed the shocks given during the Third Plan, making way for a planned growth.

General Science

INVENTIONS AND DISCOVERIS

Invention	Year	Inventor	Country
Acetylene gas	1862	Berthelot	France
Adding machine	1642	Pascal	France
Adhesive tape, Scotch	1930	Richard Drew	U.S.A.
Aeroplane	1903	Orville & Wilbur Wright	U.S.A.
Air Conditioning	1902	Carrier	U.S.A.
Airplane, jet engine	1939	Ohain	Germany
Airship (non-rigid)	1852	Henri Giffard	France
Aerosol spray	1926	Erik Rotheim	Norway
Artificial Heart	1957	Willem Kolff	Netherlands
Atomic Bomb	1945	J. Robert Oppenheimer	U.S.A.
Atomic numbers	1913	Moseley	Britain
Atomic theory	1803	Dalton	Britain
Automatic rifle	1918	John Browning	U.S.A.
Bakelite	1907	Leo H. Baekeland	Belgium
Ballistic missile	1944	Wernher von Braun	Germany
Balloon	1783	Jacques & Joseph Montgolfier	France
Ball-Point Pen	1888	John J. Loud	U.S.A.
Barometer	1644	Evangelista Torricelli	Italy
Battery (Electric)	1800	Alessandro Volta	Italy
Bicyle	1839-40	Kirkpatrick Macmillan	Britain
Bicycle Tyres (Pneumatic)	1888	John Boyd Dunlop	Britain
Bifocal Lens	1780	Benjamin Franklin	U.S.A
Bleaching Powder	1798	Tennant	Britain
Bunsen Burner	1855	R. Willhelm von Bunsen	Germany
Burglar Alarm	1858	Edwin T. Holmes	U.S.A.
Calculus	1670	Newton	Britain
Camera, Kodak	1888	Walker Eastman	U.S.A.
Canned food	1804	Appert	France
Car (Steam)	1769	Nicolas Cugnot	France
Car (Petrol)	1888	Karl Benz	Germany
Carburetor	1876	Gottlieb Daimler	Germany
Cassette, Audio	1963	Philips Co.	Holland
Cassette, Videotape	1969	Sony	Japan
Celluloid	1861	Alexander Parkes	Britain
Cement (Portland)	1824	Joseph Aspdin	Britain
Chemotherapy	1909	Ehrlich	Germany
Chronometer	1735	John Harrison	Britain
Cinema	1895	Nicolas & Jean Lumiere	France
Clock (Mechanical)	1725	I-Hsing & Liang Ling-Tsan	China
Clock (Pendulum)	1656	Christian Huygens	Netherlands
Cloning, DNA	1973	Boyer, Cohen	U.S.A.
Cloning, Mamma,	1996	Wilmut, et al	U.K.
Compact disc	1972	RCA	U.S.A.
Compact disc player	1979	Sony, Philips co	Japan, Netherlands
Computer, laptop	1987	Sinclair	Britain
Computer, mini,	1960	Digital Corp.	U.S.A.
Crossword Puzzle	1913	Arthur Wynne	U.S.A.
CT scan	1973	Hounsfield	Britain
Diesel Engine	1895	Rudolf Diesel	Germany
Disc Brake	1902	Dr.F. Lanchester-	Britain
Disc, video	1972	Philips Co.	Holland
DNA, Structure	1951	Crick-UK, Watson-US, Wiikins-UK	—
Dyriamo	1832	Hypolite Pixii	France
Electric Flat Iron	1882	H.W. Seeley	U.S.A.
Electric Lamp	1879	Thomas Alva Edison	U.S.A.

Electric Motor (DC)	1873	Zenobe' Gramme	Belgium
Electric Motor (AC)	1888	Nikola Tesla,	U.S.A.
Electric Iron	1882	Henry W. Seely	U.S.A.
Electric Washing machine	1906	Alva J. Fisher	U.S.A
Electro-Magnet	1824	William Sturgeon	Britain
Electron	1897	Tnomson.J -	Britain
Electroplating	1805	Luigi Brugnatelli	Italy
Electronic Computer	1824	Dr. Alan M. Turing	Britain
Facsimile Machine	1843	Alexander Bain	Britain
Fibre optics	1955	Kepany	Britain
Film (moving outlined)	1885	Louis Prince	France
Film (taiking)	1922	J. Engl, J. Mussolle & H. Vogt	Germany
Film (musical sound)	1923	Dr Le de Fo;est	U.S.A.
Frequency Modulation (FM)	1933	E.H. Armstrong	U.S.A.
Frisbee	1948	Fred Morrisson	U,S.A.
Fountain Pen	1884	Lewis E. Waterman	U.S.A.
Galvanometer	1834	Andre-Marie Ampere	France
Glider	1853	Sir George Cayley	Britain
Gramophone	1878	Thomos Alva Edison	U.S.A.
Helicopter	1924	Etienne Oehmichen	France
HIV	1984	Martagnier	French
Holography	1947	Denis Gason	Britain
Hydrogen bomb	1952	Edward Teller	U.S.A.
Intelligence testing	1905	Simon Binet	French
Jet Engine	1937	Sir Frank Whittle	Britain
Laser	1960	Theodore Maiman	U.S.A.
Launderette	1934	J.F. Cantrell	U.S.A.
Lift (Mechanical)	1852	Elisha G. Otis	U.S.A.
Lighting Conductor	1752	Benjamin Franklin	U.S.A.
Locomotive	1804	Richard Trevithick	Britain
Logarithms	1614	Napier	Britain
Loom, power	1785	E. Cartwright	Britain
Loudspeaker	1900	Horace Short	Britain
Machine Gun	1718	Richard Gatling	Britain
Magnetic Recording Tape	1928	Fritz Pfleumer	Germany
Match, Safety	1826	John Walker	Britain
Microphone	1876	Alexander Graham Bell	U.S.A.
Microprocessor	1971	Robert Noyce & Gordon Moore	U.S.A
Microscope, comp.	1590	Z. nssen	Netherlands
Microwave Oven	1947	Per -y LeBaron Spencer	U.S.A.
Motor cycle	1885	G. Daimler	Germany
Movie Projector	1893	Thomas Edison	U.S.A.
MR!	1971	Danradian	U.S.A.
Neon Lamp	1910	Ge urges Claude	France
Neutron -	1932	Chadwicrt	Britain
Neutron bomb	1958	Samuel Cohen	U.S.A.
Photocopier	1938	Carlson	U.S.A.
Photoelectric cell	1893	Julius Elster, Hans F. Geitel	Germany
Photo film, celluloid	1893	Reichenbach	U.S.A.
Photo film , Transparent	1884	Goodwin Eastman	U.S.A.
Photography (on metal)	1826	J.N. Niepce	France
Photography (on paper)	1835	W.H. Fox Talbot	Britain
Photography (on film,	1888	John Carbutt	U.S.A.
Piano	1709	Cristofori	Italy
Pistol, revolver	1836	Colt	U.S.A.
Plutonium fission	'E940	Kennedy, Whal, Seabolg, Segre	U.S.A.
Printing (rotary)	1846	Richard Hoe	U.S.A.
Printing (Web)	1865	William Bullock	U.S.A.
Proton	1919	Rutherford	N. Zealand
Quantum Theory	1900	Plank	Germany
Radar	1922	A.H. Taylor & Leo C. Young	U.S.A.
Radiocarbon dating	1947	Libby	U.S.A.
Radio Telegraphy	1864	Dr. Mohlon Loomis	U.S.A.

Radio Telegraphy (Trans Atlantic	1901	Marconi	Italy
Rayon	1883	Sir Joseph Swan	Britain
Razor (electric)	1931	Ccl. Jacob Scnick	U.S.A.
Razor (Safety)	1895	King C. Gillette	U.S.A.
Refrigerator	1850	James Harrison, Alexander catlin	U.S.A.
Relativity Theory	1905	Einstein	Germany
Rubber (latex foam)	1928	Dunlop Rubber Co.	Britain
Rubber (Tyres)	1846	Thomas Hancock	Britain
Rubber (Vulcanised)	,1841	Charles Goodyear	U.S.A.
Rubber (Waterproof)	1823	Charles Macintosh	Britain
Safety Pin	1849	Walter Hunt	U.S.A.
Safety razor	1903	King Camp Gillette	U.S.A.
Seat belt	1959	Volvo	Sweden
Ship (steam)	1775	I.C. Perier	France
Ship (turbine)	1894	Hon. Sir C. Parsons	Britain
Skyscraper	1882	W.Le Baron Jenny	U.S.A.
Slide Rule	1621	William Oughtred	Britain
Spinning Frame	1769	Sir Richard Arkwright	Britain
Spinning Jenny	1764	James Hargreaves	Britain
Spinning Mule	1779	Samuel Crompton	Britain
Steam Engine	1698	Thomas Savery	Britain
Steam Engine (Piston)	1712	Thomas Newcomen	Britain
Steam Engine (Condenser)	1765	James Watt	Britain
Steel (Stainless)	1913	Harry Brearley	Britain
Stethoscope	1819	Laennec	French
Submarine	1776	David Bushnell	U.S.A.
Super Computer	1976	J.H.Van Tassel	U.S.A.
Synthesiser	1964	Moog	U.S.A.
Tank	1914	Sir Ernest D. Swington	Britain
Tape recorder	1899	Fessenden Poulsen	Denmark
Telegraph	1787	M. Lammond	France
Telegraph Code	1837	Samuel F.B. Morse	U.S.A.
Telephone, Cellular	1947	Bell Labs	U.S.A.
Telephone (Imperfect)	1849	Antonio Meucci	Italy
Telephone (Perfected)	1876	Alexander Graham Bell	U.S.A.
Telescope	1608	Hans Lippershey	Netherlands
Television (Mechanical)	1926	John Logie Baird	Britain
Television (Electronic)	1927	P.T. Farnsworth	U.S.A.
Television, colour	1928	John Logie Baird	Britain
Transformer	1831	Michael Faraday	Britain
Transistor	1948	Bardeen, Shockley & Brattain	U.S.A.
Transistor radio	1955	Sony	Japan
Uranium Fission, Atomic reactor	1942	Szilard Fermi	U.S.A.
Vacuum Cleaner, elec.	1907	Spangler	U.S.A.
Video tape	1956	Charles Ginsberg	U.S.A.
Velcro (hook-and-loop-fastener	1948	Georges de Mestral	Switzerland
Washing Machine (elec.)	1907	Hurley Machine Co.	U.S.A.
Watch	1462	Bartholomew Manfredi	Italy
Welder (electric)	1877	Elisha Thomson	U.S.A.
Windmill	600	Persian corn grinding	
Wireless (telegraphy)	1896	G. Marconi	Italy
X-ray	1895	W.K. Roentgen	Germany
Zip Fastener	1891	W.L. Judson	U.S.A.

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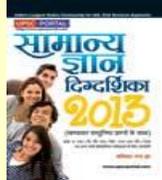   http://sscportal.in/community/fci/mains/download/exam-paper-held-15-april-2012-second-paper

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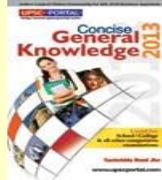
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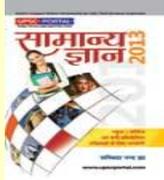
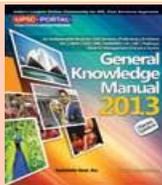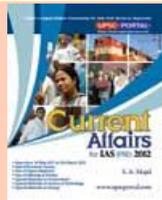|				
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