

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

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৪৯.	531	রসায়ন [Chemistry]
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৫১.	551	গণিত [Mathematics]
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৫৩.	571	ভূ-তত্ত্ব [Geology]
৫৪.	581	উদ্ভিদবিদ্যা [Botany]
৫৫.	591	প্রাণিবিদ্যা [Zoology]
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৬৯.	721	মার্কেটিং [Marketing]
৭০.	731	ব্যবস্থাপনা [Management]
৭১.	741	ব্যবসায় প্রশাসন [Business Administration]
৭২.	751	আইন [Law]

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ক্র. নং	বিষয় কোড [Subject Code]	বিষয়ের নাম [Subject Name]
৭৩.	761	আন্তর্জাতিক আইন [International Law]
৭৪.	771	মেডিকেল সায়েন্স [Medical Science]
৭৫.	791	ডেন্টাল সায়েন্স [Dental Science]
৭৬.	801	কৃষি [Agriculture]
৭৭.	802	কৃষি বিপণন [Agricultural marketing]
৭৮.	803	কৃষি ব্যবসা [Agribusiness ]
৭৯.	804	কৃষি ব্যবসা প্রশাসন/ কৃষি ব্যবসা ব্যবস্থাপনা [Agriculture Business Administration/ Agribusiness Management]
৮০.	811	কৃষি অর্থনীতি [Agricultural Economics]
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৮৫.	861	সমুদ্রবিদ্যা [Marine Science]
৮৬.	871	বনবিদ্যা [Forestry]
৮৭.	881	পুরকৌশল [Civil Engineering]
৮৮.	891	তড়িৎকৌশল [Electrical Engineering]
৮৯.	901	যন্ত্রকৌশল [Mechanical Engineering]
৯০.	903	অটোমোবাইল [Automobile Engineering]
৯১.	911	রসায়ন প্রকৌশল [Chemical Engineering]
৯২.	921	ধাতু প্রকৌশল [Metallurgical Engineering]
৯৩.	931	স্থাপত্যকৌশল [Architecture]
৯৪.	941	নৌস্থাপত্য ও সমুদ্রপ্রকৌশল [Naval Architecture and Marine Engineering]
৯৫.	951	বস্ত্রবয়ন শিল্প [Textile Technology]
৯৬.	961	চামড়া শিল্প [Leather Technology]
৯৭.	971	কম্পিউটার সায়েন্স [Computer Science]
৯৮.	981	পরিসংখ্যান [Statistics]
৯৯.	991	নগর উন্নয়ন [Urban Development]

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### বাংলা (আবশ্যিক)

[‘কারিগরি/পেশাগত’ এবং ‘সাধারণ ও কারিগরি/পেশাগত’ উভয় ক্যাডারের প্রার্থীদের জন্য]

বিষয় কোড: ০০১

পূর্ণমান-১০০

১। ব্যাকরণ	- ৫ X ৬= ৩০
ক) শব্দগঠন	
খ) বানান/ বানানের নিয়ম	
গ) বাক্যশুদ্ধি/ প্রয়োগ-অপপ্রয়োগ	
ঘ) প্রবাদ-প্রবচনের নিহিতার্থ প্রকাশ	
ঙ) বাক্যগঠন	
২। ভাব-সম্প্রসারণ	- ২০
৩। সারমর্ম	- ২০
৪। বাংলা ভাষা ও সাহিত্য-বিষয়ক প্রশ্নের উত্তর	- ৩০

### বাংলা (আবশ্যিক)

[‘সাধারণ’ এবং ‘সাধারণ ও কারিগরি/পেশাগত’ উভয় ক্যাডারের প্রার্থীদের জন্য]

বিষয় কোড: ০০২

পূর্ণমান-২০০

#### পার্ট- I

মান-১০০

১। ব্যাকরণ	- ৫ X ৬= ৩০
ক) শব্দগঠন	
খ) বানান/ বানানের নিয়ম	
গ) বাক্যশুদ্ধি/ প্রয়োগ-অপপ্রয়োগ	
ঘ) প্রবাদ-প্রবচনের নিহিতার্থ প্রকাশ	
ঙ) বাক্যগঠন	
২। ভাব-সম্প্রসারণ	- ২০
৩। সারমর্ম	- ২০
৪। বাংলা ভাষা ও সাহিত্য-বিষয়ক প্রশ্নের উত্তর	- ৩০

#### পার্ট- II

মান-১০০

১। অনুবাদ (ইংরেজি থেকে বাংলা)	- ১৫
২। কাল্পনিক সংলাপ	- ১৫
৩। পত্রলিখন	- ১৫
৪। গ্রন্থ-সমালোচনা	- ১৫
৫। রচনা	- ৪০

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

**ENGLISH**  
**(COMPULSORY)**  
Subject Code: 003  
Total Marks-200

**Part-A**  
**Marks-100**

**1. Reading Comprehension**

An unseen passage dealing with a topic relevant to our times will be set. Candidates will be required to answer (a) a number of thematic questions that will test their understanding of the passage (30 marks), and (b) a number of questions related to grammar and usage. (30 marks)

2. Candidates will be required to write a summary of the given passage in their own words within 100 words. (20 marks)

3. Candidates will have to write a letter relating to the thematic issue of the given passage to the editor of an English newspaper. (20 marks)

**Part-B**  
**Marks-100**

1. Candidates will be required to compose an essay on a topic related to an issue of topical relevance. The essay must conform to the word limit set and must convey a candidate's ability to express his or her ideas clearly and correctly in English as well as reflect and analyze a topic of contemporary interest. (50 marks)

**2. Translation from English into Bangla and Bangla into English**

Candidates will be required to translate a short passage from Bangla into English and another from English into Bangla. (25+25=50 marks)

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

### **BANGLADESH AFFAIRS (COMPULSORY) Subject Code: 005 Total Marks: 200**

This paper is designed to cover various issues/topics concerning Bangladesh affairs which include history, geography, environment, society, culture, economy and politics.

The topics/areas that should be covered are stated below:

1. Geography of Bangladesh that should include topographical features of different areas/regions and their developments over time.
2. Demographic features including ethnic and cultural diversity.
3. History and culture of Bangladesh from ancient to recent times.
4. Economy, society, literature and culture of Bangladesh with particular emphasis on developments including Poverty Alleviation, Vision- 2021, GNP, NNP, GDP etc. after the emergence of the country.
5. Bangladesh's environment and nature and challenges and prospects with particular emphasis on conservation, preservation and sustainability.
6. Natural resources of Bangladesh with focus on their sustainable harnessing and management.
7. The Constitution of the People's Republic of Bangladesh: Preamble, Features, Directive Principles of State Policy, Constitutional Amendments.
8. Organs of the Government:
  - a) Legislature: Representation, Law-making, Financial and Oversight functions; Rules of Procedure, Gender Issues, Caucuses, Parliament Secretariat.
  - b) Executive: Chief and Real executive e.g., President and Prime Minister, Powers and Functions; Cabinet, Council of Ministers, Rules of Business, Bureaucracy, Secretariat, Law enforcing agencies; Administrative setup- National and Local Government structures, Decentralization Programmes and Local Level Planning.
  - c) Judiciary: Structure: Supreme, High and other Subordinate Courts, Organization, Powers and functions of the Supreme Court, Appointment, Tenure and Removal of Judges, Organization of Subordinate Courts, Separation of Judiciary from the Executive, Judicial Review, Adjudication, Gram Adalat, Alternative Dispute Resolution (ADR).
9. Foreign Policy and External Relations of Bangladesh:  
Goals, Determinants and policy formulation process; Factors of National Power; Security Strategies; Geo-Politics and Environment Issues; Economic Diplomacy; Man-power exploitation, Participation in International Organizations; UNO and UN Peace Keeping Missions, NAM, SAARC, OIC, BIMSTEC, D-8 etc, and International Economic Institutions, Foreign Aid, International Trade.
10. Political Parties: Historical development; Leadership; Social Bases; Structure; Ideology and Programmes; Factionalism; Politics of Alliances; Inter and Intra-Party Relations; Electoral Behaviour; Parties in Government and Opposition.

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11. Elections in Bangladesh. Management of Electoral Politics: Role of the Election Commission; Electoral Law; Campaigns; Representation of People's Order (RPO); Election Observation Teams.
12. Contemporary Communication; ICT, Role of Media; Right to Information (RTI), and E-Governance.
13. Non-formal Institutions; Role of Civil Society; Interest Groups; and NGOs in Bangladesh.
14. Globalization and Bangladesh: Economic and Political Dimensions; Roles of the WTO, World Bank, IMF, ADB, IDB and other development partners and Multi National Corporations (MNCs).
15. Gender issues and Development in Bangladesh.
16. The Liberation War and its Background: Language Movement 1952, 1954 Election, Six-Point Movement, 1966, Mass Upsurge 1968-69, General Elections 1970, Non-cooperation Movement, 1971, Bangabandhu's Historic Speech of 7<sup>th</sup> March. Formation and Functions of Mujibnagar government, Role of Major Powers and of the UN, Surrender of Pakistani Army, Bangabandhu's return to liberated Bangladesh. Withdrawal of Indian armed forces from Bangladesh. } 50

# SYLLABUS FOR BCS (WRITTEN) EXAMINATION

## INTERNATIONAL AFFAIRS (COMPULSORY) Subject Code: 007 Total Marks 100

### Brief Description

International Affairs is a compulsory paper for candidates of competitive examinations under the Public Service Commission, Bangladesh and applicable to both general and professional cadre. This paper deals with conceptual issues and actors in the study of international affairs. It starts with a basic understanding of international affairs, its nature and evolution. It focuses on both conceptual and empirical issues in international affairs. Under this paper basic concepts and theories such as power, balance of power, realism, liberalism/neo-liberalism, foreign policy, security, trade, and environment will be addressed. The empirical focus of the paper is on understanding bilateral and multilateral relations, processes, functions, and politics of regional and global institutions. The paper is divided into two sections: conceptual and empirical issues.

### Objective

The paper strives to understand a basic knowledge about international affairs. It aims to examine whether the candidates are well equipped with the key concepts, perspectives and theories for explaining global phenomena to deal with policy matters effectively. Another purpose of the paper is to examine analytical capacity of the candidates about global issues and events that are closely linked with domestic arena.

### Proposed Distribution of Marks:

- |   |            |
|---|------------|
| 1. Short Conceptual Notes : 10 out of 12      | 10 x 4 =40 |
| 2. Analytical Questions: 3 out of 4 questions | 3 x 15 =45 |
| 3. Problem-solving question                   | 1 x 15 =15 |

### Section A: Conceptual Issues

**Introduction to International Affairs:** Significance of international affairs; meaning and scope of international affairs; linkage between international affairs and international politics

**Actors in the World:** Modern state, types of state, sovereignty, non-state actors, international institutions, relations between state and non-state actors

**Power and Security:** power, national power, balance of power, disarmament, arms control, geopolitics, terrorism

**Major Ideas and Ideologies:** Nationalism, imperialism, colonialism, neo-colonialism, post-modernism, globalization and new world order

**Foreign policy and Diplomacy:** concepts of foreign policy and diplomacy, decision-making process, determinants of foreign policy, diplomatic functions, immunities, and privileges

**International Economic Relations:** International trade, free trade, protectionism, foreign aid, debt crisis, foreign direct investment (FDI), financial liberalization, regionalism, regionalization, North-South gap, global poverty, MDGs

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**Global Environment:** Environmental issues challenges, climate change, global warming, climate adaptation, climate diplomacy

### **Section B: Empirical Issues**

**The United Nations System:** The UN and its organs, importance and limitations of the UN, Reforms of the UN, Role of the Security Council, UN Peacekeeping and peace-building functions, Human rights agenda, Environmental agenda, International Court of Justice, and Women empowerment

**Foreign Relations of Major Powers:** USA, Russia, UK, China, France, Germany, India, Japan etc.

**Global Initiatives and Institutions:** World Bank, IMF, ADB, G8, G-77, WTO, Kyoto Protocol, COP etc.

**Regional Institutions:** SAARC, BIMSTEC, EU, ASEAN, NATO, APEC, OIC, AU, GCC

**Major Issues and Conflicts in the World:** The Palestine Problem, the Arab Spring, the Kashmir Issue, the Syrian Crisis, Persian Gulf Conflict, nuclear issue and Iran, the North Korean issue, territorial disputes in Southeast and East Asia, Nuclear proliferation and other contemporary issues.

**Politics in South Asia:** India-Pakistan relations, Bangladesh-India relations, regional integration, water dispute, border problems and terrorism

**Bangladesh in International Affairs:** Major achievements, challenges, future directions

### **Section C: Problem-solving**

The candidates may be asked to come up with an analysis of a problem and its solution on any aspect of global developments and security issues, such as trade, climate change, foreign aid, arms proliferation etc.

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### **MATHEMATICAL REASONING (COMPULSORY)**

Subject Code: 008

Total Marks-50

Mathematical Reasoning is based on the principles of Logic. A sound knowledge of Mathematical Reasoning prepares one not only to solve mathematical problems but also develops the intellectual ability to resolve problems in all spheres of public life and to arrive at impartial and impersonal intelligent decisions.

The examination in Mathematical Reasoning will test the ability of the candidate to apply knowledge of Mathematics and Mathematical Reasoning acquired up to secondary level, especially to concrete application-oriented problems.

The syllabus of the examination is given below:

1. Simplification of Arithmetic and Algebraic Expressions.
2. Unitary Method, Average, Percentage, Simple and Compound interest, LCM, GCD, Ratio and Proportion, Profit and Loss.
3. Algebraic Formulas, Factorization of Polynomials, Linear and Quadratic Equations, Linear and Quadratic Inequalities.
4. Systems of Linear Equations with two or three unknowns.
5. Exponents and Logarithms. Exponential and Logarithmic functions.
6. Arithmetic and Geometric Sequences and Series.
7. Line, Angle, Triangle related theorems. Theorem of Pythagoras, Circle – Theorems, Corollaries.
8. Area related theorems and construction, Mensuration – plane figures and solid objects.
9. Cartesian Geometry- Distance, Equation of a Straight Line.
10. Trigonometric ratios and functions. Problems on height and distances.
11. Set theory. Venn diagram.
12. Counting Principles, Permutations and Combinations. Elementary Probability.

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

### MENTAL ABILITY (COMPULSORY)

Subject Code: 009

Total Marks-50

The objective of mental ability test is to assess differential aptitude of the candidate. The following areas are likely to be covered:

- 1. Verbal Reasoning:** The verbal reasoning test, as its name implies, is a measure of ability to understand concepts framed in pairs of words. The word used in these items may come from history, geography, literature, science, or any other content area. The item thus samples the candidate's knowledge and his/her ability to abstract and generalize relationships inherent in that knowledge.

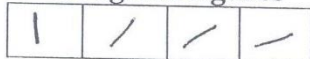
**Example:** Man has an inborn desire to.....the unknown.

**Answer:**

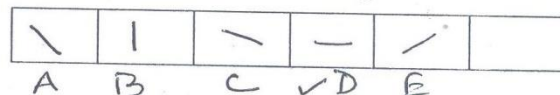
- a. Invent
- b. Discover
- c. Recover
- d. Solve
- e. fear

- 2. Abstract Reasoning:** The abstract reasoning test is intended as a nonverbal measure of the candidate's reasoning ability. The series presented in each problem requires the perception of an operating principle in the changing diagrams. In each instance, the candidate must discover the principle or principles governing the change of the figures and give evidence of his understanding by designating the diagram which should follow.

**Example:** Program figures



Answer figures



- 3. Space Relations:** The Space Relation test is a measure of ability to deal with concrete materials through visualization. The ability to visualize a constructed object from a picture of a pattern has been used frequently in test of structural visualization. The ability to imagine how an object would appear if rotated in various ways has been used effectively in the measurement of space perception.

**Example:** A man travels 1 mile, then turn left and travels 1 mile, then he turns right and travels 2 miles, then again he turns right, and travels 5 miles. How far is he from the starting point?

**Answer:**

- a) 5 Miles
- b) 1 mile
- c) 9 miles
- d) 6 miles

**SYLLABUS FOR BCS (WRITTEN) EXAMINATION**

- 4. Numerical Ability:** The test is a measure of the candidate's ability to reason with numbers, to manipulate numerical relationship and to deal intelligently with quantitative materials.

**Example:** What number has been left out?

4	$\sqrt{25}$	6	$\sqrt{49}$	?
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**Ans:**

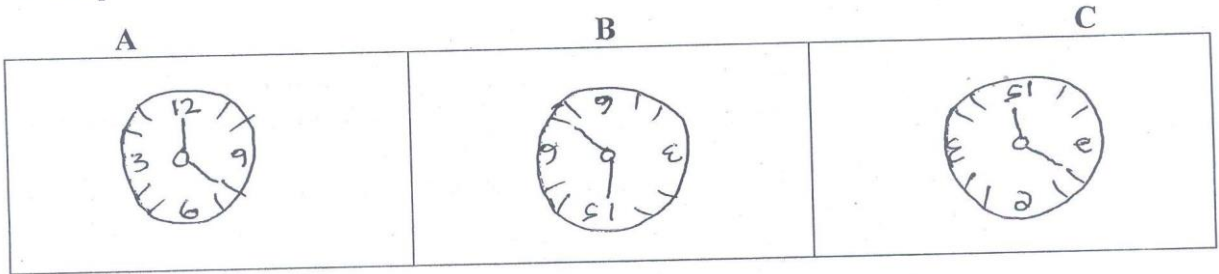
- A. 8
- B.  $\sqrt{81}$
- C. 24
- D.  $\sqrt{121}$
- E. None of these

- 5. Spelling and Language:** The spelling and language test is intended to measure the candidate's ability to detect errors in grammar, punctuation, and capitalization. The items reflect the principles of present day formal writing, and the ability measured by the test is highly predictive of success in a variety of academic courses.

**Example:** নিচের অক্ষরগুলো দিয়ে শব্দ গঠন করুন।  
র      লা      দা      প      ফ      ল

- 6. Mechanical Reasoning:** The ability measured by the Mechanical Reasoning test may be regarded as one aspect of intelligence, if intelligence is broadly defined. The person who stands high in this characteristic finds it easy to learn the principles of operation and repair of complex devices.

**Example:** আয়নার মধ্যে একটি ঘড়িকে যেমন দেখায় তা কোন ছবিতে দেখা যাচ্ছে?



## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

### GENERAL SCIENCE AND TECHNOLOGY (COMPULSORY)

Subject Code: 010

#### Part – A: General Science

Marks - 60

- i. **Light:** Nature, Spectrum, Different colours and wavelengths, UV, IR, and LASER, Reflection of Light, Refraction of Light, Total Internal Reflection of Light, Lenses, Thin converging lens, Dispersion of light, particle nature of light, Einstein's photoelectric equation, photocells
- ii. **Sound:** Hearing mechanism, Decibel, Frequency, Sound machines in home and around –, Microphone, Loud speaker, Public address system, Characteristics of a sound note, Formation of stationary waves in stretched string, Laws of vibrating strings, Beats, Doppler Effect, Applications and limitations of Doppler Effect, Echoes, Absorption of sound wave, Reverberations, Fundamentals of Building acoustics, Statement of Sabine's formula
- iii. **Magnetism:** Polarity and relationship with current, Bar magnet, Magnetic lines of force, Torque on a bar magnet in a magnetic field, Earth's magnetic field as a bar magnet, Tangent galvanometer, Vibration magnetometer, Para, dia and ferromagnetic substances with examples, Electromagnets and permanent magnets
- iv. **Acid, Base and Salt:** Acid-base concepts; characteristics of acids and bases; acid-base indicators; uses of acids and bases in daily life and caution in handling them; social effects of misuse of acids; reason for acidity in stomach and selection of the right food; pH; measurement and importance of pH of substances; salts; characteristics of salts; necessity of salt in daily life; uses of salts in agriculture and industries
- v. **Water:** Properties of water; melting and boiling points of water; electrical conductivity; structure of water; hydrogen bonding; sources of water; sources of fresh water in Bangladesh; water quality parameters (colour and taste; turbidity; presence of radioactive substances; presence of waste; dissolved oxygen; temperature; pH and salinity); recycling of water; role of water in conservation of nature; necessity of quality water; purification of water (filtration; chlorination; boiling and distillation); reasons for pollution of water sources in Bangladesh; effects of water pollution on plants, animals and human beings; effects of global warming on fresh water; strategy for preventing water pollution and responsibility of citizens or public awareness; prevention of water pollution by industries; prevention of water pollution due to soil erosion from agricultural land; conservation of water sources and development
- vi. **Our resources:** Soil; types of soil; soil pH; reasons and effects of soil pollution; natural gas and its main compositions; processing, uses and sources of natural gas, petroleum and coal; forestry; limitations and conservation of our resources
- vii. **Polymer:** Natural and synthetic polymer; polymerization process; sources, characteristics and usage of natural and synthetic polymers; manufacturing process, characteristics and uses of fibers, silk, wool, nylon and rayon; physical and chemical properties of rubber and plastic; role of rubber and plastic for environmental imbalance; aware of using rubber and plastic
- viii. **Atmosphere:** Biosphere and Hydrosphere, Ionosphere, role of oxygen, carbon dioxide and nitrogen. Potable and polluted water, Pasteurization.

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

- ix. **Food and Nutrition:** Elements of food; carbohydrates; protein; fats and lipid; vitamins; types and sources of carbohydrates, proteins; nutritional value; menu of balanced diet; the pyramid of balanced diet; body mass index (BMI); fast food or junk food; preservation of food; various processes of storing food; use of chemicals for preservation of foods and its physiological effects.
- x. **Biotechnology:** Chromosome; shape, structure and chemical composition of chromosome; nucleic acid; deoxyribonucleic acid (DNA); ribonucleic acid (RNA); protein; gene; DNA test; forensic test; genetic disorder in human beings; Biotechnology and Genetic Engineering; cloning; social effects of cloning; transgenic plants and animals; Use of biotechnology in agricultural, milk products and pharmaceuticals; Gene therapy; Genetically modified organism; Nanotechnology; Pharmacology; Pharmacokinetics.
- xi. **Disease and Healthcare:** Deficiency, Infection, Antiseptic, Antibiotics, Stroke, Heart Attack, Blood Pressure, Hypertension and Diabetes, Dengue; Diarrhoea; Drug addiction, Vaccination, Cataract, food poisoning, X-ray; Ultrasonography; CT Scan; MRI; ECG; Endoscopy; Radiotherapy; Chemotherapy; Angiography; uses, risk and side-effects of above techniques; Basic concept of Cancer, AIDS and Hepatitis.

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

### GENERAL SCIENCE AND TECHNOLOGY (COMPULSORY)

Subject Code: 010

#### Part – B: Computer and Information Technology

Marks - 25

- i. **Computer Technology:** Organization of modern personal computer and its major functional units, computer generations, History of computers, central processing unit and microprocessor, computer memories and their classification and characteristics, input and output devices with characteristics and uses. The role of BIOS. Bus architecture, Motherboard and its components, functions and organization of microprocessors, Arithmetic Logic Unit(ALU), Control unit, Language translator, Text editor, Compiler, Interpreter, Computer software, system software, operating system, application software with examples of applications, Computer virus, office automation. Computational biology; Role of computer in Drug design; Programming languages, their types and levels, steps for software development. Impacts of computer on society.
- ii. **Information Technology:** Data communication and information, information collection, processing, and distribution, System analysis and information systems, expert systems. Database software and structures, Database Management System (DBMS), Basics of multimedia systems with examples of hardware and software, concept of data compression, multimedia system development life cycle. Local area, metropolitan area and wide area computer networks,(LAN, MAN,WAN ), LAN Topology, Networking devices(Router, Switch, HUB),TCP/IP Protocol suite, Internet, Internet services and protocols, Internet Service Providers(ISPs) and their responsibilities, intranet and extranet, Word Wide Web(WWW) and web technology. Popular websites. Access control security and privacy. E-mail, Social media (facebook, twitter, blog) and their impacts. Different types of Transmission media with examples, bandwidth. Major components of telecommunication systems, mobile telephone systems, satellite communication systems and VSAT, importance of fibre optic communication system, Wi-Fi, E-Commerce technology and its impact to society, examples of E-Commerce websites, B2B, B2C, M-Commerce, Smart phones, GPS

#### Part – C: Electrical and Electronic Technology

Marks - 15

- i. **Electrical Technology:** Electrical components, voltage, current, Ohm's Law, Electrical power and energy, Electromagnet and magnetic field, electromagnetic induction, Circuits Breakers, GFCI's and Fuses, Power Distribution and Series circuit, Voltage Sources in a Series, Kirchoff's Voltage Law, Voltage Division in a Series Circuit, Interchanging Series Elements, Voltage Regulation and the Internal Resistance of Voltage Sources, Parallel Resistors, Parallel Circuits, Power Distribution in a Parallel Circuit, Kirchoff's Current Law, Open and Short Circuits, Generation of AC and DC voltages, thermal, hydraulic and nuclear power generators. Electric motors and their applications. Transformers, AC transmission and distribution, Electrical instruments, voltage stabilizers, IPS and UPS
- ii. **Electronics Technology:** Electronic components, analog and digital signals, analog electronic devices, amplifiers and oscillators, resistance, types of resistors, conductance, ohmmeters, Capacitance, Capacitors, Inductors, Inductance, Sinusoidal Alternating, Waveforms, Frequency Spectrum, The Sinusoidal Waveform, General format for the sinusoidal Voltage of current, Phase Relations, The Basic Elements and Phasors, Response of Basic R,L and C, Elements to a Sinusoidal Voltage or Current, Frequency Response of the Basic Elements, Average Power and Power Factor, Complex Numbers, Rectangular Form, Polar Form, Conversion between Forms, Impedance and the Phasor Diagram, Introduction to 3 phase Systems, Elementary Concepts of Generation, Transmission, and Distribution, Various Levels of Power, Basic Concepts of Transformers, radio, television, and radar. Digital devices and digital integrated circuits, impact of digital integrated circuits, counters and digital display devices, digital instruments.

# SYLLABUS FOR BCS (WRITTEN) EXAMINATION

## CIVIL ENGINEERING (POST RELATED) Subject Code: 881 Total Marks-200

### Part-I Marks-100

#### Structure-40

- Analysis of statically determinate and indeterminate structures by various methods.
- Space truss analysis, Deflection of beams, frames and trusses using different methods.
- Influence lines for statically determinate beams, truss, and frames.
- Analysis of bridge truss, and frames.

#### Water Resources Engineering-30

Importance of irrigations: sources and quality of irrigation water, soil-water relationship; consumptive use and estimation of irrigation water requirements; methods of irrigation; field-irrigation structures; irrigation canal system; irrigation pumps and wells; problems of irrigated lands; land drainage; flood and its mitigation; methods of river training and bank protection.

#### Environmental Engineering-30

##### Water Supply:

Planning and design consideration of water treatment plant, various methods (Sedimentation, coagulation, filtration, disinfection, chemical precipitation) of water treatment, distribution system, environmental impact assessment (EIA), Design of water supply system.

##### Sewage:

Physical, chemical and biological treatment of sewage, planning and design of sewage treatment, industrial wastes and their treatment, solid waste management, microbiology of waste water, introduction to aerobic and anaerobic treatment of waste water, self-purification of stream BOD removal kinetics. Design of domestic and storm sewers.

## CIVIL ENGINEERING

### Part-II Marks-100

#### Structure-40

##### R.C.C. Part:

Introduction of high rise building structure, structural forms of tall building, analysis of multistoried building frames subjected to wind and earthquake forces.

Working stress and ultimate strength analysis and design of reinforced concrete beams, columns, footing, two ways slab, flat slab, and flat plate structure.

##### Pre-stressed Part:

Pre stressed concrete materials and their properties; pre-stressing system; losses of pre-stress, shape, selection and tendon profile; analysis & design of section for flexure, shear, bond, and bearing.

## SYLLABUS FOR BCS (WRITTEN) EXAMINATION

### **Transportation Engineering-30**

#### **Highway:**

Design, construction and maintenance of rigid and flexible pavements. Characteristics, sub-grade, sub-base, base and asphaltic surface courses, soil stabilization, brick and block pavements, cement concrete pavements. Highway maintenance, highway drainage, airways and air-ports, waterways and terminals.

Transportation engineering, modes of transport planning of transportation system.

Highway planning, geometric design, vehicle operating characteristics, traffic survey, traffic flow and control traffic management and administration, highway materials.

#### **Railway:**

Railway alignment, gradient and curves, permanent way track construction and maintenance, points and crossings, signaling and interlocking.

### **Foundation Engineering-30**

Engineering properties of soils, shear strength, permeability, consolidation, settlement and compaction. Analysis and design of spread footings, pile foundations, mat foundation, settlement analysis, large excavation underpinning etc.