

WBCS (Main) Exam Paper – IV Practice Set

Answers with Explanation

1. (c) Saina Nehwal is the first Indian badminton player, won the bronze medal in the Olympic Games 2012 and Karnam Malleshwari was the first Indian woman to win the individual medal in Olympic games, who is associated with weight lifting. শ্রীচিভর্ষ
2. (c) India won the World Cup ICC one day final at Wankhede Stadium in Mumbai. Man of the match was Mahendra Singh Dhoni and man of the series was won by Yuvraj Singh.
3. (c) Australia is the only country which has won the ICC Cricket World Cup four times in 1987, 1999, 2003 and 2007 and won three times consecutively. Indian have also won the ICC Cricket World Cup 1983 and 2011. শ্রীচিভর্ষ
4. (a) The correctly matched pairs are : Khadakvasla — National Defence Academy. The National Defence Academy (NDA) is the Joint Services academy of the Indian Armed Forces, where cadets of the three services, the Army, the Navy and the Air Force train together before they go on to pre-commissioning training in their respective service academies. The NDA is located in Khadakwasla near Pune, Maharashtra. It is the first tri-service academy in the world. Konark — Sun Temple. Konark Sun Temple is a 13th century temple, at Konark, in Odisha, India. It was supposedly built by king Narasimhadeva I of Eastern Ganga Dynasty around 1250.
5. (a) The correctly matched pairs are: Bandipur National Park — Mysore. 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. It was once a private hunting reserve for the Maharaja of the Kingdom of Mysore. Dachigam Sanctuary — Jammu and Kashmir. Dachigam National Park is located 22 kilometers from Srinagar, Jammu and Kashmir. It covers an area of 141 square kilometers. শ্রীচিভর্ষ Ghana Bird Sanctuary — Bharatpur. The Keoladeo National Park or Keoladeo Ghana National Park formerly known as the Bharatpur Bird Sanctuary in Bharatpur, Rajasthan, India is a famous avifauna sanctuary that plays host to thousands of birds especially during the summer season.
6. (d) All the given statements are correct.
7. (c) Pichavaram — Tamil Nadu শ্রীচিভর্ষ
Krishna estuary — Andhra Pradesh
Ratnagiri — Maharashtra
Bhitarkanika — Odisha
8. (a) Keoladeo — Rajasthan.
Point Calimere — Tamil Nadu.
Ratan Mahal — Gujarat.
Ghat Prabha — Karnataka.
Astamudi — Kerala.
9. (a) GSLV Mk-3 is the latest version of GSLV. It can carry up to 4500 to 5000 kg satellites. Until now, India relied on EU's Arianespace launch vehicle to send those INSAT-4 satellites. It will consist of 3 stages. 1st stage will have solid propellant, 2nd stage will have liquid propellant and 3rd stage will be cryogenic engine. GSLV MK-3 will make ISRO a competitive player in commercial launches of foreign satellites. শ্রীচিভর্ষ
10. (a) SMAP (Soil Moisture Active Passive) Satellite is a three-year mission which will measure the amount of moisture in soil. It will help to monitor drought, predict floods, assist crop productivity, weather forecasting and linking water, energy and carbon cycles.
11. (c) Idukki district of Kerala has become first district in India to have high speed Rural Broadband Network i.e. National Optical Fibre Network (NOFN) Internet connectivity. NOFN is the largest rural connectivity project of its kind in the world. শ্রীচিভর্ষ
12. (a) 'Curiosity' is a car-sized robotic rover, exploring Gale Crater on Mars as part of NASA's Mars Science Laboratory Mission (MSL) 'MESSENGER' is an acronym of Mercury Surface Environment, Geochemistry, and Ranging. It is a robotic NASA spacecraft orbiting the planet Mercury. Rustom is a medium Altitude Long Endurance unmanned combat air vehicle (UCAV) being developed by DRDO.
13. (a) Planktons are passively floating in upper water, nektons are actively swimming while benthos

- lead sedentary life upon the sea bottom. Planktons are producers and are present in large number. অ্যাচিভার্স
14. (c) Absorption technique is used for controlling Gaseous pollutant. These pollutants are brought into contact with a liquid such as water. The liquid absorbs the gas. অ্যাচিভার্স
15. (b) CO₂ is the largest contributor towards global warming, followed by methane, CFCs and N₂O.
16. (a) Oxygen is required for decomposition of microorganism under the water. Increase in waste and pollution enhances the decomposition activities and thereby reduces the availability of oxygen for other organic activities under the water body. Hence a higher demand of oxygen (BOD) indicates higher level of microbial pollution.
17. (d) Urochrome is the chemical which is responsible for the yellow colour of urine.
18. (b) Acupuncture is the stimulation of specific acupuncture points along the skin of the body using thin needles. অ্যাচিভার্স
19. (d) Viviparous plants produce seeds that germinate before they detach from the parent plant.
20. (b) King Cobra is the only snake in the world that builds a nest. The female snake, which is about 13 feet long, builds a nest to lay its eggs.
21. (c) Fishes have 2 chambered heart. Birds have four chambered heart. Frogs, toads, newts and salamanders have four legs. But caecilians, which form the least known group of amphibians, have no limbs and only a very short tail. They resemble snakes, worms or eels.
22. (b) The natural semen, collected from the male should be ideally used with 30-45 minutes of collection. In general, if semen has to be stored beyond one hour after collection, dilution with ideal extender and careful handling is essential. Diluents increase the volume of semen, retains cell integrity and buffering the detrimental effect arising on storage. অ্যাচিভার্স
23. (d) Shah Rukh Khan, has become the first Indian to become the Brand ambassador of the INTERPOL, for its global "Turn Back Crime" Campaign.
24. (b) The Indian or Asian wild Ass is *Equus hemionus khur*. It is a subspecies of the onager native to Southern Asia. The barasingha or the swamp deer is *Rucervus duvaucelii* syn. *Cervus duvaucelii*. It is a deer species distributed in the Indian subcontinent. Chinkara is *Gazella bennettii*. Nilgai or *Boselaphus tragocamelus* is the largest Asian antelope. অ্যাচিভার্স
25. (b) Mysore type cattle is long horned. Gir type cattle is long eared. Danny type cattle is called Danny. Himalaya cattle is called Dwarf type.
26. (a) Beans are highly rich in proteins, potatoes and bananas are carbohydrate rich. Banana provides an amount of sugar, minerals and vitamins and some acids (mainly malic acid).
27. (d) Transduction and conjugation were discovered by Joshua Lederberg. Morgan investigated about the sex-linked inheritance in *Drosophila*. In 1956, Arthur Kornberg and colleagues had discovered the enzyme DNA polymerase I, also known as Pol I, in *Escherichia coli*. Hargobind Khorana, Marshall W. Nirenberg and Robert W. Holley were given the Nobel Prize for their work on the discovery of the genetic code in 1968.
28. (d) Sternum is the breast bone. Clavicle is the collar bone. Patella is the knee cap. Scapula is the shoulder blade. অ্যাচিভার্স
29. (c) Adrenalines are secreted in the situations of exercise, fear or any kind of dangerous situation. Oestrogens are steroid hormones or female primary sex hormones. Insulin is responsible for the metabolism of sugar in the body. Pheromones are the compounds which are secreted generally from insect; go out to affect the other insects. Some of the pheromones include alarm pheromones, food trail pheromones, and sex pheromones.
30. (a) Ptyalin digests the starch in the mouth. Pepsin is a proteolytic enzyme which breaks down the proteins into simple peptides. Renin is responsible for converting angiotensinogen to angiotensin. Oxytocin is a hormone that stimulates the contraction of smooth muscles of the body.
31. (a) (i) MnO₂
Oxidation of Mn in MnO₂ : অ্যাচিভার্স
 $x + 2(-2) = 0$
 $x = 4$
(ii) H₂S₂O₇
 $2(+1) + 2(x) + 7(-2) = 0$
 $2 + 2x - 14 = 0$
 $x = 6$
(iii) CaO
 $x + 1(-2) = 0$
 $x = 2$
(iv) NaAlH₄ অ্যাচিভার্স
 $1(+1) + x + 4(-1) = 0$

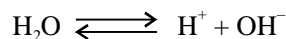
(H is hydride in this compound)

$$1 + x - 4 = 0$$

$$x = 3$$

প্র্যাচিউর্স

32. (b) Dissociation of water is temperature dependent



Dissociation constant = $KW = [\text{OH}^-][\text{H}^+]$

Water at 100°C will have more of the molecules dissociated to ions than at 25°C i.e., KW increase with increase in temperature.

\therefore pH of water decreases on increasing temperature. At 100°C pH of water becomes 6.14.

33. (c) The Vechur cattle is a rare breed of *Bos indicus*, named after the village Vechoor in Kottayam district of the state of Kerala in India. Its average length is 124 cm and height is 87 cm, according to the Guineas Book of Records, it's the smallest cattle breed in the world. Its milk is considered to have medicinal properties. Unlike other cattle, they can resist drought by being hardy towards it.

প্র্যাচিউর্স

34. (a) Octopus belongs to Mollusca. Jellyfish belongs to Coelenterata. Silver fish belongs to Arthropoda. Bombay Duck belongs to Pisces.

35. (d) All the statements are correct. The term gene was coined by Danish biologist Wilhelm Johannsen in 1909. Genes are the discrete DNA segments sitting in the chromosomes which express to give rise to a particular protein. Alleles are the alternative forms of same gene. In diploid organisms, there are two alleles on the two homologous chromosomes. If there exists multiple number of alleles of same gene, it means all the alleles are multiple or simply multiple alleles.

প্র্যাচিউর্স

36. (a) Frogs generally breathe by their lungs but they can also breathe with their skin too. Their skin is glandular which can exchange oxygen and carbon dioxide along with some other bodily secretions. The mature frogs have no gills, but before their larval stage have tail as well as internal gills like fishes through which most of the breathing occurs. These two particular features disappear once the tadpoles are ready to metamorphose.

37. (a) Wavelength is the distance between two consecutive crests or troughs and 1 angstrom = 10^{-10}m , joule is the unit of energy. Intensity of sound is measured in decibel. Frequency is measured in hertz (Hz).

প্র্যাচিউর্স

38. (c) The unit of temperature is kelvin, power is measured in watt, pressure in pascal and force in newton.

প্র্যাচিউর্স

39. (a) Cosmic rays have very high frequency $>10^{23}$ Hz and wavelength $<10^{-24}$ m.

40. (c) Pendulum clocks become slow in summer because the length of the pendulum increases. Increase in length $\Delta l = l_0 \alpha \Delta T$ where l_0 = original length, α = coefficient of linear expansion and ΔT = change in temperature.

41. (a) A piece of ice added to the drink cool it because ice takes latent heat from the drink for melting resulting in the cooling of the drink.

42. (d) Revolver was discovered by Colt. Dynamite was discovered by Alfred Nobel. Law of cooling was discovered by Newton and law of pressure by Pascal.

প্র্যাচিউর্স

43. (c) Hugo de Vries introduced the term mutation and developed the mutation theory of evolution. Darwin had given the theory of evolution. One gene one enzyme hypothesis was an idea which said that one gene is responsible for producing one enzyme only. This was proposed by Beadle and Tatum in 1941. The concept of Operon was given by Jacob and Monod in 1961.

44. (a) Pure capsaicin is a white crystalline powder. Capsaicin is a capsaicinoid which belongs to the alkaloid family. It is present in chili peppers. It is beneficial for heart as it has role in controlling cholesterol. Geraniol is a natural antioxidant. Geraniol has been suggested to help prevent cancer. It is found in coriander, lavender, lemon, lime, nutmeg, oranges. Allicin is an antioxidant found in garlic and is effective against cancers. Lycopene is a carotenoid present in tomatoes. It is a very efficient antioxidant, which can neutralize oxygen-derived free radicals.

প্র্যাচিউর্স

45. (c) In the flower, the ovules undergo fertilization by fusing the egg with the pollen. These then develop into seeds nestling the small embryo inside. The ovary swells to become the fleshy fruit. The wood in trees is the result of secondary growth of the outer layers of stem by cell divisions. The leaves are the site of photosynthesis and the photosynthates (the sugars are converted into starch) are stored in the form of starch.

প্র্যাচিউর্স

46. (c) Night blindness is caused by deficiency of vitamin-A. Deficiency of vitamin D causes rickets. Deficiency of vitamin C causes scurvy. Deficiency of vitamin B causes beri-beri.

47. (b) Ligaments connect two bones together. Tendon connects muscles. Areolar tissue is filling tissue. Fats are stored in adipose tissue. শ্রীচিওর্ষ
48. (b) Marasmus is caused by protein deficiency in under five years children. Kwashiorkor is deficiency of proteins, energy malnutrition caused by prolonged starvation. Tuberculosis is caused by *Mycobacterium* infection. Hepatitis B is a viral diseases. শ্রীচিওর্ষ
49. (a) The causative agent of Anthrax is used as a potent bioweapon in warfare. Thalassaemia is a disease caused by defective genes of haemoglobin. Surrogecy is an intermediate stage in artificial insemination for producing an offspring. The science of altering genes is a branch of biology known as *transgenics*.
50. (c) Diphtheria is a respiratory tract illness caused by *Corynebacterium diphtheriae*. Pneumonia is an inflammatory condition of the lung caused by virus or bacteria. Leprosy or Hansen's disease is caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis*. AIDS, syphilis and gonorrhoea are viral diseases. Polio, Japanese encephalitis and plague are viral diseases. Colourblindness, haemophilia, and sickle cell anaemia are X-linked (sex-linked) disease conditions.
51. (d) Rh factor is a protein found in blood. A person having Rh factor in blood is called Rh positive whereas that who does not carry this protein in the blood is called Rh negative. Marriage should be avoided in between Rh negative female & Rh positive male. This can be fatal for the mother as well as the baby of such parents. শ্রীচিওর্ষ
52. (d) During inhalation, the diaphragm contracts and moves downward. This increases the space in the chest cavity and thus the lungs expand. The inter coastal muscles contract to pull the rib cage upward and outward. Haemoglobin binding affinity for carbon monoxide is 250 times greater than its affinity for oxygen.
53. (d) The correctly matched pairs are :
 Baggarwal — Jammu and Kashmir
 Chencus — Andhra Pradesh
 Tharu — Uttar Pradesh
 Bhumij — Jharkhand শ্রীচিওর্ষ
 All these are the names of different tribes existing in the respective states given above.
54. (c) Khajuraho, as we know, is the ancient capital of the Chandela Dynasty. The temples here were erected simultaneously in the 11th century and are nearly equally divided among the three religions viz. Jaina, Saiva and Vaishnava. Each group has one shrine greater than the rest around which small temples have been clustered. This largest temple is Kandariya Mahadev in Saivite, Ramachandra in Vaishnavite and Jinanatha in Jain. শ্রীচিওর্ষ
55. (b) Harsha During the times of Harsha, a script called Siddhimatrika was developed which is sometimes called Harsha Script. Siddhimatrika was the form of writing in which Sanskrit works became known in China and Japan.
56. (d) The third type of sculpture art that Flourished during the Kushana time was Amaravati School of art in the Andhra Pradesh. White Marble was used in this art and the themes were Buddha's life and Jatakas tales. The curly hair of Buddha is a feature that is influenced by the Greeks. In this school, the Kings, Princes, Palaces etc. have got prominence. শ্রীচিওর্ষ
57. (a) Mughal architecture, building style that flourished in northern and central India under the patronage of the Mughal emperors from the mid-16th to the late 17th century. The Mughal period marked a striking revival of Islamic architecture in northern India. Under the patronage of the Mughal emperors, Persian, Indian, and various provincial styles were fused to produce works of unusual quality and refinement.
58. (a) Padma Vibhushan is awarded to recognize exceptional and distinguished service to the nation in any field, including government service. It is awarded to recognize distinguished service of a high order to the nation in any field while Padma Shri is awarded to citizens of India to recognize their distinguished contribution in various spheres of activities including the Arts, Education, Industry, Literature, Science, Sports, Medicine, Social Service and Public Affairs. শ্রীচিওর্ষ
59. (c) Arjuna Awards was instituted in 1961, Drona Charya award was instituted in 1985 while Rajiv Gandhi Khel Ratna award was commenced in the year 1991-92 and Dhyan chand award was initiated in 2002.
60. (a) Saraswati Samman is meant for outstanding literary work in any Indian language. Kabir Award is given for promotion of communal harmony. Arjuna Award is meant for sports and Bhatnagar Award is conferred in the field of Science. শ্রীচিওর্ষ

61. (a) Only statement 1 is correct. The Padma Vibhushan is the second highest civilian award in the Republic of India and is instituted by Samsung Electronics and the Sahitya Akademi and not by UNESCO. শ্রীচিভর্ষ
62. (d) All the statements are correct. The Saraswati Samman is an annual award for outstanding prose or poetry literary works in any Indian language. To be eligible for the Vyas Samman, the literary work must be in the Hindi language. Bihari Puruskar is awarded to an outstanding work published in Hindi or Rajasthani by a Rajasthani writer.
63. (a) Jnanpith award is a literary award in India. The Saraswati Samman is also a literary award for outstanding prose or poetry literary works in any Indian language. Vachaspati Samman is given in Sanskrit literature while Shankar award is for Indian Philosophy. শ্রীচিভর্ষ
64. (d) All the statements are correct. Vyas Samman is presented for the outstanding work in literature. Kabir Samman is presented for communal harmony. Bhatnagar Award is presented for science and Dhanwantari award is conferred in medical science.
65. (d) All the three awards Bharat Ratna, Padma Vibhushan and Padma Shree are presented or announced on the eve of Republic Day.
66. (a) The Param Vir Chakra is India's highest military decoration award. The Maha Vir Chakra is the second highest military decoration while veer chakra is third in precedence in the war time gallantry awards.
67. (a) The award was started in 1999. শ্রীচিভর্ষ
68. (c) The Lady Tata Memorial Trust was established by Sir Dorabji Tata in April 1932 in memory of his wife, Lady Meherbai, who was struck with leukaemia in 1930 at the age of 50, and succumbed to the disease a year later in Wales, and passed away on 18th June 1931. The Trust offers one-fifth of its income to scholars doing scientific investigations in Indian Universities and Institutes into diseases of the blood, with special references to leukaemia, and for scientific research towards alleviation of human suffering from disease. শ্রীচিভর্ষ
69. (c) Both the given statements are correct regarding the Nobel Prize. The Nobel Prize is a set of annual international awards bestowed in a number of categories by Swedish and Norwegian committees in recognition of cultural and/or scientific advances. The will of the Swedish inventor Alfred Nobel established the prizes in 1895. The prizes in Physics, Chemistry, Physiology or Medicine, Literature, and Peace were first awarded in 1901. The related Nobel Memorial Prize in Economic Sciences was created in 1968. শ্রীচিভর্ষ
70. (a) Jawaharlal Nehru Award for International Understanding was founded in 1965. It is administered by the Indian Council for Cultural Relations (ICCR) to people "for their outstanding contribution to the promotion of international understanding, goodwill and friendship among people of the world". The money constituent of this award is 2.5 million rupees.
71. (d) Neither of the given statements are correct.
72. (b) The Nobel prize except the Economics first awarded in 1901. শ্রীচিভর্ষ
73. (a) The Myanmar Navy has officially inducted the submarine INS Sindhuvir, which was handed over by the Indian Navy to the country in October 2020. INS Sindhuvir was commissioned on 25th December 2020, which marked the 73rd anniversary of the Myanmar Navy.
74. (a) Indian Space startup, Skyroot Aerospace has successfully test fired a solid propulsion rocket engine, named Kalam-5. With this, it has become the first private company of India to successfully design, develop and test a full solid-fueled rocket stage.
75. (b) The Indian Navy and Vietnamese Navy undertook the naval passage exercise PASSEX in the South China Sea. শ্রীচিভর্ষ
76. (d) Sir Garfield Sobers Award for ICC Male Cricketer of the Decade goes to Virat Kohli.
77. (a) Sreenivas Karanam, Bengaluru was selected for the FIRST prize for his contribution in developing a cost-effective customized technical solution under the brand 'C mobile', for deep-sea communication, operating along the Kerala coast, facilitating communication among fishermen and issue of weather alerts etc.
78. (b) The Hawker Culture of street food in Singapore has been inducted by UNESCO in its prestigious 'Representative List of the Intangible Cultural Heritage of Humanity'. শ্রীচিভর্ষ
79. (c) Konark Corps of Indian Army has launched a 1971 kilometres cycling expedition in Gujarat and Rajasthan to commemorate the commencement of the Golden Jubilee Victory Celebrations of Indian Armed Forces in the Indo-Pak War of 1971.

80. (c) International Literacy Day 2020 focuses on “Literacy teaching and learning in the COVID-19 crisis and beyond,” especially on the role of educators and changing pedagogies. প্র্যাচিভর্স
81. (c) India’s first hot air balloon wildlife safari was launched at Bandhavgarh Tiger Reserve in Madhya Pradesh by MP forest minister Vijay Shah in line with the vision of Buffer Mein Safar.
82. (a) Late Justice Rajindar Sachar’s Autobiography: ‘In Pursuit of Justice’.The family of Late Justice Rajindar Sachar in association with The Indian Society of International Law and The Indian Law Institute is organizing the book launch “In Pursuit Of Justice : An Autobiography”. sachar committee appointed in 2005 to study the conditions of Muslims in India. প্র্যাচিভর্স
83. (b) Srinagar based Amar Singh College building, built nearly 80 years ago, is one of the seven conservation projects to be recognised with ‘2020 UNESCO Asia-Pacific Awards for Cultural Heritage Conservation’. It was recognised with the ‘Award of Merit’.
84. (c) Nobel laureate Kailash Satyarthi’s new book titled ‘Covid-19: Sabhyata ka Sankat Aur Samadhan’ (Covid-19: Crisis of Civilisation and Solutions) was launched by former Chief Justice of India Dipak Misra and Rajya Sabha Deputy Chairman Harivansh Narayan Singh. প্র্যাচিভর্স
85. (a) Himachal Pradesh Chief Minister Jai Ram Thakur has unveiled an 18-foot tall statue of late former Prime Minister Atal Bihari Vajpayee on the occasion of his 96th birth anniversary at the historic Ridge in the state capital.
86. (d) Former Australia Test all-rounder Eric Freeman has passed away. He was 76.Freeman made his Test debut against India at the Gabba (Brisbane Cricket Ground) in 1968 during which his opening scoring shot was a six, and he became the first player to achieve the feat.
87. (b) Professor Robert D. Bullard (USA) who was awarded the Champion of the Earth Lifetime Achievement award for his commitment and service to environmental justice. প্র্যাচিভর্স
88. (c) Indian actor Sonu Sood has topped the first-of-its-kind ‘50 Asian Celebrities In The World’ 2020 list, published by UK based Eastern Eye newspaper.
89. (b) The year 2020 Ramanujan Prize for Young Mathematicians was awarded to Dr Carolina Araujo, Mathematician from the Institute for Pure and Applied Mathematics (IMPA), Rio de Janeiro, Brazil. প্র্যাচিভর্স
90. (c) Every year the UNICEF Day is observed on December 11.
91. (b) Madhya Pradesh has honoured with “Best State Promoting Sports” award by FICCI.
92. (b) Adar Poonawalla, the Chief Executive of the Pune-based Serum Institute of India (SII), has been named among six “The Straits Times Asians of the Year” for 2020, by Singapore’s leading daily, The Straits Times, for their work in fighting the COVID-19 pandemic.
93. (b) The International Civil Aviation Organization has decided that from now until 2023, the theme will be: “Advancing Innovation for Global Aviation Development”. প্র্যাচিভর্স
94. (b) The Prime Minister of Romania Ludovic Orban has stepped down from his post on 7th December 2020, after his ruling National Liberal Party (PNL) lost in 2020 parliamentary election.
95. (c) Assam’s first and only woman chief minister, Syeda Anwara Taimur passed away.
96. (d) The Researchers at the Indian Institute of Technology (IIT) Madras have come up with an indigenously-made Microprocessor, named ‘MOUSHIK.’
97. (d) The Union environment minister, Prakash Javadekar has released a report titled the ‘Status of Leopard in India 2018’. As per the report, the population of leopard in India has increased by 60 per cent in four years since 2014.
98. (b) India (Score- 6.56/10) has been ranked 105th in the Global Economic Freedom Index 2020 released by the Fraser Institute, Canada.
99. (d) The World First Aid Day is observed on the second Saturday of September every year to create awareness about importance of first aid in preventing injuries and saving lives. The World First Aid Day 2020 is being observed on 12 September. প্র্যাচিভর্স
- 100.(b) The state government of Meghalaya has launched India’s Biggest “Piggery Mission” with an outlay of Rs 209 Crores.