

RRB

Railway Recruitment Board

Junior Engineer

CBT 1 : 2024

Computer Based Test - Stage 1

- General Science
- General Awareness

Comprehensive Theory *with* Practice Questions
& Previous Years' Solved Questions





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RRB-Junior Engineer : General Science & General Awareness

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Preface

The post of Railway Recruitment Board-Junior Engineer has always been preferred by Engineers due to job stability. Indian Railways is one of the biggest Government employers in India. With the exam being just a few months away, it is time for the candidates planning to appear for the exam to pull up their socks and start their RRB-JE preparation.

The RRB-JE exam is conducted in two stages as shown in table given below.



Papers	Subjects	Maximum Marks	Duration
CBT-1 : Objective Type	(i) Mathematics	30 Marks	90 Minutes
	(ii) General Intelligence and Reasoning	25 Marks	
	(iii) General Awareness	15 Marks	
	(iv) General Science	30 Marks	
	Total	100 Marks	
CBT-2 : Objective Type	(i) General Awareness	15 Marks	120 Minutes
	(ii) Physics and Chemistry	15 Marks	
	(iii) Basics of Computers and Applications	10 Marks	
	(iv) Basics of Environment and Pollution Control	10 Marks	
	(v) Technical Abilities (viz, CE, ME, EE, EC, CS etc)	100 Marks	
	Total	150 Marks	

Note: There shall be negative marking for incorrect answers in CBTs. Each question carries 1 mark and 1/3rd of the marks allotted for each question shall be deducted for each wrong answer. Candidates shortlisted in Stage 1 will be called for Stage 2.

This book comprises both the General Science & General Awareness subjects. Besides, previous years' RRB-JE questions have been also included in a separate section. MADE EASY has taken due care to present detailed theory and MCQs without compromising the accuracy of answers.

Apart from Railway Recruitment Board-Junior Engineer Exam, this book is also useful for Public Sector Examinations and other competitive examinations for engineering graduates. I hope this book will prove as an important tool to succeed in RRB-JE and other competitive exams.

I have true desire to serve student community by providing good source of study materials and quality guidance. Any suggestion from the readers for improvement of this book is most welcome.

With Best Wishes

B. Singh (Ex. IES)

CMD, MADE EASY Group

Exam Syllabus

(Computer Based Test 2024-First Stage)

Mathematics: Number systems, BODMAS, Decimals, Fractions, LCM and HCF, Ratio and Proportion, Percentages, Mensuration, Time and Work, Time and Distance, Simple and Compound Interest, Profit and Loss, Algebra, Geometry, Trigonometry, Elementary Statistics, Square Root, Age Calculations, Calendar & Clock, Pipes & Cistern.

General Intelligence and Reasoning: Analogies, Alphabetical and Number Series, Coding and Decoding, Mathematical operations, Relationships, Syllogism, Jumbling, Venn Diagram, Data Interpretation and Sufficiency, Conclusions and Decision Making, Similarities and Differences, Analytical reasoning, Classification, Directions, Statement – Arguments and Assumptions etc.

General Awareness: Knowledge of Current affairs, Indian geography, culture and history of India including freedom struggle, Indian Polity and constitution, Indian Economy, Environmental issues concerning India and the World, Sports, General scientific and technological developments etc.

General Science: Physics, Chemistry and Life Sciences (up to 10th Standard CBSE syllabus).



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SECTION



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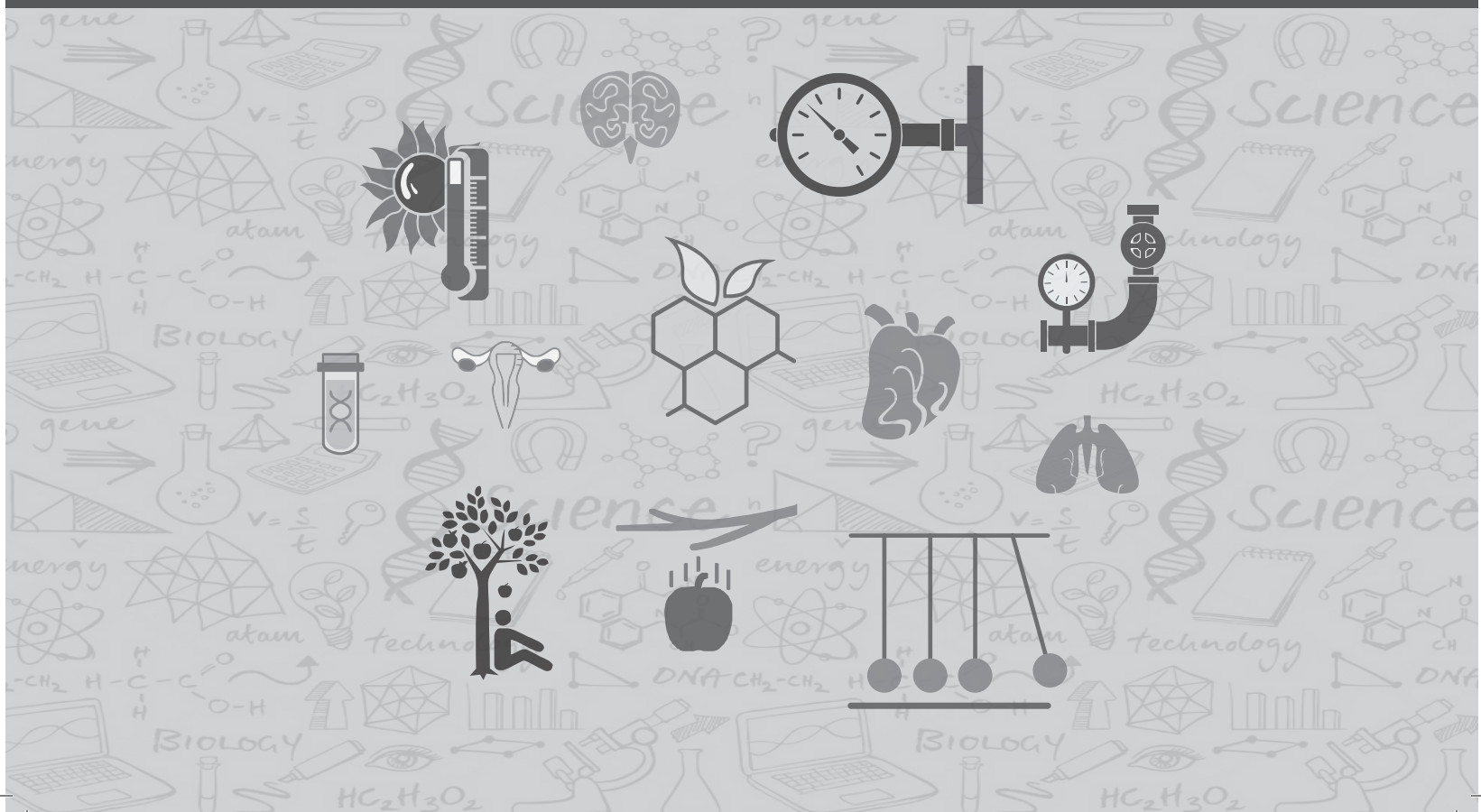
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Section **A**

General Science

Railway Recruitment Board (RRB) | Junior Engineer Examination



Physics

1

Chapter

Physics is a branch of science which is concerned with all aspects of nature on both the microscopic and macroscopic level. Its scope of study encompasses not only the behavior of objects under the action of forces but also the nature of gravitational, electromagnetic, nuclear forces among others. The ultimate objective of physics is to formulate comprehensive principles that bring together and explain all such phenomena.

UNITS & MEASUREMENT

Unit & Measurement

- Unit is the chosen standard used for measuring a physical quantity.
- There are basically two types of unit:
 - 1. Fundamental Unit:** These units are a set of measurements, defined arbitrarily and from which other units are derived. Examples: meter, kilogram, second, etc.
The fundamental unit of some of the physical quantities are given below:

International System of Units (S.I.)		
Physical	Fundamental	Symbol
Mass	Kilogram	kg
Length	Metre	m
Time	Second	s
Temperature	Kelvin	K
Electric-current	Ampere	A
Luminous intensity	Candela	Cd
Quantity of matter	Mole	mol

Systems of units	Length	Mass	Time
C.G.S. System	Centimetre	Gram	Second
F.P.S. System	Foot	Pound	Second
M.K.S. System	Metre	Kilogram	Second

- 2. Derived Unit:** All the units which are expressed in terms of fundamental units are known as derived units. Examples: Newton, Joule, etc.
- Internationally, there are four types of unit systems. These are:
 - 1. S.I. Units/System:** It is the modern form of the metric system, and is the most widely used system of measurement. It comprises a coherent system of units of measurement built on seven base units namely kilogram, meter, second, candela, ampere, kelvin and mol.
 - 2. CGS System:** The centimeter-gram-second (CGS) system of units is a variant of the metric system based on centimetre as the unit of length, gram as unit of mass, and the second as the unit of time.
 - 3. FPS System:** The foot-pound-second (FPS) system is a system of units built on three fundamental units: the foot for length, the pound for mass and the second for time.
 - 4. MKS System:** The MKS system of units is a physical system of units that expresses any given measurement using base units of the metre, kilogram, and second.

MOTIONS



Basics of Motion

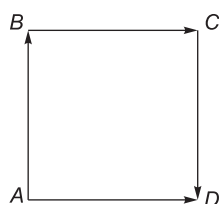
A body is said to be in motion if it changes its position with respect to its surroundings as time goes on. A body is said to be at rest if it does not change its position with time, with respect to its surroundings.

Types of Motion

- When a particle or a body moves along a straight path, its motion is Rectilinear or translatory motion.
- When a particle or a body moves in a circular path, its motion is circular motion. When a body spins about its own axis, it is said to be in rotational motion.
- When a body moves to and fro or back and forth repeatedly about a fixed point in a definite interval of time, it is said to be in vibrational or oscillatory motion.

The path travelled by an object during its motion is called trajectory. The actual path length during the motion is called distance and, the straight distance between the initial and final position of the motion in a particular direction is called displacement.

Let a particle travel, starting from point A and go to point D along the path $ABCD$ in a given interval of time. The total path length ($= AB + BC + CD$) is the distance travelled and the shortest path length (AD) in the direction A to D is the displacement within the same time-interval.



Speed

The time rate of change of position of an object in any direction i.e. the rate of change of distance of an object with respect to time is known as speed.

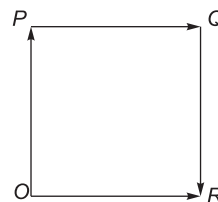
$$\text{Speed} = \frac{\text{displacement}}{\text{time taken}}$$

Velocity

The rate of change of displacement of an object with respect to time is known as velocity.

$$\text{Velocity} = \frac{\text{displacement}}{\text{time}}$$

Let a square $OPQR$ of side length 2 metre. A particle travels along its side starting from O to R via P and Q . It takes a total time of 2 seconds. The total distance travelled is $OP + PQ + QR = 2 + 2 + 2 = 6$ metres whereas the total displacement is $OR = 2$ metres. Hence



$$\text{Average Speed} = \frac{\text{distance}}{\text{time}} = \frac{6}{2} = 3 \text{ m/s}$$

$$\text{Average Velocity} = \frac{\text{displacement}}{\text{time}} = \frac{2}{2} = 1 \text{ m/s}$$

Acceleration

The rate of change of velocity with respect to time is called acceleration.

$$\text{Acceleration} = \frac{\text{Change in velocity}}{\text{time taken}}$$

When a body completes equal displacement in equal interval of time, its velocity is constant and hence, it does not have an acceleration. When a body shows equal change in velocity in equal interval of time its velocity is not constant but it has a constant acceleration.

Equation of Motion

For a body moving with a uniform velocity

If a body completes a displacement ' S ' in time ' t ' with a uniform velocity ' V ', then,

$$\text{Displacement} = \text{velocity} \times \text{time}$$

$$\text{or } S = vt \quad \dots(i)$$

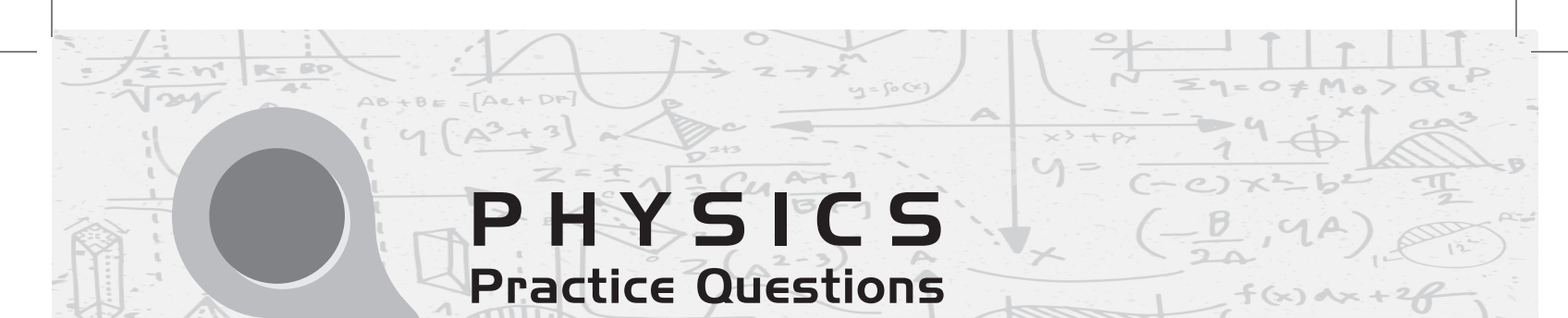
For a body moving with a uniform acceleration

If a body starting with an initial velocity ' u ' moves with a uniform acceleration ' a ' for a time ' t ' and attains a final velocity ' v ' after travelling a displacement ' s ' then,

$$S = ut + \frac{1}{2}at^2 \quad \dots(iii)$$

$$v^2 = u^2 + 2as \quad \dots(iv)$$

When the velocity of a body increases, it has a positive acceleration and when the velocity decreases, it has a negative acceleration.



PHYSICS

Practice Questions

- Q.1** A liquid is kept in a regular cylindrical vessel up to a certain height. If this vessel is replaced by another cylindrical vessel having half the area of cross-section of the bottom, the pressure on the bottom will
- Remain unaffected
 - Be reduced to half the earlier pressure
 - Be increase to twice the earlier pressure
 - Be reduced to one-fourth the earlier pressure
- Q.2** In SONAR, we use
- Ultrasonic waves
 - Infrasonic waves
 - Radio waves
 - Audible sound waves
- Q.3** Which one of the following reactions is the main cause of the energy radiation from the Sun?
- Fusion reaction
 - Fission reaction
 - Chemical reaction
 - Diffusion reaction
- Q.4** Two identical piano wires have same fundamental frequency when kept under the same tension. What will happen if tension of one of the wire is slightly increased and both the wire are made to vibrate simultaneously?
- Noise
 - Beats
 - Resonance
 - Non-linear effects
- Q.5** Which one among the following correctly defines a unit magnetic pole in SI units? It is the pole which when placed in air at a distance of
- 1 foot from an equal and a similar pole repels it with a force of 1 pound
 - 1 metre from an equal and similar pole repels it with a force of 1 newton
 - 1 cm from an equal and a similar pole repels it with a force of 1 dyne
 - 1 metre from an equal and a similar pole repels it with a force of 1 newton/m²
- Q.6** Which one of the following phenomena is associated with the fire flies giving cold light in night?
- Fluorescence
 - Phosphorescence
 - Chemiluminescence
 - Effervescence
- Q.7** When a ball drops onto the floor it bounces back. Why does it bounce?
- The floor is perfectly fluid
 - The floor heats up on impact
 - Newton's third law implies that for every action (drop), there is a reaction (bounce)
 - The floor exerts a force on the ball during the impact
- Q.8** When you pull out the plug connected to an electric appliance, you will often observe a spark. To which property of the appliance is this related?
- Resistance
 - Inductance
 - Capacitance
 - Wattage
- Q.9** In scuba diving, while ascending towards the water surface, there is a danger of bursting the lungs. It is because
- Graham's law of diffusion
 - Archimedes' principle
 - Boyle's law
 - Henry's law
- Q.10** The most familiar form of radiant energy in sunlight that cause tanning and has the potential for causing melanoma in humans is called
- Infra-red radiation
 - Visible radiation
 - Ultra-violet radiation
 - Microwave radiation
- Q.11** An athlete diving off high springboard can perform a variety of exercise in the air before entering the water body. Which one of the following parameters will remain constant during the fall?
- The athlete's linear momentum
 - The athlete's angular momentum
 - The athlete's kinetic energy
 - The athlete's moment of inertia

- Q.97** What is the wavelength of visible spectrum ?
 (a) 1300A°-3000A°
 (b) 3900 A° - 7600 A°
 (c) 7800 A° - 8000 A°
 (d) 8500 A° - 9800 A°
- Q.98** The sky appears blue because of
 (a) Atmospheric water vapour
 (b) Scattering of light
 (c) Reflection on sea water
 (d) Emission of blue wavelength by the sun
- Q.99** Oil rises up the wick in a lamp because
 (a) Oil is very light
 (b) Of the diffusion of oil through the wick
 (c) Of the surface tension phenomenon
 (d) Of the capillary action phenomenon
- Q.100** The hydraulic brakes used in automobiles is a direct application of:
 (a) Archimedes principle
 (b) Toricellian law
 (c) Bernoulli's theorem
 (d) Pascal's law
- Q.101** For a body moving with non-uniform velocity and uniform acceleration
 (a) Displacement - Time graph is linear
 (b) Displacement - Time graph is non-linear
 (c) Velocity - Time graph is nonlinear
 (d) Velocity - Time graph is linear
- Q.102** Lamberts law is related to
 (a) Reflection (b) Refraction
 (c) Interference (d) Illumination
- 103.** Decibel is the unit used for
 (a) Speed of light
 (b) Intensity of heat
 (c) Intensity of sound
 (d) Radio wave frequency
- 104.** The atmospheric layer reflecting 'radio waves' is called
 (a) Ozonosphere (b) Ionosphere
 (c) Stratosphere (d) Mesosphere
- 105.** The mass-energy relation is the outcome of
 (a) quantum theory
 (b) general theory of relativity
 (c) field theory of energy
 (d) special theory of relativity
- 106.** Danger signals are generally red as red light
 (a) is least bright
 (b) undergoes least deviation
 (c) has lowest velocity
 (d) gives comfort to eye
- 107.** Heat from the sun reaches earth by the process of
 (a) Conduction (b) Convection
 (c) Radiation (d) All of the above
- 108.** The instrument for measuring intensity of earthquakes is called
 (a) Ediograph
 (b) Pantagraph
 (c) Ergograph
 (d) Seismograph

Answer Key**General Science | Chapter 1 • Physics**

1. (c)	2. (a)	3. (a)	4. (b)	5. (b)	6. (c)	7. (d)	8. (a)	9. (c)
10. (c)	11. (b)	12. (d)	13. (d)	14. (d)	15. (d)	16. (b)	17. (c)	18. (b)
19. (b)	20. (c)	21. (b)	22. (c)	23. (b)	24. (c)	25. (b)	26. (b)	27. (a)
28. (b)	29. (d)	30. (b)	31. (a)	32. (a)	33. (a)	34. (b)	35. (a)	36. (a)
37. (c)	38. (b)	39. (c)	40. (c)	41. (b)	42. (a)	43. (b)	44. (d)	45. (c)
46. (b)	47. (c)	48. (c)	49. (c)	50. (d)	51. (b)	52. (d)	53. (c)	54. (a)
55. (c)	56. (b)	57. (b)	58. (d)	59. (a)	60. (b)	61. (b)	62. (a)	63. (d)
64. (c)	65. (c)	66. (d)	67. (a)	68. (c)	69. (d)	70. (a)	71. (b)	72. (b)
73. (d)	74. (a)	75. (b)	76. (c)	77. (a)	78. (b)	79. (b)	80. (d)	81. (a)
82. (c)	83. (c)	84. (a)	85. (b)	86. (b)	87. (c)	88. (b)	89. (c)	90. (b)
91. (c)	92. (c)	93. (b)	94. (b)	95. (c)	96. (a)	97. (b)	98. (b)	99. (d)
100. (d)	101. (b)	102. (d)	103. (c)	104. (b)	105. (d)	106. (b)	107. (c)	108. (d)

History and Culture of India

1

Chapter

ANCIENT INDIA

PREHISTORIC PERIOD

- The early prehistoric period was observed before the 8th millennium BCE.
- The period of the prehistoric agriculturalists and pastoralists was during approximately the 8th to the mid-fourth millennium BCE.
- The Early Indus or Early Harappan period witnessed the emergence of the first cities in the Indus River System (3500-2600 BCE).

Period/ Age	Remarks
Paleolithic Age	<ul style="list-style-type: none">• People in Paleolithic age were dependent on hunting for their livelihood and used to travel from one place to another depending on the availability of natural resources for survival.• They developed sharp weapons of stone for hunting purpose.
Mesolithic Age	<ul style="list-style-type: none">• During Mesolithic age, people were still hunter-gatherers, but were possibly starting to stay in one place.• Domestication of animals can be seen in this age.
Neolithic Age	<ul style="list-style-type: none">• During Neolithic age, stone tools and weapons were also further modified and were sharpened by fine shedding of the stones.• It also contributed greatly in the field of transportation by an important invention of the wheel.
Chalcolithic Age	<ul style="list-style-type: none">• The people of Chalcolithic age practiced agriculture. They used tools made up of copper and stone.• Painted pottery was the most distinguishing feature of all Chalcolithic cultures.

INDUS VALLEY CIVILIZATION

- Indus Valley Civilization is one of the oldest civilizations of the world. It flourished around the Indus river and its tributaries. The area consists of modern Pakistan and Northwestern India. Mohenjodaro is the largest site of the Civilization.
- Indus valley civilization is also called as Harappan civilization because Harappa was the first site to be excavated in 1921 under the supervision of **Daya Ram Sahni**.
- The known extent of this civilization in the west is upto Sutkagendor in Baluchistan; Alamgirpur (UP) in the east; Daimabad (Maharashtra) in South; and Manda (J and K) in the north.
- This civilization belongs to Bronze Age/ Chalcolithic Age. Hence, it is also called Bronze Age civilization.
- Contemporary civilizations of Harappan civilization are Mesopotamian or Sumerian civilization, Egyptian civilization and Chinese civilization.
- John Marshall was the first scholar to use the term "Indus Valley Civilization".

Important Sites of Harappan Civilization

1. Harappa

- People of Harappa knew the process of making tarcoal.
- Main gate for the entry in the houses of Harappa was in the north direction.
- R-37 cemetery have been found here.
- Terracotta figurine of Mother Goddess have been found here.

2. Mohenjo-daro

- Mohenjo-daro was discovered in 1922 under the supervision of **R.D. Bannerji**.

- The literal meaning of Mohenjo-daro in Sindhi language is **mound of the dead**.
- The Great Bath, a granary, big halls, a bronze statue of a dancing girl, idol of a yogi and numerous seals have been found here.
- Seven layers of Mohenjo-daro city directs that the city was destroyed and rebuilt seven times.

3. Lothal

- In 1954, Lothal was discovered by S.R. Rao in Gulf of Cambay in Gujarat.
- Red & black clay pots, copper tools, brick built tank like structure, a bead making factory and a seal from Iran have been found at Lothal.
- Linear scale of bronze have been found here.
- A dockyard has been found at Lothal.

4. Kalibangan

- Kalibangan was discovered in 1953. It is located in upper Rajasthan.
- It did not have a drainage system.
- A number of firepits *agnikundas* (firepits) have been found here.

- It saw two cultural phases viz. pre-Harappan and Harappan.
- A ploughed field have been found here.

5. Dholavira

- Dholavira in Gujarat was discovered in 1992 by **J.P. Joshi**.
- Dholavira shows all the three phases of Harappan civilization.
- A script consists of big alphabets has been found on a gate in Dholavira.



Major Harappan Sites and their Excavators					
Site	River	District	Province/ State	Country	Excavators
Harappa	Ravi	Sahiwal	Punjab	Pakistan	Daya Ram Sahni (1921), Madho Swaroop Vatsa (1926), Wheeler (1946)
Mohenjodaro	Indus	Larkana	Sindh	Pakistan	Rakhal Das Bannerji (1922), Mackay (1927), Wheeler (1930)
Chanhudaro	Indus	Shaheed Benazirabad	Sindh	Pakistan	Mackay (1925), N.G. Mazumdar (1931)
Lothal	Sabarmati & Bhogva	Ahmedabad	Gujarat	India	S.R. Rao (1954)
Kalibangan (i.e., the bangles of black colour)	Ghaggar	Hanuman-garh	Rajasthan	India	Amalanand Ghosh (1951), B.B. Lai & B.K. Thapar (1961)
Banawali	Saraswati	Fatehabad	Haryana	India	R.S. Bist (1973)
Dholavira	Luni	Kutchh	Gujarat	India	J.P. Joshi (1967-68)

Major Harappan Sites and Archeological Findings	
Site	Archaeological Findings
Harappa	6 Granaries in row, Working floors, Workmen's quarters, Virgin-Goddess (seal), Cemetery (R-37, H), Stone symbols of Lingam (male sex organ) & Yoni (female sex organ), Painted pottery, Clay figures of Mother Goddess, Wheat & Barley in wooden mortar, Copper scale, Crucible for bronze, Copper-made mirror, Vanity box, Dice.
Mohenjodaro	Great Bath, Great Granary (the largest building of civilization), Assembly hall, Shell strips, Pashupati Mahadeva/Proto-Shiva (seal), Bronze Image of a nude woman dancer, Steatite image of bearded man, Human skeletons huddled together, Painted seal (Demi-God), Clay figures of Mother Goddess, A fragment of woven cotton, Brick Kilns, 2 Mesopotamian seals, 1398 seals (57% to total seals of civilization), Dice.
Chanhudaro	City without a citadel, Inkpot, Lipstick; Metal-workers', shell-ornament makers' and bead-makers' shops; Imprint of dog's paw on a brick, Terracotta model of a bullock cart, Bronze toy cart.
Kalibangan	Ploughed field surface (Pre-Harappan), 7 Fire altars, Decorated bricks, Wheels of a toy cart, Mesopotamian cylindrical seal.
Lothal	Dockyard, Rice husk; Metal-workers', shell-ornament makers' & bead-makers' shops; Fire altars, Terracotta figurine of a horse, Double burial (burying a male and a female in a single grave), Terracotta model of a ship, Dying vat, Persian/ Iranian seal, Baharainean seal, Painted jar (bird & fox).
Surkotada	Bones of horse, Oval grave, Pot burials.
Banawali	Lack of chess-board or gridiron pattern town planning, Lack of systematic drainage system, Toy plough, Clay figures of Mother Goddess.
Daimabad	Bronze images (Charioteer with chariot, ox, elephant & rhinoceros)
Dholavira	A unique water harnessing system and its storm water drainage system, a large well and a bath (giant water reservoirs), Only site to be divided into 3 parts, Largest Harappan inscription used for civic purposes, A stadium.

Important Features of Indus Valley Civilization

- **Town planning** was the most distinguishable feature of the Harappan civilization. Hence, this civilization is also called first urbanisation.
- Towns were divided into parts viz. citadel and lower town. Citadels were occupied by members of ruling class and lower town was inhabited by the common people.
- Harappan cities were developed in **Block Pattern/Chess Board Pattern** because roads of these cities used to cut each other at right angles.
- Most peculiar feature of town planning was their **drainage system**. Drains were built of burnt bricks and covered by stone lids and manholes for cleaning.
- Complete burial was the most common method of the disposal of the dead.
- They grew wheat and barley on a large scale. The other crops grown were pulses, cereals, cotton, dates, melons, pea, sesamum and mustard.
- No clear evidence of rice has been found, except from Rangpur and Lothal where some grains of rice were found, but they may be of later period.
- Harappan people were mostly peasants and thus the Harappan civilization was an agro-commercial civilization.
- Evidences of hoe and plough have been found in kalibangan and Banawali.

- Harappans domesticated sheep, goat, buffalo and pig. They also knew about tiger, camel, elephant, tortoise, deer, various birds, etc. However, they did not know about **lion**.
- **Humpless bull** or unicorn was the most important animal.
- They did not know about the horse, except a jaw bone of horse which has been recovered from Surkotada in Gujarat in upper layers of excavation.
- The Harappans were the earliest people to produce cotton because cotton was first produced in this area. The Greeks called it **sindon**, which is derived from **sindh**.
- The Harappan culture belongs to the Bronze Age, as the people were very well acquainted with the manufacture and use of bronze.
- Leather was also known to them but no evidence of **silk** has been found.
- Harappans used to make seals, stone statues, terracotta figurines, etc.
- Harappans did not know about iron.
- Seals are made of **steatite** and they are square in shape.
- Land and sea trade was in vogue.
- Most important trading partner was Mesopotamia. It is evident from the inscriptions of Mesopotamia. Other trading partners were Afghanistan, Persia, central Asia and various parts of India.
- The Mesopotamian inscriptions refer to trade relations with **Meluha** which was the ancient name given to Indus region.
- The mode of trade was barter system.
- Pashupati seal has been found from Mohenjodaro in which a Yogi figure has been depicted. The Yogi on the seal is surrounded by buffalo, tiger, elephant, rhinoceros and deer. Hence, the Yogi is said to be proto-Shiva.
- Signs of phallic worship have been found.
- Harappans worshipped Mother Goddess. It is evident from the terracotta figurine recovered from Harappa.
- Harappans worshipped **pipal** tree.
- No evidences of temples have been found in this civilization.
- The Harappan script is not alphabetical but mainly pictographic.

- The Harappan script has not been deciphered so far.
- Script was consisted of about 400 symbols, out of which 75 were original and remaining were their variants.

Major Imports Items	
Material	Source place
Gold	Kolar (Karnataka), Afghanistan, Persia (Iran)
Silver	Afghanistan, Persia
Copper	Khetri (Rajasthan), Baluchistan, Saudi Arabia
Lead	Rajasthan, South India, Afghanistan, Iran
Tin	Afghanistan, Central Asia
Agates	Western India
Lapis Lazuri and Sapphire	Afghanistan
Turquoise	Central Asia, Iran
Amethyst	Maharashtra

VEDIC PERIOD

- Aryans are said to be propounders of Vedic civilization.
- They spoke a language called **arya** which was similar to later days Sanskrit. Hence, they are called Aryans.
- Central Asian theory of Max Muller is widely accepted theory of the origin of Aryans.

Views on Original Home of Aryans	
Europe	Sir W. Jones
Central Asia	Max Muller
Arctic Region	Bal Gangadhar Tilak
Tibet Region	Dayanand Saraswati

- The source of knowledge about the Aryans is the Vedic literature, of which Vedas are the most important. **Veda** means knowledge.

Section C

Previous Years Questions

Railway Recruitment Board (RRB) | Junior Engineer Examination

General Science & General Awareness • Questions Prior to 2019

- Q.1** Which of the following is a unit of momentum?
(a) 1 Nm (b) kgms^{-1}
(c) kgms^{-2} (d) kgms^{-2}
- Q.2** A ball is thrown vertically upward with a velocity of 16 m/s. The maximum height it attains is ($g = 9.8 \text{ m/s}^2$)
(a) 4.9 m (b) 9.8 m
(c) 19.6 m (d) 39.2 m
- Q.3** A 10 kg box is placed at a height h above the ground. The potential energy of the box is 980 J. The value of h is ($g = 9.8 \text{ m/s}^2$)
(a) 10 m (b) 20m
(c) 98 m (d) 49 m
- Q.4** A source produces sound waves under water. Waves travel through water and some of it is transmitted into air. Which of the following statements about the frequency f and wavelength λ is correct as sound passes from water to air?
(a) f and λ remain unchanged
(b) f increases but λ decreases
(c) f remains unchanged but λ increases
(d) f remains unchanged but λ decreases
- Q.5** A light ray from air enters and passes through a glass slab. Which of the following statements is true about its speed after it emerges from the block?
(a) Speed is same as that before it entered glass slab
(b) Speed is same as that in glass slab
(c) Speed is less than when in glass slab
(d) Speed is less than before it entered glass slab
- Q.6** An object of mass m at rest is acted upon by a force. When the velocity-time graph of the object is plotted (with velocity on y-axis and time on x-axis), we get a straight line passing through origin and inclined to x-axis. If the force (on x-axis) versus time (on x-axis) graph is plotted, the graph is a straight line

- (a) passing through origin and inclined to x-axis
 (b) passing through origin and coinciding with x-axis
 (c) parallel to x-axis
 (d) parallel to y-axis
- Q.7** The acceleration due to gravity, g is
 (a) independent of the mass of the earth
 (b) inversely proportional to the radius of the earth
 (c) proportional to the mass of the earth and inversely proportional to the square of the radius of the earth
 (d) same at the poles and the equator.
- Q.8** Rohan (mass 40 kg) and Sohan (mass 60 kg) climb the stairs of their school building to reach the first floor in 40 s and 60 s, respectively. Let P_1 and P_2 be the power delivered in this task by Rohan and Sohan, respectively. Which one the following is correct?
 (a) $P_1 = P_2$ (b) $P_2 > P_1$
 (c) $P_1 < P_2$ (d) $P_1 = 2P_2$
- Q.9** The loudness or softness of a sound is determined basically by its
 (a) Amplitude
 (b) frequency
 (c) speed
 (d) speed and frequency both
- Q.10** A ray of light travelling in air is incident on a glass slab. Part of it is reflected and part is refracted. Let i , r and s be the angle of incidence, angle of reflection and angle of refraction. Which one of the following is correct?
 (a) $i = r = s$ (b) $i \neq r \neq s$
 (c) $i = r$ and $s < i$ (d) $i = r$ and $s > i$
- Q.11** A conducting wire has length l and area of cross-section A . The resistivity of its material is ρ and its resistance is R . It is connected in series with another wire of the same dimensions but of a resistivity 2ρ . The net resistance of the combination is
 (a) R (b) $2R$
 (c) $3R$ (d) $2R/3$
- Q.12** An object of mass m at rest is acted upon by a force. The velocity-time graph (velocity on y-axis and time on x-axis) is found to be a straight line passing through origin and inclined to x-axis with a slope c . The force acting on the object is
 (a) 0 (b) m/c
 (c) mc (d) $2mc$
- Q.13** The SI unit of gravitational constant G , is
 (a) $\text{Nm}^2\text{kg}^{-2}$ (b) $\text{Nm}^{-2}\text{kg}^{-2}$
 (c) $\text{N kg}^2 \text{m}^{-2}$ (d) $\text{m}^2 \text{kg}^{-1} \text{s}^{-2}$
- Q.14** A force acting on an object of mass m changes its velocity during its course of motion, which of the following cases, the work done by the force is maximum?
 (a) When velocity of the object changes from 0 to v m/s
 (b) When velocity of the object changes from v m/s to $2v$ m/s
 (c) When velocity of the object changes from $2v$ m/s to $3v$ m/s
 (d) When velocity of the object changes from $3v$ m/s to $4v$ m/s
- Q.15** In a longitudinal sound wave, the particles of the medium move
 (a) about their position of rest in a direction parallel to the direction of propagation of disturbance
 (b) about their position of rest in a direction perpendicular to the direction of propagation of disturbance
 (c) from one place to another in a direction parallel to the direction of propagation of disturbance
 (d) from one place to other in a direction perpendicular to the direction of propagation of disturbance
- Q.16** Rays of light are incident on a concave mirror parallel to the principal axis. After reflection, they meet at
 (a) Infinite
 (b) The centre of curvature
 (c) At focus
 (d) At a point halfway to the focus

- Q.17** A conducting wire of length l and resistance R is cut into two equal parts, which are then connected in parallel. The resistance of the combination is
- (a) $R/2$ (b) $R/4$
(c) R (d) $2R$
- Q.18** A ball is rolled on a floor. Moving in straight line, it stops after some time due to frictional force exerted by the floor. Which of the following statements about acceleration and force during the motion of the ball is correct?
- (a) Both acceleration and force are positive
(b) Both acceleration and force are negative
(c) Acceleration is positive but force is negative
(d) Acceleration is negative but force is positive
- Q.19** Let g be the acceleration due to gravity at a place on earth (mass M and radius R). The ratio g/G at the place is given by (G -Universal gravitational constant)
- (a) M/R (b) M/R^2
(c) MR (d) MR^2
- Q.20** A ball of mass m is raised to height h and then dropped to the ground. When the ball has fallen half of the height, the velocity of the ball is (neglecting air resistance), where g is the acceleration due to gravity.
- (a) \sqrt{gh} (b) $\sqrt{2gh}$
(c) $\sqrt{\frac{gh}{2}}$ (d) $2\sqrt{gh}$
- Q.21** Which one of the following is correct regarding the electrolytic refining of impure copper?
- (a) Impure copper is taken as the cathode
(b) Pure copper is deposited at the anode
(c) Pure copper is deposited at the cathode
(d) Impurities are settled as the cathode mud
- Q.22** On heating with an alkaline solution of KMnO_4 , ethanol produces
- (a) Ethanoic acid (b) Ethanol
(c) Methanol (d) Methanoic acid
- Q.23** A triatomic oxide of an element 'X' reacts with hydrochloric acid to produce the solution of a diatomic salt and water. Which of the following is correct about the formula of the oxide and its chemical nature?
- (a) The formula is XO and it is acidic in nature.
(b) The formula is XO and it is basic in nature.
(c) The formula is X_2O and it is acidic in nature.
(d) The formula is X_2O and it is basic in nature.
- Q.24** Lime water turns milky on passing through it. On passing excess of carbon dioxide gas, milkiness disappears. It is due to the formation of
- (a) CaCO_3 (b) CaHCO_3
(c) $\text{Ca}(\text{HCO}_3)_2$ (d) $\text{Ca}(\text{OH})_2$
- Q.25** Eka-aluminium predicted by Mendeleev was found to have properties similar to
- (a) scandium (b) gallium
(e) germanium (d) thallium
- Q.26** Which one of the following was used as a chemical weapon in the First World War
- (a) Carbon mono-oxide
(b) Hydrogen cyanide
(c) Mustard gas
(d) Water gas
- Q.27** Which of the following is used in making ointment for curing skin disease?
- (a) ZnCO_3 (b) ZnSO_4
(c) $\text{Zn}_4\text{Si}_2\text{O}_7$ (d) ZnS
- Q.28** The characteristic odour of garlic is due to
- (a) a chloro compound
(b) a sulphur compound
(c) a fluorine compound
(d) acetic acid
- Q.29** The oxide of an element 'A' can react separately with an acid and a base to produce salt and water.
- (a) The element 'A' is metallic and the oxide is amphoteric.
(b) The element 'A' is metallic and the oxide is basic.
(c) The element 'A' is non metallic and the oxide is acidic.
(d) The element 'A' is non metallic and the oxide is amphoteric.

- 123.** With reference to water pollution, BOD means
 (a) Biochemical Oxygen Dilution
 (b) Biochemical Oxygen Demand
 (c) Bio Organic Dissolutes
 (d) Basic Organic Dissolutes
- 124.** Approx. percentage of oxygen in Earth's atmosphere is
 (a) 17% (b) 21%
 (c) 25% (d) 33%
- 125.** In the context of Information Technology, OCR means
 (a) Optical Character Recognition
 (b) Octagonal Cyclic Recharge
 (c) Octadecimal Cyclic Regeneration
 (d) Optical Character Regeneration
- 126.** Which state is known for its sandalwood carvings?
 (a) Maharashtra (b) Madhya Pradesh
 (c) Kerala (d) Karnataka
- 127.** Section 66 A has been in media controversy recently. The section pertains to
 (a) Communal Harmony
 (b) Sexual Aggression
 (c) Company's Act
 (d) Information Technology
- 128.** IPC stands for
 (a) International Peace Code
 (b) Indian Peace Code
 (c) Indian Penal Code
 (d) International Punishment Code
- 129.** Who among the following can accept the deposits of money from the public, as a business in financial transactions?
 (a) Individuals
 (b) Firms
 (c) Unincorporated Associations
 (d) None of the above
- 130.** NEFT and RTGS are the means for
 (a) Money transfer
 (b) Fiscal control policy
 (c) Monitoring tax collection
 (d) Implementing GST
- 131.** In Sept. 2014 ISRO achieved success in which project?
 (a) Launched Heavy payload vehicle
 (b) Launched geo-stationary satellite
 (c) Launched rocket to mars
 (d) Mars orbiter successfully entered mars orbit
- 132.** In October 2014 a cyclone hit Vishakhapatnam. The name of the cyclone was
 (a) Katrina (b) Hudhud
 (c) Laila (d) Helen
- 133.** SAARC countries are from which part of the world?
 (a) South America (b) South Asia
 (c) South Africa (d) None of these

Answer Key**RRB JE | Questions Prior to 2019**

1. (b)	2. (c)	3. (a)	4. (d)	5. (a)	6. (c)	7. (c)	8. (a)	9. (a)
10. (c)	11. (c)	12. (c)	13. (a)	14. (d)	15. (a)	16. (c)	17. (b)	18. (b)
19. (b)	20. (a)	21. (c)	22. (a)	23. (d)	24. (c)	25. (b)	26. (c)	27. (a)
28. (b)	29. (a)	30. (c)	31. (d)	32. (a)	33. (d)	34. (b)	35. (c)	36. (a)
37. (b)	38. (a)	39. (d)	40. (c)	41. (c)	42. (b)	43. (a)	44. (b)	45. (b)
46. (c)	47. (d)	48. (d)	49. (a)	50. (b)	51. (c)	52. (c)	53. (c)	54. (a)
55. (a)	56. (a)	57. (c)	58. (d)	59. (b)	60. (d)	61. (c)	62. (a)	63. (d)
64. (a)	65. (a)	66. (d)	67. (a)	68. (d)	69. (b)	70. (c)	71. (a)	72. (d)
73. (c)	74. (c)	75. (d)	76. (c)	77. (a)	78. (c)	79. (d)	80. (b)	81. (c)
82. (c)	83. (b)	84. (d)	85. (c)	86. (d)	87. (d)	88. (d)	89. (b)	90. (c)
91. (b)	92. (d)	93. (c)	94. (d)	95. (a)	96. (a)	97. (c)	98. (a)	99. (d)
100. (c)	101. (c)	102. (a)	103. (a)	104. (b)	105. (b)	106. (a)	107. (b)	108. (c)
109. (c)	110. (a)	111. (b)	112. (a)	113. (b)	114. (d)	115. (c)	116. (a)	117. (d)
118. (b)	119. (a)	120. (c)	121. (c)	122. (d)	123. (b)	124. (b)	125. (a)	126. (d)
127. (d)	128. (c)	129. (d)	130. (a)	131. (d)	132. (b)	133. (b)		