

**FURTHER DETAILS REGARDING MAIN TOPICS OF  
PROGRAMME No. 11/2016/ONLINE (Item No. 4)**

**VOCATIONAL TEACHER (PRINTING TECHNOLOGY  
(NCA NOTIFICATION)**

***KERALA VOCATIONAL HIGHER SECONDARY EDUCATION***

**CATEGORY No.72/14**

**Module I : General Knowledge and Current Affairs**

**Salient Features of Indian Constitution**

Salient features of the Constitution - Preamble- Its significance and its place in the interpretation of the Constitution.

Fundamental Rights - Directive Principles of State Policy - Relation between Fundamental Rights and Directive Principles - Fundamental Duties.

Executive - Legislature - Judiciary - Both at Union and State Level. - Other Constitutional Authorities.

Centre-State Relations - Legislative - Administrative and Financial.

Services under the Union and the States.

Emergency Provisions.

Amendment Provisions of the Constitution.

**Social Welfare Legislations and Programmes**

Social Service Legislations like Right to Information Act, Prevention of atrocities against

Women & Children, Food Security Act, Environmental Acts etc. and Social Welfare Programmes like Employment Guarantee Programme, Organ and Blood Donation etc.

**RENAISSANCE IN KERALA**

**Towards A New Society**

Introduction to English education - various missionary organisations and their functioning- founding of educational institutions, factories, printing press etc.

**Efforts To Reform The Society**

**(A) Socio-Religious reform Movements**

SNDP Yogam, Nair Service Society, Yogakshema Sabha, Sadhu Jana Paripalana Sangham, Vaala Samudaya Parishkarani Sabha, Samathwa Samajam, Islam Dharma Paripalana Sangham, Prathyaksha Raksha Daiva Sabha, Sahodara Prasthanam etc.

**(B) Struggles and Social Revolts**

Upper cloth revolts.Channar agitation, Vaikom Sathyagraha, Guruvayoor Sathyagraha, Paliyam Sathyagraha. Kuttamkulam Sathyagraha, Temple Entry Proclamation, Temple Entry Act .Malyalee Memorial, Ezhava Memorial etc. Malabar riots, Civil Disobedience Movement, Abstention movement etc.

### **Role Of Press In Renaissance**

*Malayalee, Swadeshabhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, Al-Ameen, Prabhatham, Yukthivadi, etc*

### **Awakening Through Literature**

Novel, Drama, Poetry, *Purogamana Sahithya Prasthanam, Nataka Prashtanam*, Library movement etc

### **Women And Social Change**

Parvathi Nenmenimangalam, Arya Pallam, A V Kuttimalu Amma, Lalitha Prabhu.Akkamma Cheriyan, Anna Chandi, Lalithambika Antharjanam and others

### **Leaders Of Renaissance**

Thycaud Ayya Vaikundar, Sree Narayana Guru, Ayyan Kali.Chattampi Swamikal, Brahmananda Sivayogi, Vagbhadananda, Poikayil Yohannan(Kumara Guru) Dr Palpu, Palakkunnath Abraham Malpan, Mampuram Thangal, Sahodaran Ayyappan, Pandit K P Karuppan, Pampadi John Joseph, Mannathu Padmanabhan, V T Bhattathirippad, Vakkom Abdul Khadar Maulavi, Makthi Thangal, Blessed Elias Kuriakose Chaavra, Barrister G P Pillai, TK Madhavan, Moorkoth Kumaran, C. Krishnan, K P Kesava Menon, Dr.Ayyathan Gopalan, C V Kunjuraman, Kuroor Neelakantan Namboothiripad, Velukkutty Arayan, K P Vellon, P K Chathan Master, K Kelappan, P. Krishna Pillai, A K Gopalan, T R Krishnaswami Iyer, C Kesavan. Swami Ananda Theerthan , M C Joseph, Kuttippuzha Krishnapillai and others

### **Literary Figures**

Kodungallur Kunhikkuttan Thampuran, KeralaVarma Valiyakoyi Thampuran, Kandathil Varghese Mappila. Kumaran Asan, Vallathol Narayana Menon, Ulloor S Parameswara Iyer, G Sankara Kurup, Changampuzha Krishna Pillai, Chandu Menon, Vaikom Muhammad Basheer. Kesav Dev, Thakazhi Sivasankara Pillai, Ponkunnam Varky, S K Pottakkad and others

## **GENERAL KNOWLEDGE AND CURRENT AFFAIRS**

General Knowledge and Current Affairs

### **Module II (a): Technical Mathematics**

- I. Matrices – Identification of Matrices, matrix operations, adjoint and inverse.
- II. Determinants – Evaluation of second and third order, minors and cofactors, solutions of simultaneous linear equation in three unknown using Cramer’s rule.
- III. Binomial Series – Expansions using Binomial theorem.

- IV. Trigonometric functions – Signs of functions in each quadrant. Trigonometric values of angles, properties of trigonometric functions, applications of the identities  $\sin(A \pm B)$ ,  $\cos(A \pm B)$  and  $\tan(A \pm B)$ .
- V. Coordinate geometry – Equations to a straight line – slope-intercept form, intercept form, Angle between two lines, condition for two lines to be perpendicular, parallel.
- VI. Differentiation – Limits and continuity, derivatives of functions, equation to tangents and normals. Maxima and minima of functions of one variable.
- VII. Integration of functions – Integration of different types of functions.
- VIII. Applications of integration – Area bounded by a curve and X or Y axis, solutions of differential equations using the method of variable separable, solutions of linear differential equations of first order.

### **Module II (b): Basic Civil Engineering**

**Materials:** Brick – varieties and strength, characteristics of good brick. Cement – varieties and grade of cement and its uses. Steel – types of steel for reinforcement bars, steel structural sections. Aggregates – types & requirements of good aggregates. Concrete – grades of concrete as per IS code, water cement ratio. Workability, mixing, batching, compaction and curing.

**Construction:** Parts of building – foundation – types of foundations – spread footing, isolated footing, combined footing, Raft, pile and well foundations. Masonry – types rubble masonry, brick masonry, English bond and Flemish bond. (One brick wall).

**Surveying:** Chain surveying – principles, instruments, ranging, and chaining survey lines, field work and field book, selection of survey stations, units of land area.

**Levelling:** Levelling instruments, different types, bench mark, reduced level of points, booking of field notes, reduction of levels by height of collimation method (simple problem). Modern survey – instruments – Total station, Electronics theodolite, Distomat.

### **Module II (c): Basic Mechanical Engineering**

**The importance of IC Engines:** Definition, classification – two stroke engines, four stroke engines, working of two stroke engines and four stroke engines with the help of line sketches, comparison between two stroke and four stroke engines, comparison between petrol and diesel engines, function of fly wheel, clutch, gearbox, propeller shaft and differential in power transmission, explain with sketch the working of differential, briefly explain power transmission of 4 wheel vehicle with line diagram.

**The importance of Power Plants:** Introduction, classification of power plants – working of hydroelectric power plant with schematic sketches – working of thermal

(Steam and Diesel) power plant with schematic sketches – working of nuclear power plant with schematic sketches.

### **Module II (d): Basic Electrical Engineering**

Review with discussion of electric current, potential difference, power, EMF, resistance and its laws, Ohms law and series parallel circuit, electromagnetism, generation of AC and DC supply.

**Idea of Basic electrical circuit:** Electrical supply and load and its functioning, division of voltage and current in a parallel and series circuit – simple problems, units of power and energy, solution of DC circuit with calculation of energy consumption in an installation.

**Circuit parameters:** Resistance, Capacitance and inductance. AC circuit with R, L, C. Simple solution of typical AC circuit with resistance, impedance, power and power factor.

**Electrical circuit of an installation:** Earthing, lightning protection.

### **Module II (e): Essentials of Electronics Engineering**

Active and passive devices – review only. LED – working, applications, comparison of LED lighting and CFL lighting. Full wave rectifier – diagram and explanation, 5 V power supply – with bridge rectifier and 7805. SMPS – block diagram and advantages. Integrated circuits. SMDs – advantages. Static electricity – precautions in handling electronic circuits.

**Switches:** ON / OFF, push to ON, push to OFF, push to ON / OFF, SPST, SPDT, DPDT. Working and application of limit switches, proximity switches, relays.

**Microcontrollers:** Simple block diagram of 8 bit microcontrollers – application.

**Mobile technology:** CDMA and GSM. Compare – 2G and 3G technologies.

**Inverter & UPS:** Block diagram. Compare – inverter and UPS. Online and off line UPS – differentiate. Battery selection for UPS and inverter.

**E-waste:** Health hazards of e-waste.

### **Module III : Paper, Ink and Auxiliary Materials for Printing**

Paper – Raw materials, paper manufacture, paper characteristics, paper grains, paper sizes, water marks, testing methods, physical and chemical properties, warehousing.

Ink – constituents, ink manufacture, qualities, drying methods, types of inks, characteristics, ink testing methods, physical and chemical properties.

Auxiliary materials – Blanket, plate – characteristics and types, strength of materials and material properties.

Press management factors, Eco friendly and Lean production parameters.

#### **Module IV : Managing Fonts and Type, Page Layout, Formatting and Halftoning**

Fonts, terms and definitions, units and measurements, kinds of fonts, fonts in bitmap, vector and layout programs, print design considerations, formats – graphic types, file formats, post scripts, half toning – pixel to half tone dots, digital dots, scanners, dot gain and loss, bitmap – resampling and resolution, working with images, archiving, gamut, pantone, vector graphics – gradients and banding, patterns, colour mode, spot colour etc., page layout – page layout capabilities, job organisation, preflight, planning, estimating and scheduling.

#### **Module V : Prepress Requirements, Colour Management – PDF, RIP and Proofing**

Prepress requirement – System and accessories, CTP, CTF, CTM, colour balance, colour correction, RGB to CMYK conversion, ideal digital document, compression in PDF, choosing compression, working with colour in PDF, RIP – RIP and preflighting, proofing – proofing method, digital proofers, press proof, CIE Lab and values, colour problems, various surface preparation techniques.

#### **Module VI : Press – Offset, Gravure, Flexo, Screen, Digital and Ondemand Variable Data Printing**

Offset – machine design considerations, types, operations, Gravure – design considerations, types, suitable works for gravure Flexo – machine design, types how flexography works, what for mainly used, Digital printing – digital printing machines, how digital printing works, what for used, screen printing – types of screen printing machines, how screen printing works, what for mainly used. Advantages and disadvantages of offset, Gravure, Screen, Flexo and Digital printing. Ondemand and variable data printing – workflow, data mail formats. Quality and quality assurance in printing – various targets used. Future trends in printing.

#### **Module VII : Post Press – Binding, Finishing and Packaging Operations**

Binding – tools, materials and equipments, material calculation, qualities required, sewing methods, book binding operations, end papers, indexing, special protective coating, coating on printed surface – aqueous coating, electron beam coating, ultraviolet coating etc.

Post press machines – Packaging – tools, materials and equipments, qualities required, dyes for packaging, packaging machinery, types of packages, packaging considerations, specialised finishing techniques.