

## WBCS (Main) Exam Paper – IV Practice Set

### Answers with Explanation

1. (d) Radio waves are produced by rapidly oscillating electrical currents. For detecting over speeding of vehicles, police use the Doppler effect to reflected short radio waves.  
Scattering  $\propto \frac{1}{\lambda^4}$  শ্রুতিভঙ্গ
2. (c) The intersected area of magenta and yellow-coloured circles will have red colour. The intersected area of cyan and magenta coloured circles will have blue colour.  
Magenta = Red + Blue  
Cyan = Blue + Green
3. (d) A hydrogen-inflated polythene balloon rises to an altitude up in the atmosphere, it will maintain the same size and shape. শ্রুতিভঙ্গ
4. (c) The free surface of oil is inclined to the horizontal with larger depth at the rear end as the oil tanker is moving forward with uniform acceleration.
5. (c) The unit of acceleration is metre per sec<sup>2</sup>. The unit of electric current is ampere. The unit of work done is joule. The unit of impulse is newton second.
6. (b) Joule denoted by coulomb–volt. Watt denoted by amp<sup>2</sup>–ohm. Volt denoted by henry–amp/sec. Coulomb denoted by farad–volt.
7. (d) In our houses, the frequency of alternating voltage supplied is 50 Hz, i.e. 50 times per second.
8. (c) Heat is a form of energy. Heat can be reflected by mirror. Heat can't pass through vacuum.
9. (c) According to the modern theory of nature of light, the light has both wave and particle nature.
10. (c) Ultrasonic waves can produce perfectly homogeneous solution. It is used in homogenising milk cosmetics, etc. শ্রুতিভঙ্গ
11. (c) The term Dolby B or Dolby C printed on tape recorders and other sound systems refers to noise reduction circuit.
12. (a) A man inside an artificial satellite feels weightlessness because the force of attraction due to earth i.e.  $g$  (= acceleration due to gravity) is zero.
13. (d) The function of the moderator is to slow down the neutrons.
14. (a) Due to the surface tension, a liquid drop tends to assume a spherical shape to minimise the surface area.
15. (b) The electrostatic force between two charges is inversely proportional to the square of the distance between the charges.  
$$F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^2}$$
 শ্রুতিভঙ্গ
16. (c) To produce light, a CFL uses mercury vapour and phosphorus while an LED lamp uses semiconductor material.
17. (d) Hydrogen combines with oxygen with explosive force in the presence of a spark. Helium is an inert gas that will not burn or explode, so is much safer to use in balloons instead of hydrogen.
18. (c) Sour milk – Lactic acid শ্রুতিভঙ্গ  
Vinegar and pickel – Acetic acid  
Soda water – Carbonic acid  
Apple – Malic acid
19. (c) Cerargyrite, also called Horn Silver, gray, very heavy halide mineral composed of silver chloride (AgCl); it is an ore of silver.  
Tiny particles of silver iodide are sprayed on a cloud from an aeroplane. The particles attract water drops from the cloud. When they form a drop that is large enough, it starts raining.  
Zinc phosphide is an inorganic compound that is used in pesticide products as a rodenticide..  
Zinc oxide is also known as philosopher's wool.
20. (d) It produces fumes of ammonia and hydrochloric acid. শ্রুতিভঙ্গ
21. (c) The zinc serves as a sacrificial anode, so that it cathodically protects exposed steel.
22. (d) Hydrofluoric acid is one of the most dangerous acids known. It needs to be treated differently than even strong acids like sulphuric and hydrochloric. HF reacts with many materials, therefore, avoid contact with glass, concrete, metals, water, other acids, oxidizers, reducers, alkalis, combustibles, organics and ceramics.
23. (b) Enriched uranium is a type of uranium in which the percent composition of uranium-235 has been increased through the process of isotope separation.  
Enriched uranium is a critical component for

both civil nuclear power generation and military nuclear weapons. The International Atomic Energy Agency attempts to monitor and control enriched uranium supplies and processes in its efforts to ensure nuclear power generation safety and curb nuclear weapons proliferation.

24. (a) The energy released from the collapse of the gas into a star causes the centre of the star to become extremely hot. When the core is hot enough, nuclear fusion commences. Fusion is the process where two hydrogen atoms combine to form a helium atom, releasing energy.

শ্রীচিড়াক্স

The fusion reaction is a very efficient process, releasing a huge amount of energy. This is because a single helium atom contains less mass than two hydrogen atoms. The excess mass is released as energy.

25. (b) Cosmic waves have very high wavelength. cosmic rays are high-energy charged particles that travel through space at nearly the speed of light. Their extremely high energies are comparable to those of gamma rays at the upper end of the electromagnetic spectrum.
26. (b) As a gemstone used in jewellery, silicon carbide is called “synthetic moissanite” or just “moissanite”. Moissanite is similar to diamond in several important respects it is transparent and hard. Moissanite has become popular as a diamond substitute, and may be misidentified as diamond, since its thermal conductivity is close to that of diamond, more than any other diamond substitute.

শ্রীচিড়াক্স

The properties of carbon fibres, such as high stiffness, high tensile strength, low weight, high chemical resistance, high temperature tolerance and low thermal expansion, make them very popular in aerospace, civil engineering, military, and motor sports.

Dichlorodifluoromethane (R-12) is a colourless gas, and usually sold under the brand name Freon-12, is a chlorofluorocarbon halomethane (CFC), used as a refrigerant and aerosol spray propellant.

শ্রীচিড়াক্স

In photosynthesis, solar energy is converted to chemical energy. The chemical energy is stored in the form of glucose (sugar). Carbon dioxide, water, and sunlight are used to produce glucose, oxygen, and water.

27. (b) Myxedema is case of either hypothyroidism or hyperthyroidism due to defect in endocrine thyroid gland. Nephrosis is disease of nephrons

of kidney, which is a part of excretory system. Paralysis is most often caused by damage in the nervous system or spinal cord. Syphilis is a sexually-transmitted disease of the reproductive system.

শ্রীচিড়াক্স

28. (b) Prophylaxis is a medical or public health procedure whose purpose is to prevent, rather than treat an ailment. For tuberculosis, BCG vaccine is given. DPT vaccine prevents diphtheria, pertussis and tetanus. ATS (antitetanus serum) and DPT vaccines are used to prevent tetanus. TAB vaccine is typhoid-paratyphoid A and B vaccine.
29. (d) Leprosy is caused by bacteria, *Mycobacterium leprae* and *Mycobacterium lepromatosis*. Measles is caused by virus. Kala-ajar is caused by protozoa of genus *Leishmania*. Athlete’s foot is caused by fungi *Epidermophyton floccosum*, *Trichophyton sp.*
30. (a) Cardiologist cures heart diseases. Nephrologist cures kidney. Urologist cures urinary tract ailments. Oculist cures eye.
31. (d) Khaira is a disease of rice, in which the plants develop chlorotic or yellow patches at leaf base on both sides of the midrib. Anaemia is a decrease in number of red blood cells caused due to iron deficiency. Deficiency of iodine causes goitre. Scurvy is a gum disease caused due to vitamin-C deficiency.
32. (c) Antipyretics are drugs or herbs that reduce fever. Paracetamol or N-acetyl-p-aminophenol is used as an antipyretic. Antifoaming agent is a chemical that reduces foam formation, is chemically polydimethylsiloxanes or polyamides, silicones. Aspirin is a salicylate drug, used as an analgesic. Saframycin, rifamycin, etc. are antiseptics. Calciferol is antirachitic.
33. (b) A biodiversity hotspot is a biogeographic region with a significant reservoir of biodiversity that is under threat from humans. Around the world, as many as 25 areas qualify to be the hotspots. Out of which India has 2 hotspots: Eastern Himalayas and Western Ghats.
34. (c) Dihang-Dibang or Dehang-Debang is a biosphere reserve constituted under the Man & Biosphere Programme. It is in the Arunachal Pradesh. Manas National Park is in Assam. Nokrek National Park is located in West Garo Hills district of Meghalaya. Simlipal National Park is an elephant reserve situated in the Mayurbhanj district in Odisha.

35. (d) The correct descending order of mangrove cover in the states are West Bengal, Gujarat, Andhra Pradesh, Orissa. শ্রেণীভিত্তিক
36. (b) The concept of biodiversity was propounded by E.O. Wilson. The concept of wildlife was propounded by W. Hornaday. The concept of Ecosystem propounded by G. Tansley. The concept of Ecology was propounded by E. Haeckel.
37. (b) Nilgiri biosphere site was set up in 1986. Nanda Devi biosphere site was set up in 1988. Sundarban biosphere site was set up in 1989. Kanchanjunga biosphere site was set up in 2000.
38. (c) The Gir Forest National Park and Wildlife Sanctuary is a forest and wildlife sanctuary in Gujarat. It is the sole home of the Asiatic Lions (*Panthera leopersica*). Sundarbans National Park in West Bengal is the home of Bengal tigers. Betla National Park is located in the Chota Nagpur Plateau of the Latehar district of Jharkhand. Kaziranga National Park is located in Golaghat and Nagaon districts of Assam, a World Heritage Site, the park hosts two-thirds of the world's Great One-horned Rhinoceroses. শ্রেণীভিত্তিক
39. (a) Namdapha National Park is the largest protected area in the Eastern Himalaya biodiversity hotspot and is located in Arunachal Pradesh. Periyar National Park and Wildlife Sanctuary is a protected area in the districts of Idukki and Pathanamthitta in Kerala. Bandipur National Park, established in 1974 as a tiger reserve under Project Tiger, is a national park located in the south Indian state of Karnataka. The Keibul Lamjao National Park is a national park in the Bishnupur district of Manipur.
40. (b) The **Mars-500** mission was a psychosocial isolation experiment conducted between 2007 and 2011 by Russia, the European Space Agency and China, in preparation for an unspecified future manned space flight to the planet Mars. The experiment's idea was to mimic the time scale of a MARS mission. শ্রেণীভিত্তিক
41. (c) *Hayabusa* was an unmanned spacecraft developed by the Japan Aerospace Exploration Agency (JAXA). Its goal was to return a sample of material from a small near-Earth asteroid named 25143 Itokawa to Earth for further analysis. শ্রেণীভিত্তিক
42. (c) Brown dwarfs are substellar objects too low in mass to sustain hydrogen-1 fusion reactions in their cores. Red Dwarfs are cool but Brown Dwarfs are cooler than them and it is very large planet. শ্রেণীভিত্তিক
43. (a) The asteroid belt is a doughnut-shaped concentration of many different sized asteroids between the orbits of Mars and Jupiter, closer to the orbit of Mars. The asteroids orbit the Sun. The asteroid belt is not smooth but there are concentric gaps in it known as Kirkwood gaps.
44. (b) The rings of Saturn is made up of many uneven particles. The ring particles are made almost entirely of water ice, with a trace component of rocky material. There is still no consensus as to their mechanism of formation.
45. (a) The correctly matched pairs are:  
 Ugadi — Andhra Pradesh শ্রেণীভিত্তিক  
 Navbarsha — West Bengal  
 Bhadra Purnima — Gujarat  
 Gudi Padwa — Maharashtra  
 This is the time when New Year's Day is celebrated in the states of Tamil Nadu, Maharashtra, Punjab, West Bengal, Gujarat, Karnataka and Assam.
46. (d) The correctly matched pairs are:  
 Baggarwal — Jammu and Kashmir  
 Chencus — Andhra Pradesh  
 Tharu — Uttar Pradesh শ্রেণীভিত্তিক  
 Bhumij — Jharkhand  
 All these are the names of different tribes existing in the respective states given above.
47. (a) The Dark Room — R.K. Narayanan  
 Indian Philosophy — Dr. S. Radhakrishnan  
 Golden Threshold — Sarojini Naidu  
 Anamika — Nirala
48. (a) Amrit Aur Vish — Amrit Lal Nagar  
 A voice of freedom — Nayantara Sehgal  
 Area of Darkness — V.S. Naipal  
 Chandrakanta Santati — Devkinandan Khatri
49. (a) (December 3, 1903 – December 26, 1976) was a Hindi language author who wrote in a range of genres, including essays, novels and short stories. He also wrote a play and an autobiography. শ্রেণীভিত্তিক  
 Jaishankar Prasad was one of the most famous figures in modern Hindi literature as well as Hindi theatre.  
 Kazi Nazrul Islam, known popularly as Nazrul, was a Bengali poet, musician and revolutionary who pioneered poetic works espousing intense spiritual rebellion against fascism and oppression.

Maithilisharan Gupt was one of the most important modern Hindi poets. He is considered one among the pioneers of Khari Boli poetry and wrote in Khari Boli dialect, at a time when most Hindi poets favoured the use of Braj Bhasha dialect.

শ্রীচিভর্ষ

50. (a) National Youth Day — 12th January  
Kargil Memorial Day — 26th July  
Indian Air Force Day — 8th October  
National Sports Day — 29th August
51. (c) Tejas — Light combat aircraft. The HAL Tejas is a 4+ generation, multirole light fighter developed by India. It is a tailless, compound delta-wing design powered by a single engine. Arjun — Main battle tank. The Arjun is a third generation main battle tank developed by India's Defence Research and Development Organization (DRDO), for the Indian Army. The Arjun features a 120 mm main rifled gun with indigenously developed APFSDS ammunition, one 7.62 mm coaxial machine gun, and a 12.7 mm machine gun. Dhanush — Ship based missile. Dhanush is a variant of the surface-to-surface/ship-to-ship Prithvi II missile, which has been developed for the Indian Navy. It is capable of carrying both conventional as well as nuclear warheads with pay-load capacity of 500 kg and can strike targets in the range of 350 km. Astra — Air-to-air missile. Astra is an active radar homing beyond-visual-range air-to-air missile (BVRAAM) developed by the Defence Research and Development Organisation (DRDO), India. Astra is designed to be capable of engaging targets at varying ranges and altitudes allowing for engagement of both short-range targets (up to 20 km) and long-range targets (up to 80 km) using alternative propulsion modes.
52. (a) A. Grand old man of India  
1. Dadabhai Naoroji. Dadabhai Naoroji, known as the Grand Old Man, was a Parsi intellectual, educator, cotton trader, and an early Indian political and social leader.  
B. Tota-e-Hind  
2. Amir Khushro. Ab'ul Hasan Yamin ud-Din Khusrow was a Sufi musician, poet and scholar. He was an iconic figure in the cultural history of the Indian subcontinent.  
C. Shakespeare of India  
3. Kalidas. Kalidas was a Classical Sanskrit writer, widely regarded as the greatest poet

and dramatist in the Sanskrit language. His floruit cannot be dated with precision, but most likely falls within the 5th century AD.

D. Nightingale of India

শ্রীচিভর্ষ

4. Sarojini Naidu. Sarojini Naidu, born as Sarojini Chattopadhyay also known by the sobriquet as The Nightingale of India, was a child prodigy, Indian independence activist and poet.

53. (a) A. National Institute of Immunology 1. New Delhi  
B. National Centre for Cell Science 2. Pune  
C. Centre for DNA Finger Printing and diagnostics 3. Hyderabad  
D. National Brain Research Centre 4. Manesar Centre
54. (d) The Kerala government is all set to launch Rs 300 crore three-tower 'Gender Park' in Kozhikode.
55. (d) India ranked 10th out of 11 Asia Pacific countries in a newly-launched health index to measure the progress towards personalised healthcare.
56. (b) ISRO chairman K Sivan is likely to inaugurate the 'SriShakthiSat' ground station at Sri Shakthi Institute of Engineering and Technology in Coimbatore.
57. (a) Bharti Airtel took an edge by becoming the first telecom operator in India to demonstrate 5G services successfully. Bharti Airtel announced that it orchestrated live fifth-generation (5G) service over a commercial network in Hyderabad.
58. (c) Oscar winning-actor Cloris Leachman has passed away. The late star was known as one of Hollywood's most prolific performers having won an Academy Award, a Golden Globe, and eight Primetime Emmy Awards.
59. (d) The Ram Temple tableau of Uttar Pradesh that was on display during the Republic Day 2021 has bagged the first prize among all tableaux.
60. (c) Italian Prime Minister, Giuseppe Conte resigned after losing his Senate majority, plunging the country into political uncertainty just as it's battling the pandemic and a recession.
61. (d) Bharti Axa General Insurance, a joint venture between Bharti Enterprises, one of India's leading business groups, and Axa, one of the world's largest insurance companies, launched a new app "Krishi Sakha" to cater to the needs of farmers and guide them in adopting best

- farming practices and enhancing productivity.
62. (b) New Zealand, Vietnam and Taiwan are the top three countries respectively in the index.
63. (d) India has been ranked at 86th position among 98 countries in the new Coronavirus Performance Index released by Australia-based Lowy Institute. শ্রীচিওর্স
64. (d) Lieutenant General Chandni Prasad Mohanty has been appointed as the new Vice-chief of Army staff. He would assume the office on February 1, 2021 from Lt General SK Saini, who is superannuating on 31 January 2021.
65. (c) The appointments committee (ACC) of the Cabinet has approved the appointment of Swaminathan Janakiraman and Ashwini Kumar Tewari as new Managing Directors (MDs) of State Bank of India (SBI) for a period of three years. Dinesh Kumar Khara is the current Chairman of the bank. The other two MDs of the bank are C.S. Setty and Ashwani Bhatia.
66. (a) Page orientation is the way in which a rectangular page is oriented for normal viewing.
67. (a) A hyperlink, or simply a link, is a reference to data that the reader can directly follow either by clicking, tapping, or hovering. Hyperlinks are found in nearly all Web pages, allowing users to click their way from page to page.
68. (b) A home page is the main page or the introductory page of a website, typically serving as a table of contents for the site.
69. (d) A hub contains several ports for connecting multiple computers to form a small network. A simple hub is also called a concentrator.
70. (d) A blog is a regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.
71. (c) Uttar Pradesh Chief Minister Yogi Adityanath launched the 'Udyam Sarathi App' on the occasion of the Foundation Day of the state, on 24 January 2021. শ্রীচিওর্স
72. (a) International Day of Education will be marked under the theme 'Recover and Revitalize Education for the COVID-19 Generation'. The United Nations General Assembly proclaimed 24 January as International Day of Education.
73. (d) Shristi Goswami, a nineteen-year-old Haridwar-based student, become the Chief Minister of Uttarakhand for one day on National Girl Child Day.
74. (b) The theme of National Voters' Day 2021 is, 'Making Our Voters Empowered, Vigilant, Safe and Informed'. India observes "National Voters' Day" every year on January 25.
75. (d) The iconic American radio and television host, and paid spokesman, Larry King, has passed away. শ্রীচিওর্স
76. (d) The Border Security Force (BSF) has launched "Operation Sard Hawa" on the western international border of Rajasthan.
77. (a) In UT and city states category, Delhi topped followed by Chandigarh.
78. (c) The Appointments Committee of the Cabinet has appointed Siddhartha Mohanty as the managing director of India's largest insurer Life Insurance Corporation (LIC).
79. (d) The Gujarat state government has renamed dragon fruit as 'Kalamam'. The move has kept the internet in splits and many criticized it using the hashtag #SanskariFruitSabzi. শ্রীচিওর্স
80. (b) Rishabh Pant was signed by JSW Sports, the sports arm of JSW Group. The multi-year association between the two parties will see JSW Sports manage all commercial interests and marketing rights of the 23-year-old cricketer, who most recently played a starring role in India's magnificent Test series win in Australia.
81. (b) Chief Minister Jai Ram Thakur has launched Himachal Pradesh's first online youth radio station "Radio Hills-Youngistan Ka Dil".
82. (d) The Indian Air Force (IAF) and French Air and Space Force will kickstart the bilateral exercise Desert Knight-21 at Air Force Station Jodhpur from January 20.
83. (d) In Uttar Pradesh, a new 3,300-metre-long airstrip has been constructed near Kurebhar on Purvanchal Expressway. With this new airstrip, Uttar Pradesh has become the first state in India having two airstrips on expressways. Uttar Pradesh also has an airstrip on Lucknow-Agra Expressway.
84. (d) The incumbent President of Portugal, Marcelo Rebelo de Sousa has won a second five-year term after winning the 2021 Portuguese presidential election with landslide victory.
85. (c) The Subhash Chandra Bose Aapda Prabandhan Puraskar 2021 has been conferred upon Dr. Rajendra Kumar Bhandari in Individual category.
86. (a) Shinzo Abe, Japan has been awarded Padma Vibhushan 2021 in Public Affairs category.
87. (a) Indian Personality of the Year Award – Biswajit Chatterjee. শ্রীচিওর্স
88. (d) Mozambique is the top country in the Global

- Climate Risk Index 2021, for being worst-hit country by climate change.
89. (b) A large-scale tri-service joint amphibious exercise AMPHEX – 21 was held in Andaman & Nicobar group of islands from 21 – 25 Jan 2021. অ্যাচিভমেন্ট
90. (c) In Madhya Pradesh, Chief Minister Shivraj Singh Chouhan launched a new scheme 'PANKH Abhiyan' on 24 January, to mark the occasion of National Girl Child Day. The scheme has been launched under the 'Beti Bachao Beti Padhao' scheme for the empowerment and growth of the girl child.
91. (a) Veteran Malayalam actor Unnikrishnan Namboothiri has passed away while contracting COVID-19. অ্যাচিভমেন্ট
92. (c) The Karnataka Chief Minister, BS Yediyurappa recently launched Avalokana software. The software will enable the state government to access data on expenditures and sanctions incurred on 1,800 programmes.
93. (d) Uttarakhand Chief Minister, Trivendra Singh Rawat will inaugurate the first child-friendly police station of Uttarakhand, which is meant to provide a friendly environment to children associated with crimes.
94. (b) The Union Cabinet has approved 850 megawatt (MW) Ratle hydropower project worth a Rs. 5281.94 crore on Chenab river in Kishtwar district of Jammu and Kashmir. অ্যাচিভমেন্ট
95. (c) The Reserve Bank of India (RBI) has imposed a monetary penalty of Rs 2 crore on Standard Chartered Bank–India for delays in reporting of frauds.
96. (a) The first-of-its-kind Labour Movement Museum, in India, would be launched in Alappuzha in Kerala, to showcase the history of world labour movement.
97. (c) The theme for this year's summit, which is being held virtually is 'Aatmanirbhar Bharat – Start of New Decade'.
98. (b) Ministry for Sports and Youth Affairs, Kiren Rijiju has been given the additional charge of the Ayush Ministry.
99. (d) The book has been written by senior journalist Waman Subha Prabhu.
100. (c) The Chief Minister of Bihar Nitish Kumar inaugurated the first-ever bird festival of the state, 'Kalrav', at Nagi-Nakti bird sanctuary, located in Jamui district. অ্যাচিভমেন্ট

