USN											**17MAT31**

Third Semester B.E. Degree Examination, Dec.2019/Jan.2020
Engineering Mathematics – III

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Find the Fourier series expansion of $f(x) = x - x^2$ in $(-\pi, \pi)$, hence deduce that
$$\frac{\pi^2}{12} = \frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + ---.$$ **(08 Marks)**

   b. Find the half range cosine series for the function $f(x) = (x-1)^2$ in $0 \le x \le 1$. **(06 Marks)**

   c. Express y as a Fourier series upto first harmonics given :

x	0	60°	120°	180°	240°	300°
y	7.9	7.2	3.6	0.5	0.9	6.8

(06 Marks)

OR

2 a. Obtain the Fourier series for the function :
$$f(x) = \begin{cases} 1 + \dfrac{4x}{3} & \text{in } \dfrac{-3}{2} < x \le 0 \\ 1 - \dfrac{4x}{3} & \text{in } 0 \le x < \dfrac{3}{2} \end{cases}$$

Hence deduce that $\dfrac{\pi^2}{8} = \dfrac{1}{1^2} + \dfrac{1}{3^2} + \dfrac{1}{5^2} + ---.$ **(08 Marks)**

   b. If $f(x) = \begin{cases} x & \text{in } 0 < x < \pi/2 \\ \pi - x & \text{in } \pi/2 < x < \pi \end{cases}$

Show that the half range sine series as
$$f(x) = \frac{4}{\pi}\left[\sin x - \frac{\sin 3x}{3^2} - \frac{\sin 5x}{5^2} ---- \right].$$ **(06 Marks)**

   c. Obtain the Fourier series upto first harmonics given :

x	0	1	2	3	4	5	6
y	9	18	24	28	26	20	9

(06 Marks)

Module-2

3 a. Find the complex Fourier transform of the function :
$$f(x) = \begin{cases} 1 & \text{for } |x| \le a \\ 0 & \text{for } |x| > a \end{cases} \quad \text{and hence evaluate } \int_0^\infty \frac{\sin x}{x}\,dx.$$ **(08 Marks)**

   b. Find the Fourier cosine transform of e^{-ax}. **(06 Marks)**

   c. Solve by using z – transforms $u_{n+2} - 4u_n = 0$ given that $u_0 = 0$ and $u_1 = 2$. **(06 Marks)**

OR

4 a. Find the Fourier sine and Cosine transforms of :

$$f(x) = \begin{cases} x & 0 < x < 2 \\ 0 & \text{elsewhere} \end{cases}.$$

(08 Marks)

b. Find the Z – transform of : i) n^2 ii) ne^{-an}. (06 Marks)

c. Obtain the inverse Z – transform of $\dfrac{2z^2 + 3z}{(z+2)(z-4)}$. (06 Marks)

Module-3

5 a. Obtain the lines of regression and hence find the co-efficient of correlation for the data :

x	1	3	4	2	5	8	9	10	13	15
y	8	6	10	8	12	16	16	10	32	32

(08 Marks)

b. Fit a parabola $y = ax^2 + bx + c$ in the least square sense for the data :

x	1	2	3	4	5
y	10	12	13	16	19

(06 Marks)

c. Find the root of the equation $xe^x - \cos x = 0$ by Regula – Falsi method correct to three decimal places in (0, 1). (06 Marks)

OR

6 a. If $8x - 10y + 66 = 0$ and $40x - 18y = 214$ are the two regression lines, find the mean of x's, mean of y's and the co-efficient of correlation. Find σ_y if $\sigma_x = 3$. (08 Marks)

b. Fit an exponential curve of the form $y = ae^{bx}$ by the method of least squares for the data :

No. of petals	5	6	7	8	9	10
No. of flowers	133	55	23	7	2	2

(06 Marks)

c. Using Newton–Raphson method, find the root that lies near x = 4.5 of the equation tanx = x correct to four decimal places. (06 Marks)

Module-4

7 a. From the following table find the number of students who have obtained marks :
i) less than 45 ii) between 40 and 45.

Marks	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
No. of students	31	42	51	35	31

(06 Marks)

b. Using Newton's divided difference formula construct an interpolating polynomial for the following data :

x	4	5	7	10	11	13
f(x)	48	100	294	900	1210	2028

and hence find f(8). (08 Marks)

c. Evaluate $\displaystyle\int_0^1 \frac{dx}{1+x}$ taking seven ordinates by applying Simpson's ⅜th rule. (06 Marks)

OR

8 a. In a table given below, the values of y are consecutive terms of a series of which 23.6 is the 6th term. Find the first and tenth terms of the series by Newton's formulas.

x	3	4	5	6	7	8	9
y	4.8	8.4	14.5	23.6	36.2	52.8	73.9

(08 Marks)

b. Fit an interpolating polynomial of the form x = f(y) for data and hence find x(5) given :

x	2	10	17
y	1	3	4

(06 Marks)

c. Use Simpson's $\frac{1}{3}^{rd}$ rule to find $\int_0^{0.6} e^{-x^2} dx$ by taking 6 sub-intervals. **(06 Marks)**

Module-5

9 a. Verify Green's theorem in the plane for $\oint_c (3x^2 - 8y^2)dx + (4y - 6xy)dy$ where C is the closed curve bounded by $y = \sqrt{x}$ and $y = x^2$. **(08 Marks)**

b. Evaluate $\int_c xydx + xy^2 dy$ by Stoke's theorem where C is the square in the x − y plane with vertices (1, 0)(−1, 0)(0, 1)(0, −1). **(06 Marks)**

c. Prove that Catenary is the curve which when rotated about a line generates a surface of minimum area. **(06 Marks)**

OR

10 a. If $\vec{F} = 2xy\,\hat{i} + yz^2\,\hat{j} + xz\,\hat{k}$ and S is the rectangular parallelepiped bounded by x = 0, y = 0, z = 0, x = 2, y = 1, z = 3 evaluate $\iint_s \vec{F} \cdot \hat{n}\, ds$. **(08 Marks)**

b. Derive Euler's equation in the standard form viz $\frac{\partial f}{\partial y} - \frac{d}{dx}\left[\frac{\partial f}{\partial y'}\right] = 0$. **(06 Marks)**

c. Find the external of the functional $I = \int_0^{\pi/2} (y^2 - y'^2 - 2y\sin x)dx$ under the end conditions y(0) = y(π/2) = 0. **(06 Marks)**

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Third Semester B.E. Degree Examination, Dec.2019/Jan.2020
Electronic Instrumentation

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the following terms briefly:
      i)   Accuracy
      ii)   Precision
      iii) Resolution and significant errors.   **(07 Marks)**
   b. Explain the operation of the multirange ammeter with suitable circuit.   **(05 Marks)**
   c. Explain the operation of the RF Ammeter (Thermocouple) considering the different types with suitable diagrams.   **(08 Marks)**

OR

2 a. With suitable diagrams, explain briefly the operation of the multirange voltmeter. **(07 Marks)**
   b. Calculate the value of the multiplier resistance on the 50V range of a dc voltmeter, that uses a 200µA meter measurement with an internal resistance of 100Ω.   **(05 Marks)**
   c. With block diagram approach, explain the operation of the true RMS voltmeter.   **(08 Marks)**

Module-2

3 a. Explain the operation of the ramp type digital voltmeter with voltage to time conversion waveform and block diagram.   **(08 Marks)**
   b. Explain the operation of the 3½ digit display with suitable diagram.   **(05 Marks)**
   c. With block diagram approach explain the operation of the digital phase meter.   **(07 Marks)**

OR

4 a. With block diagram, approach explain the operation of the digital PH meter.   **(06 Marks)**
   b. Explain the operation of the digital frequency meter with suitable block diagram.   **(07 Marks)**
   c. With block diagram approach, explain the operation of the successive approximation digital voltmeter.   **(07 Marks)**

Module-3

5 a. With block diagram of oscilloscope, explain the operation of CRO. And also mention the functions of each block.   **(07 Marks)**
   b. Explain the operation of the sweep or time base generator with suitable circuit and relevant Sawtooth output waveform.   **(07 Marks)**
   c. Explain the operation of the conventional standard signal generator with relevant block diagram.   **(06 Marks)**

OR

6 a. With block diagram approach, explain the operation of the AF sine and square wave generator.   **(06 Marks)**
   b. Explain the operation of the function generator with relevant block diagram.   **(06 Marks)**
   c. Briefly explain the operation of digital storage oscilloscope with relevant block diagram.   **(08 Marks)**

Module-4

7 a. Explain the operation of the phase meter which detects the phase for the positive half and negative half using different circuits. **(07 Marks)**

b. Explain the operation of the field strength meter using diode circuit. **(06 Marks)**

c. A capacitance comparison bridge is used to measure a capacity impedance at a frequency of 2kHz. The bridge constants at balance are $C_3 = 100\mu F$, $R_1 = 10K\Omega$, $R_2 = 50K\Omega$, $R_3 = 100K\Omega$. Find the equivalent series circuit of the unknown impedance. **(07 Marks)**

OR

8 a. With Maxwell's bridge circuit, explain the balance condition. And derive an expression for the R_x and L_x. **(07 Marks)**

b. Find the equivalent parallel resistance and capacitance that causes a Wein bridge with the following component values $R_1 = 3.1K\Omega$, $C_1 = 5.2\mu F$, $R_2 = 25K\Omega$, $f = 2.5K\Omega$, $R_4 = 100K\Omega$. **(07 Marks)**
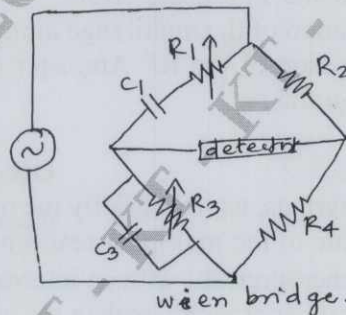

Fig.Q.8(b)

c. Explain the operation of the basic Megger circuit with neat diagram. **(06 Marks)**

Module-5

9 a. Explain the different types of resistive transducers with figure. Mention the advantages and disadvantages. **(07 Marks)**

b. Explain the operation of the Industrial platinum resistance thermometer with bridge circuit. **(07 Marks)**

c. Explain the operation of the photo transistor with construction, symbol, output characteristics and photo transistor with relay circuit. **(06 Marks)**

OR

10 a. Explain the Thermistor with resistance Vss temperature graph, and various configurations of thermistor. And also mention the advantages and limitations. **(07 Marks)**

b. Explain the operation of the linear variable differential transducer with construction, various core position of LVDT and variation of output voltage with displacement. **(07 Marks)**

c. Explain the operation of the piezoelectrical transducer with construction and equivalent circuit. **(06 Marks)**

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CBCS SCHEME

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Third Semester B.E. Degree Examination, Dec.2019/Jan.2020
Analog Electronics

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Derive the expression for input impedance, output impedance, voltage gain and current gain for common emitter voltage divider bias configuration using re model. **(10 Marks)**

   b. For the emitter-follower circuit shown in Fig.Q.1(b). Determine:
      i)   Input impedance
      ii) Output resistance
      iii) Voltage gain
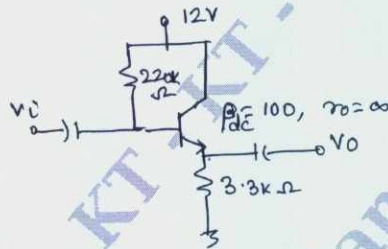   iv) Current gain.

Fig.Q.1(b)

(10 Marks)

OR

2 a. Derive the expression for voltage gain, current gain, input resistance, output resistance CE transistor amplifier using hybrid parameters. **(10 Marks)**

   b. Describe the hybrid π-model. **(04 Marks)**

   c. Determine Z_i, Z_o, A_v, A_i for the circuit shown in Fig.Q.2(c) using approximate hybrid model. Given data $h_{ie} = 1.1K\Omega$, $h_{fe} = 100$, $h_{oe} = 20\mu A/V$ **(06 Marks)**
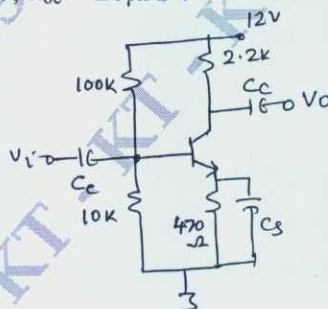

Fig.Q.2(c)

Module-2

3 a. Indicate various operating regions of JFET. Also determine parameters from the characteristics. **(06 Marks)**

   b. Analyze self bias configuration of JFET and derive the expression for voltage gain, output impedance and input impedance. **(07 Marks)**

c. Compute g_m, z_i, z_o and A_v for the circuit shown in Fig.Q.3(c). Given V_{GSQ} = -2.2V, I_{DQ} = 2.03mA, I_{DSS} = 10mA, V_p = -4V and r_d = 40KΩ. **(07 Marks)**
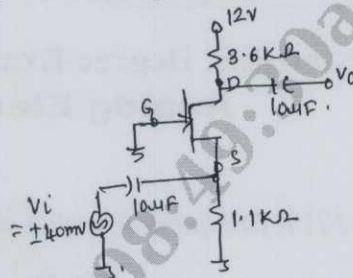

Fig.Q.3(c)

OR

4 a. Explain the characteristics of enhancement type MOSFET. Also indicate various operating regions. **(06 Marks)**

b. Derive the expression voltage gain, input resistance and output resistance of the source follower. **(07 Marks)**

c. Evaluate z_i, z_o and A_v for the JFET circuit shown in Fig.Q.4(c). Given: I_{DSS} = 12mA, V_p = -3V, g_m = 2m℧, r_d = 40KΩ **(07 Marks)**
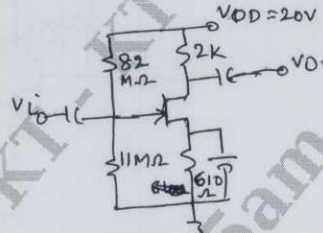

Fig.Q.4(c)

Module-3

5 a. Derive the expression for cut-off frequency due to source capacitor and coupling capacitor of a BJT amplifier. **(06 Marks)**

b. If the applied ac power to a system is 5µw at 100mV and the output power is 48W, Determine: i) Power gain in dB   ii) The voltage gain in dB if the output impedance is 40KΩ iii) The input impedance. **(06 Marks)**

c. Derive an expression for Miller input and output capacitance. Also draw the equivalent circuit. **(08 Marks)**

OR

6 a. Derive the expression f'_L and f'_H for the multistage amplifier. **(06 Marks)**

b. For the circuit shown in Fig.Q.6(b) determine f_{Hi} and f_{Ho}, given C_{wi} = 3pF, C_{wo} = 5pF, C_{gd} = 4pF, C_{gs} = 6pF, C_{ds} = 1pF, I_{DSS} = 6mA, V_p = -6V r_d = ∞ and g_m = 2m℧. **(08 Marks)**
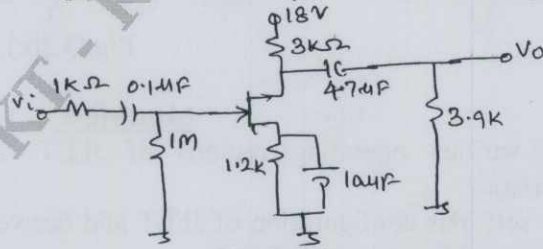

Fig.Q.6(b)

c. Determine overall lower 3dB and upper 3dB frequency for a four stage amplifier having an individual value of $f_1 = 40Hz$ and $f_2 = 2.5MHz$. Also calculate overall bandwidth. **(06 Marks)**

Module-4

7 a. Explain the concept of feed back using block diagram. **(06 Marks)**
   b. Derive the expression for input resistance and output resistance of a voltage series feedback amplifier. **(08 Marks)**
   c. If the gain of an amplifier changes from a value of -1000 by 10%, calculate the gain change, if the amplifier used in a feedback circuit having $\beta = \dfrac{-1}{20}$. **(06 Marks)**

OR

8 a. Explain the operation of FET phase shift oscillator. **(08 Marks)**
   b. Describe the Wein bridge oscillator for the oscillating frequency $f_0 = 2.2kHz$. Also draw the circuit diagram. **(06 Marks)**
   c. Determine the oscillating frequency of the Colpitts oscillator for the given specifications $C_1 = 750pF$, $C_2 = 2500pF$ and $L = 40\mu H$. Also calculate the feedback factor of the Colpitts oscillator. **(06 Marks)**

Module-5

9 a. Derive an expression for conversion efficiency of transformer coupled class-A amplifier. **(08 Marks)**
   b. Calculate the second harmonic distortion for an output waveform having measured values of $V_{CEmin} = 2.4V$ $V_{CEQ} = 10V$ and $V_{CEmax} = 20V$. **(04 Marks)**
   c. Explain with the help of neat circuit diagram, voltage series regulator operation. **(08 Marks)**

OR

10 a. Derive an expression for conversion efficiency of class B push pull amplifier. **(08 Marks)**
    b. A transformer coupled class-A amplifier drives a 16Ω speaker through 4:1 transformer using a power supply of $V_{cc} = 36V$, the circuit delivers 2W to the load. Calculate : i) P(ac) across transformer primary   ii) V_L(ac). **(06 Marks)**
    c. Calculate the harmonic distortion components for an output signal having fundamental amplitude of 2.1V, second harmonic component amplitude of 0.3V, third harmonic component of 0.1V and fourth harmonic component of 0.05V. Also calculate total harmonic distortion. **(06 Marks)**

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CBCS SCHEME

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Third Semester B.E. Degree Examination, June/July 2019
Digital Electronics

Time: 3 hrs.   Max. Marks: 100

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1. a. Construct a truth table and write a Boolean expression for the problem statement. An output variable Y is to be true when the value of inputs exceeds 4. The weights for each input variable is a = 4, b = 3, c = –1, and d = 1. Design the logic circuit for the obtained expression. **(10 Marks)**

 b. Place the equation $P = f(a, b, c) = ab + \bar{a}c + b\bar{c}$ into proper canonical form and write the minterms. **(05 Marks)**

 c. What do you mean by canonical SOP and canonical POS? Explain with example? **(05 Marks)**

OR

2. a. Simplify K = f(w, x, y, z) = Σm(0, 1, 5, 13, 15) + Σd(2, 7, 10, 14) using K-map method. Draw the logic diagram for obtained expression. **(10 Marks)**

 b. Simplify D = f(a, b, c, d) = Σm(0, 1, 2, 3, 6, 7, 8, 9, 12, 15) using QM – method, verify the same using K–map. Draw the logic diagram for simplified expression. **(10 Marks)**

Module-2

3. a. What is an encoder? Design 4 to 2 priority encoder? **(08 Marks)**

 b. Realize the function X = f(a, b, c, d) = Σm(0, 3, 7, 10, 13) using 74LS138 ICs. **(08 Marks)**

 c. Design 4 : 1 Mux and draw the logic diagram using basic gates. **(04 Marks)**

OR

4. a. Implement f(a, b, c, d) = Σm(0, 1, 5, 6, 7, 10, 15) using 8 : 1 Mux with a, b, c as select lines. **(08 Marks)**

 b. Design a binary full subtractor using NAND gates only. **(06 Marks)**

 c. Explain about carry look ahead adder. **(06 Marks)**

Module-3

5. a. Obtain the characteristic equations for D and T flip-flops. **(08 Marks)**

 b. Explain the operation of SR–Flip-Flop with the help of logic diagram. Draw functional table. **(08 Marks)**

 c. What is race around condition? Explain with diagram. **(04 Marks)**

OR

6. a. Explain the working of master slave J-K flip flop with the help of logic diagram. Draw the timing diagrams of the same. **(10 Marks)**

 b. Explain D-flip-flop operation using positive edge triggered clock. **(06 Marks)**

 c. Write two-two difference between :
 i) Combinational and sequential logic
 ii) Latch and flip-flop. **(04 Marks)**

Module-4

7 a. What is register? Explain with diagram of 4-bit serial-in parallel-out shift register. **(10 Marks)**
   b. Explain 3-bit asynchronous up and down binary counters. **(10 Marks)**

OR

8 a. Design mod-5 ripple counter using T-flip-flops. **(08 Marks)**
   b. Design 3-bit synchronous up counter. **(08 Marks)**
   c. Compare asynchronous and synchronous counters. **(04 Marks)**

Module-5

9 a. Design a Mealy type sequence detector to detect a serial input sequence of 101. **(10 Marks)**
   b. Design 2-bit synchronous up counter. **(10 Marks)**

OR

10 a. Analyze the following sequential circuit, by writing input and output equations, state table and state diagram. **(12 Marks)**
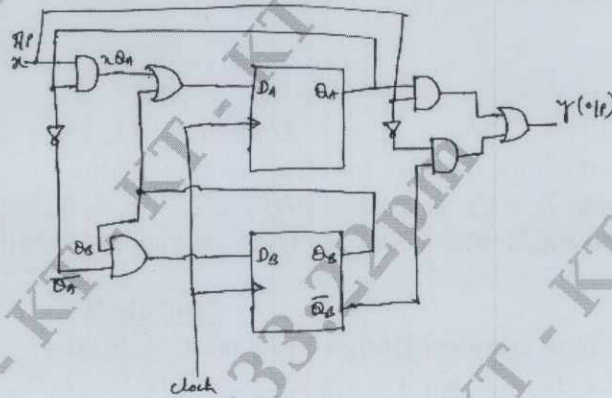

Fig.Q10(a)

   b. What are Mealy and Moore models? Explain briefly with diagram. **(04 Marks)**
   c. Draw a sate table and state diagram with an example. **(04 Marks)**

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CBCS SCHEME

Third Semester B.E. Degree Examination, Dec.2019/Jan.2020
Engineering Electromagnetics

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Obtain an expression for electric field intensity at any given point due to 'n' number of point charges. **(04 Marks)**

    b. Four 10 nC positive charges are located in the z = 0 plane at the corners of a square 8 cm on a side. A fifth 10 nC positive charge is located at a point 8 cm distant from the other charges. Calculate the magnitude of the total force on this fifth charge for $\epsilon = \epsilon_0$. **(08 Marks)**

    c. Find the total charge contained in a 2 cm length of the electron beam for 2 cm < z < 4 cm, ρ = 1 cm and $\rho_v = -5\,e^{-100\rho z}\,\mu c/m^3$. **(08 Marks)**

OR

2   a. Define electric flux and electric flux density, and also, obtain the relationship between electric flux density and electric field intensity. **(06 Marks)**

    b. Infinite uniform line charges of 5 nC/m lie along the (positive and negative) x and y axes in free space, Find $\vec{E}$ at P(1, 2, 3). **(10 Marks)**

    c. Given a 60 μC point charge located at the origin, find the total electric flux passing through:

      (i)   That portion of the sphere r = 26 cm bounded by $0 < \theta < \frac{\pi}{2}$ and $0 < \phi < \frac{\pi}{2}$.

      (ii)   The closed surface defined by ρ = 26 cm and z = ±26 cm. **(04 Marks)**

Module-2

3   a. State and obtain mathematical formulation of Gauss law. **(07 Marks)**

    b. Given $\vec{D} = 6\rho \sin\left(\frac{\phi}{2}\right)\hat{a}_\rho + 1.5\rho\cos\left(\frac{\phi}{2}\right)\hat{a}_\phi$ C/m^2. Evaluate both sides of divergence theorem for the region bounded by ρ = 2m, ϕ = 0, $\phi = \pi$ rad, z = 0 and z = 5m. **(08 Marks)**

    c. Derive the point form of current continuity equation. **(05 Marks)**

OR

4   a. Given the non-uniform field $\vec{E} = y\hat{a}_x + x\hat{a}_y + 2\hat{a}_z$ V/m, determine the work expended in carrying 2C from B(1, 0, 1) to A(0.8, 0.6, 1), along the shorter arc of the circle; $x^2 + y^2 = 1$, z = 1. **(07 Marks)**

    b. Derive the expression for potential field resulting from point charge in free-space. **(07 Marks)**

    c. Find the value of volume charge density at p(r = 1.5 m, θ = 30°, ϕ = 50°), when $\vec{D} = 2r\sin\theta\cos\phi\,\hat{a}_r + r\cos\theta\cos\phi\,\hat{a}_\theta - r\sin\phi\,\hat{a}_\phi$ C/m^2. **(06 Marks)**

Module-3

5   a. Using Gauss law derive Poisson and Laplace equations. **(05 Marks)**

    b. State and prove uniqueness theorem. **(10 Marks)**

    c. Calculate $\Delta\vec{H}_2$ at P$_2$(4, 2, 0) resulting from $I_1\Delta\vec{L}_1 = 2\pi\hat{a}_z$ μAm at P$_1$(0, 0, 2). **(05 Marks)**

OR

6 a. Show that $\nabla^2 V = 0$, for $V = (5\rho^4 - 6\rho^{-4})\sin 4\phi$. **(05 Marks)**

   b. Evaluate both sides of Stoke's theorem for the field $\vec{H} = 6xy\,\hat{a}_x - 3y^2\,\hat{a}_y$ A/m and the rectangular path around the region, $2 \le x \le 5$, $-1 \le y \le 1$, $z = 0$. Let positive direction of $\vec{ds}$ be $\hat{a}_z$. **(08 Marks)**

   c. State and explain Ampere's circuital law. Using the same, obtain the expression for $\vec{H}$ at any given point due to the infinite length filamentary conductor, carrying current I. **(07 Marks)**

Module-4

7 a. Obtain an expression for Lorentz force equation. **(05 Marks)**
   b. Obtain the relationship between magnetic fields at the boundary of two different magnetic media. **(09 Marks)**
   c. Derive the expression for force between two infinitely long. Straight, parallel filamentary conductors, separated by distance d, carrying equal and opposite currents, I. **(06 Marks)**

OR

8 a. Given a ferrite material which operates in a linear mode with B = 0.05 T, calculate values for magnetic susceptibility, magnetization and magnetic field intensity. Given $\mu_r = 50$. **(05 Marks)**

   b. Obtain expressions for magneto motive force (mmf) and reluctance in magnetic circuits by making use of analogy between electric and magnetic circuits. **(08 Marks)**

   c. Two differential current elements, $I_1\vec{\Delta L_1} = 3(10^{-6})\hat{a}_y$ Am at $P_1(1, 0, 0)$ and $I_2\vec{\Delta L_2} = 3(10^{-6})(-0.5\hat{a}_x + 0.4\hat{a}_y + 0.3\hat{a}_z)$ Am at $P_2(2, 2, 2)$ are located in free space. Find vector force exerted on $I_2\vec{\Delta L_2}$ by $I_1\vec{\Delta L_1}$. **(07 Marks)**

Module-5

9 a. Explain the inadequacy of Ampere's circuital law for time-varying fields. Obtain a suitable correction for the same, which will remain consistent for both time and non-time-varying fields. **(05 Marks)**

   b. Let $\mu = 10^{-5}$ H/m, $\epsilon = 4 \times 10^{-9}$ F/m, $\sigma = 0$ and $\rho_v = 0$. Find K (including units) so that the following pair of fields satisfy Maxwell's equations: $\vec{E} = (20y - Kt)\hat{a}_x$ V/m, $\vec{H} = (y + 2\times10^6 t)\hat{a}_z$ A/m. **(05 Marks)**

   c. Starting from Maxwell's curl equation, obtain the equation of Poynting's theorem and interpret the same. **(10 Marks)**

OR

10 a. Express Maxwell's equations in phasor form as applicable to free-space. Using the same, obtain vector Helmholtz equation in free space. **(09 Marks)**

   b. Obtain an expression for skin depth when an electromagnetic wave enters a conducting medium. Also, calculate the skin depth when a 160 MHz plane wave propagates through aluminum of conductivity 10^5 ℧/m, $\epsilon_r = \mu_r = 1$ **(05 Marks)**

   c. Starting from equation of Faraday's law, obtain the point form of Maxwell's equation concerning spatial derivative of $\vec{E}$ and time derivative of $\vec{H}$. **(06 Marks)**

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17MATDIP31

Third Semester B.E. Degree Examination, Dec.2019/Jan.2020
Additional Mathematics – I

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Find the modulus and amplitude of
         $$\frac{3+i}{2+i}$$ (07 Marks)

    b.   If $x = \cos\theta + i\sin\theta$, then show that $\dfrac{x^{2n}-1}{x^{2n}+1} = i\tan n\theta$.   (07 Marks)

    c.   Simplify $\dfrac{(\cos 3\theta + i\sin 3\theta)^4(\cos 4\theta + i\sin 4\theta)^5}{(\cos 4\theta + i\sin 4\theta)^3(\cos 5\theta + i\sin 5\theta)^{-4}}$ (06 Marks)

OR

2   a.   Find the sine of the angle between $\vec{A} = 2\hat{i} + 2\hat{j} - \hat{k}$ and $\vec{B} = 6\hat{i} - 3\hat{j} + 2\hat{k}$.   (07 Marks)

    b.   Find the value of λ, so that the vectors $\vec{a} = 2\hat{i} - 3\hat{j} + \hat{k}$, $\vec{b} = \hat{i} + 2\hat{j} - 3\hat{k}$ and $\vec{c} = \hat{i} + \lambda\hat{k}$
         are coplanar.   (07 Marks)

    c.   Prove that $\vec{a} \times (\vec{b} \times \vec{c}) + \vec{b} \times (\vec{c} \times \vec{a}) + \vec{c} \times (\vec{a} \times \vec{b}) = 0$.   (06 Marks)

Module-2

3   a.   Find the nth derivative of $e^{ax}\cos(bx + c)$.   (07 Marks)

    b.   If $y = a\cos(\log x) + b\sin(\log x)$ prove that $x^2 y_{n+2} + (2n+1)xy_{n+1} + (n^2+1)y_n = 0$.   (07 Marks)

    c.   If $u = \sin^{-1}\left(\dfrac{x^2 + y^2}{x + y}\right)$, prove that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = \tan u$.   (06 Marks)

OR

4   a.   Find the pedal equation of $r^n = a^n \cos n\theta$.   (07 Marks)
    b.   Expand $\log_e(1 + x)$ in ascending powers of x as for as the term containing x^4.   (07 Marks)
    c.   If $x = r\cos\theta$, $y = r\sin\theta$, find $\dfrac{\partial(x,y)}{\partial(r,\theta)}$ (06 Marks)

Module-3

5   a.   Evaluate $\displaystyle\int_0^1 \int_{y^2}^{y} (1 + xy^2)\,dx\,dy$ (07 Marks)

    b.   Evaluate $\displaystyle\int_0^{2\pi} \sin^4 x \cos^6 x \, dx$ (07 Marks)

    c.   Evaluate $\displaystyle\int_0^2 \frac{x^4}{\sqrt{4 - x^2}}\,dx$ (06 Marks)

OR

6 a. Evaluate $\int\limits_{1}^{2}\int\limits_{3}^{4}\left(xy + e^{y}\right)dydx$ **(07 Marks)**

   b. Evaluate $\int\limits_{0}^{\pi} x\sin^{8}x\, dx$ **(07 Marks)**

   c. Evaluate $\int\limits_{1}^{2}\int\limits_{0}^{1}\int\limits_{-1}^{1}(x^{2} + y^{2} + z^{2})dxdydz$ **(06 Marks)**

Module-4

7 a. If particle moves on the curve $x = 2t^{2}$, $y = t^{2} - 4t$, $z = 3t - 5$ where t is the time. Find the velocity and acceleration at $t = 1$.   **(07 Marks)**

   b. Find the angle between the tangents to the curve $\vec{r} = t^{2}\hat{i} + 2t\hat{j} - t^{3}\hat{k}$ at the point $t = \pm 1$.   **(07 Marks)**

   c. If $\vec{F} = (3x^{2}y - z)\hat{i} + (xz^{3} + y^{4})\hat{j} - 2x^{3}z^{2}\hat{k}$ find grad(div $\vec{F}$) at $(2, -1, 0)$.   **(06 Marks)**

OR

8 a. Find the directional derivative of $\phi = 4xz^{3} - 3x^{2}y^{2}z$ at $(2, -1, 2)$ along $2\hat{i} - 3\hat{j} + 6\hat{k}$ **(07 Marks)**

   b. Find the unit normal to the surface $x^{2}y + 2xz = 4$ at $(2, -2, 3)$.   **(07 Marks)**

   c. Show that $\vec{F} = (2xy^{2} + yz)\hat{i} + (2x^{2}y + xz + 2yz^{2})\hat{j} + (2y^{2}z + xy)\hat{k}$ is irrotational.   **(06 Marks)**

Module-5

9 a. Solve $\dfrac{dy}{dx} = \sin(x + y)$ **(07 Marks)**

   b. Solve $\dfrac{dy}{dx} + y\cot x = \cos x$ **(07 Marks)**

   c. Solve $(x - y + 1)dy - (x + y - 1)dx = 0$ **(06 Marks)**

OR

10 a. Solve $\left(1 + e^{x/4}\right)dx + e^{x/y}\left(1 - \dfrac{x}{y}\right)dy = 0$.   **(07 Marks)**

   b. Solve $\left(x^{3}\cos^{2}y - x\sin 2y\right)dx = dy$.   **(07 Marks)**

   c. Solve $\left(3x^{2}y^{4} + 2xy\right)dx + \left(2x^{3}y^{3} - x^{2}\right)dy = 0$ **(06 Marks)**

* * * * *

USN

Third/Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
ಕನ್ನಡ ಮನಸು [Kannada Manasu]

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 30

ಸೂಚನೆಗಳು

1. ಎಲ್ಲ ೩೦ ಪ್ರಶ್ನೆಗಳಿಗೂ ಉತ್ತರಿಸಿರಿ. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಒಂದು ಅಂಕ.

2. ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಯು.ಎಸ್.ಎನ್ ಸಂಖ್ಯೆ ಹಾಗೂ ಪಶ್ನೆ ಪತ್ರಿಕೆಯ ಶ್ರೇಣಿಯನ್ನು ಅಂದರೆ ಅ,ಬ,ಕ ಅಥವಾ ಡ ಯನ್ನು ತಪ್ಪಿಲ್ಲದಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಗುರುತಿಸುವುದು ಅಭ್ಯರ್ಥಿಯ ಜವಾಬ್ದಾರಿಯಾಗಿರುತ್ತದೆ.

3. ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ನಿಗದಿಪಡಿಸಿರುವ ಸ್ಥಳದಲ್ಲಿ ಭರ್ತಿಮಾಡದೆ ಹಾಗೆಯೇ ಬಿಟ್ಟಲ್ಲಿ ಅಥವಾ ಭರ್ತಿಮಾಡಿದ ಮಾಹಿತಿಯಲ್ಲಿ ಯಾವುದೇ ವ್ಯತ್ಯಾಸವಿದ್ದಲ್ಲಿ ಅಂತಹ ಉತ್ತರ ಪತ್ರಿಕೆಗಳನ್ನು ರದ್ದು ಪಡಿಸಲಾಗುವುದು.

4. ಕೇವಲ ಒಂದು ಉತ್ತರವನ್ನು ಮಾತ್ರ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಗುರುತಿಸತಕ್ಕದ್ದು. ಒಂದೆ ಪ್ರಶ್ನೆಗೆ ಎರಡು ಉತ್ತರವನ್ನು ಗುರುತಿಸುವುದು ಅಮಾನ್ಯ.

5. ಎಲ್ಲಾ ಉತ್ತರಗಳನ್ನು ನಿಮಗೆ ಒದಗಿಸಲಾದ ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯ ಹಾಳೆಯ ಮೇಲೆ ಕಪ್ಪು ಅಥವಾ ನೀಲಿ ಶಾಹಿಯ ಬಾಲ್‌ಪಾಯಿಂಟ್ ಪೆನ್ನಿನಿಂದ ಗುರುತು ಮಾಡಬೇಕು.

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1. 'ಶ್ರಾವಣ' ಕವನದಲ್ಲಿ ಕವಿ ಸೌಂದರ್ಯ ಯಾವುದಕ್ಕೆ ಸಂಬಂಧಿಸಿದೆ?
   ಅ) ನಿಸರ್ಗಕ್ಕೆ   ಬ) ಬೆಂಗಳೂರಿಗೆ   ಕ) ಬೆಳಗಾವಿಗೆ   ಡ) ಕಾಲೇಜಿಗೆ

2. ಕನ್ನಡದ ಪ್ರಸಿದ್ಧ ಲೇಖಕರಾದ 'ಶ್ರೀ ಕುಪ್ಪಳ್ಳಿ ವೆಂಕಟಪ್ಪ, ಪುಟ್ಟಪ್ಪನವರ' ಕಾವ್ಯನಾಮ
   ಅ) ರಾಶಿ   ಬ) ಕುವೆಂಪು   ಕ) ವಿನಾಯಕ   ಡ) ಅಂಬಿಕಾತನಯದತ್ತ

3. 'ಬೆಣ್ಣೆ ಹಚ್ಚು' ಪದದ ಅರ್ಥ
   ಅ) ರೊಟ್ಟಿಗೆ ಬೆಣ್ಣೆ ಹಚ್ಚುವುದು   ಬ) ವಿಡಂಬನೆ
   ಕ) ಹೊಗಳುವುದು   ಡ) ದೋಸೆಗೆ ಬೆಣ್ಣೆ ಹಚ್ಚುವುದು

4. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರ ವ್ಯಕ್ತಿತ್ವಕ್ಕೆ ಯಾವುದು ಸರಿಹೊಂದಿಕೊಳ್ಳುತ್ತದೆ?
   ಅ) ಶಿಸ್ತು   ಬ) ತರ್ಕಬದ್ಧವಾದ ಆಲೋಚನೆ
   ಕ) ನ್ಯಾಯ ಪರತೆ   ಡ) ಮೇಲಿನ ಎಲ್ಲವು

5. ಶ್ರೀ ಶಿವರಾಮ ಕಾರಂತರ 'ದೋಣಿ – ಹರಿಗೋಲುಗಳಲ್ಲಿ'ಲೇಖನ ಈ ರೀತಿಯಾಗಿದೆ :
   ಅ) ಪ್ರವಾಸ ಕಥನ   ಬ) ಹಾಸ್ಯ ಲೇಖನ
   ಕ) ಯಕ್ಷಗಾನ ಸಂಭಾಷಣೆ   ಡ) ಬಂಡಾಯ ಲೇಖನ

6. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರು ಸ್ಥಾಪಿಸಿದ ಬ್ಯಾಂಕ್
   ಅ) ಪಂಜಾಬ್ ನ್ಯಾಷನಲ್ ಬ್ಯಾಂಕ್   ಬ) ಮೈಸೂರು ಬ್ಯಾಂಕ್
   ಕ) ಕೆನರಾ ಬ್ಯಾಂಕ್   ಡ) ವಿಜಯಾ ಬ್ಯಾಂಕ್

7. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರು ಭಾಷಣಕ್ಕೆ ಪೂರಕವಾಗಿ
   ಅ) ಶ್ರೋತೃ ವರ್ಗಕ್ಕೆ ಗೌರವ
   ಬ) ಸರಿಯಾದ ತಯಾರಿ
   ಕ) ಮಾತಿನ ಮಂಟಪದಲ್ಲಿ ಜನರನ್ನು ಮರಳುಗೋಳಿಸುವುದು
   ಡ) ಸತ್ಯ ಸಂಗತಿಗಳು

8. 'ಸುಖ' ಪದಕ್ಕೆ ಸಮಾನಾರ್ಥಕ ಜೋಡಿಪದ :
   ಅ) ನಲಿವು   ಬ) ದುಃಖ   ಕ) ಒಲವು   ಡ) ಸಂತೋಷ

9. 'ನಮ್ಮ ಎಮ್ಮೆಗೆ ಮಾತು ತಿಳಿಯುವುದೇ' ಇದೊಂದು :
   ಅ) ಹಾಸ್ಯ ಬರಹ   ಬ) ಬಂಡಾಯ ಲೇಖನ
   ಕ) ಹಾಲು ಮಾರುವವನ ಕಥೆ   ಡ) ಪ್ರವಾಸ ಕಥನ

10. ಸಚಿವ + ಆಲಯ = ಸಚಿವಾಲಯ: ಕನ್ನಡ ವ್ಯಾಕರಣದಂತೆ ಇಲ್ಲಿರುವ ಸಂಧಿ:
    ಅ) ಸುವರ್ಣ ಸಂಧಿ   ಬ) ಸವರ್ಣ ದೀರ್ಘ ಸಂಧಿ
    ಕ) ವೃದ್ಧಿ ಸಂಧಿ   ಡ) ಲೋಪ ಸಂಧಿ

11. ಕನ್ನಡಕ್ಕೆ ದೊರೆಕಿರುವ ಜ್ಞಾನಪೀಠ ಪ್ರಶಸ್ತಿಗಳು :
    ಅ) ೯   ಬ) ೫   ಕ) ೭   ಡ) ೧೦

12. ಕನ್ನಡ ಬರವಣಿಗೆಯ ಕುರಿತು ಇರಬೇಕಾದದ್ದು :
    ಅ) ಕೀಳರಿಮೆ   ಬ) ಅನಾದರ   ಕ) ಅನಾಸಕ್ತಿ   ಡ) ಆಸಕ್ತಿ

13. 'ರೊಟ್ಟಿ ಮತ್ತು ಕೋವಿ' ಕವನದಲ್ಲಿ ನಾಡಿನ ಸಂಪತ್ತನ್ನು ಸೃಷ್ಟಿಸುವವರು
    ಅ) ದುಡಿವ ಜನ   ಬ) ಬಂಡವಾಳ ಶಾಹಿಗಳು
    ಕ) ಭಾಷಣಕಾರರು   ಡ) ಭಟ್ಟಂಗಿಗಳು

14. "ಒರೆ ಹತ್ತಿ ಉರಿದೆಡೆ ನಿಲಬಹುದಲ್ಲದೇ, ಧರೆ ಹತ್ತಿ ಉರೆದರೆ ನಿಲಬಾರದು, ಏರಿ ನೀರುಂಬಡೆ, ಬೇಲಿ ಹೊಲವ ಮೇಪ್ಪೂಡೆ, ನಾರಿ ತನ್ನ ಮನೆಯಲ್ಲಿ ಕಳುವೊಡೆ .... ಇನ್ನಾರಿಗೆ ದೂರುವೇ? ಕೂಡಲಸಂಗಮದೇವಾ" ಈ ವಚನದ ರಚನೆಕಾರರು
    ಅ) ಸರ್ವಜ್ಞ   ಬ) ಬಸವಣ್ಣ   ಕ) ಅಲ್ಲಮ ಪ್ರಭು   ಡ) ಅಕ್ಕ ಮಹಾದೇವಿ

15. 'ಎಲ್ಲ ಹುಡಿಗಿಯರ ಕನಸು' ಪದ್ಯದಲ್ಲಿ ಕವನದಲ್ಲಿ ನಾಯಕಿಯು ತನ್ನ ------- ನ ಮುಂದೆ ತನಗೆ ರಾತ್ರಿ ಬಿದ್ದ ಕನಸನ್ನು ಹೇಳಿಕೊಳ್ಳುತ್ತಾಳೆ.
    ಅ) ಗೆಳತಿ   ಬ) ತಂಗಿ   ಕ) ಅಪ್ಪ   ಡ) ಅಕ್ಕ

16. 'ಬೆಂಕ್ರ ಮೇಸ್ರಿ ಮತ್ತು ಅರಿಸ್ಟಾಟಲ್' ಲೇಖನ ಯಾವ ರೀತಿಯಾಗಿದೆ?
   ಅ) ವಿನೋದ ಬರಹ   ಬ) ಪ್ರವಾಸ ಕಥನ
   ಕ) ಬಂಡಾಯ ಲೇಖನ   ಡ) ಪರಿಸರ ಲೇಖನ

17. ಜಸ್ಟಿಸ್ (justice) ಗೆ ಸರಿಯಾದ ಕನ್ನಡ ಪದ:
   ಅ) ನ್ಯಾಯಾಧೀಶ   ಬ) ಕುಲಪತಿ   ಕ) ರಾಜ್ಯಪಾಲ   ಡ) ರಾಷ್ಟ್ರಪತಿ

18. ಶ್ರೀ ಸಿದ್ದಲಿಂಗಯ್ಯನವರ 'ಬೆಳ್ಳಿಯ ಹಾಡು' ಕವನ ಏನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?
   ಅ) ಗೆಳೆತನದ ಮಹತ್ವ   ಬ) ದಲಿತರ ಕನಸು
   ಕ) ಪ್ರೇಮದ ರಮ್ಯತೆ   ಡ) ಭಕ್ತಿಯ ಪರವಶತೆ

19. 'ಬಂದೇ ನವಾಜ್' ಯಾರು?
   ಅ) ಗಣಿಧಣಿಗಳು   ಬ) ಯೋಗಗುರು
   ಕ) ಸೂಫಿ ಸಂತರು   ಡ) ವಜ್ರದ ವ್ಯಾಪಾರಿಗಳು

20. ಶ್ರೀ ಬಿ.ಜಿ.ಎಲ್. ಸ್ವಾಮಿಯವರ 'ಆನೆಹಳ್ಳದಲ್ಲಿ ಹುಡುಗಿಯರು' ಲೇಖನ ಯಾರ ಶೈಕ್ಷಣಿಕ ಪ್ರವಾಸದ ಕುರಿತಾಗಿದೆ?
   ಅ) ತಾಂತ್ರಿಕ ವಿದ್ಯಾರ್ಥಿಗಳ ಪ್ರವಾಸ
   ಬ) ವೈದ್ಯಕೀಯ ವಿದ್ಯಾರ್ಥಿಗಳ ಚಾರಣ
   ಕ) ಗೆಳೆಯ ಗೆಳತಿಯರ ಚಾರಣ
   ಡ) ಸಸ್ಯ ವೀಕ್ಷಣೆ ಹಾಗೂ ಸಸ್ಯ ಸಂಗ್ರಹಕ್ಕೆಂದು ಕಾಡಿಗೆ ಕರೆದುಕೊಂಡು ಹೋದ ಶೈಕ್ಷಣಿಕ ಪ್ರವಾಸ

21. ಶ್ರೀ ಮಂಟೆಸ್ವಾಮಿ ಯಾವುದಕ್ಕೆ ಸರಿಹೊಂದುತ್ತಾರೆ?
   ಅ) ಮೈಸೂರು – ಮಂಡ್ಯ ಸೀಮೆಯ ಕೆಳವರ್ಗದ ಸಮುದಾಯದಲ್ಲಿ ಜನಪ್ರಿಯರಾಗಿರುವ ಸಂತ
   ಬ) ಯೋಗ ಗುರು
   ಕ) ಬೆಳಗಾವಿ ಜಿಲ್ಲೆಯ ಸಂತರು
   ಡ) ಯಕ್ಷಗಾನ ಕಲಾವಿದರು

22. 'ಮೂಡಣ' ಪದದ ವಿರುದ್ಧಾರ್ಥಕ ಪದ :
   ಅ) ತೆಂಕಣ   ಬ) ಪಡುವಣ   ಕ) ಕೊಂಕಣ   ಡ) ಬಡಗಣ

23. "ಶ್ರೀ ಎ.ಆರ್ ರೆಹಮಾನರ ಹಾಡಿನ ಕಂಪೋರ್ಶಿಶನ್ ತುಂಬಾ ಚೆನ್ನಾಗಿದೆ". ಈ ವಾಕ್ಯದಲ್ಲಿ ಕಂಪೋರ್ಶಿಶನ್ ಗೆ ಸರಿಯಾದ ಕನ್ನಡದ ಪದ :
   ಅ) ಧ್ವನಿ ಸಂಪತ್ತು   ಬ) ನಿರ್ದೇಶನ   ಕ) ಸಂಯೋಜನೆ   ಡ) ಗಾಯನ

24. ವಿಶ್ವಮಾನವತೆ ಏನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?

    ಅ) ಕಂದಾಚಾರ   ಬ) ಭಾಷಾ ಕಲಹ

    ಕ) ಮತೀಯ ದ್ವೇಷ   ಡ) ಸಹಬಾಳ್ವೆ – ಸೌಹಾರ್ದ

25. ಮನವಿಗಳು ಮತ್ತು ವ್ಯವಹಾರಿಕ ಪತ್ರಗಳಲ್ಲಿ ಇರಬೇಕಾದದ್ದು :

    ಅ) ನಿಖರ ಮಾಹಿತಿ   ಬ) ಸೌಜನ್ಯ

    ಕ) ನೇರ ನಿರೂಪಣೆ   ಡ) ಮೇಲಿನ ಎಲ್ಲವೂ

26. ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಯಾವ ರೀತಿಯಲ್ಲಿದೆ?

    ಅ) ವರ್ಣರಂಜಿತ   ಬ) ಬಹುರೂಪಿ

    ಕ) ಜೀವಂತ   ಡ) ಮೇಲಿನ ಎಲ್ಲವನ್ನು ಒಳಗೊಂಡ ರೀತಿ

27. ಶ್ರೀ ಬಸವರಾಜ ಕುಕ್ಕರಹಳ್ಳಿಯವರ 'ನೀರು' ಲೇಖನ ಏನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?

    ಅ) ಮಾನವ ಬದುಕಿಗೆ ನೀರಿನ ಮಹತ್ವ   ಬ) ನೀರು ಕಲಹ ಸೃಷ್ಟಿಸಬಲ್ಲದು

    ಕ) ನೀರನ್ನು ಹಂಚಿಕೊಂಡು ಬಳಸಬೇಕು   ಡ) ಮೇಲಿನ ಎಲ್ಲವನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ

28. 'ಶ್ರೀ ಗುಬ್ಬಿ ವೀರಣ್ಣ' ಯಾವುದಕ್ಕೆ ಸಂಬಂಧಿಸಿದ್ದಾರೆ?

    ಅ) ತೊಗಲು ಬೊಂಬೆಯಾಟ   ಬ) ದೊಡ್ಡಾಟ

    ಕ) ಯಕ್ಷಗಾನ   ಡ) ನಾಟಕ ಕಂಪನಿ

29. ಡಾ‖ ಬೆಸಗರ ಹಳ್ಳಿ ರಾಮಣ್ಣನವರ 'ಗಾಂಧಿ' ಕತೆ ಏನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?

    ಅ) ವರ್ಣಾಶ್ರಮ ಪದ್ಧತಿ

    ಬ) ಜಾತೀಯತೆ

    ಕ) ಮೂಢ ನಂಬಿಕೆ

    ಡ) ಮಹಾತ್ಮಾಗಾಂಧೀಜಿಯವರ ಮೌಲ್ಯಗಳಿಗೆ ಒದಗಿರುವ ಅವಸ್ಥೆಯನ್ನು

30. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರ ಕರ್ತೃತ್ವ ಶಕ್ತಿಗೆ ಸಾಕ್ಷಿಯಾಗಿರುವುದು:

    ಅ) ಮೈಸೂರು ಬ್ಯಾಂಕ್   ಬ) ಕೃಷ್ಣರಾಜ ಸಾಗರ ಆಣೆಕಟ್ಟು

    ಕ) ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ   ಡ) ಮೇಲಿನ ಎಲ್ಲವು

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CBCS SCHEME

17CPH39/49

USN | 1 | K | T | 1 | 7 | M | E | 0 | 0 | 8

Question Paper Version : A

Third/Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Constitution of India, Professional Ethics & Human Rights
(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 30

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **thirty** questions, each question carries **ONE** mark.

2. Use only **Black ball point pen** for writing / darkening the circles.

3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**

4. Darkening two circles for the same question makes the answer invalid.

5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. The 'Government', it meant a body that,
   a) Makes law
   b) Implements laws made
   c) Interprets the laws
   d) Carrying all these functions

2. Which one of the following is a features common to both the Indian Federation and the American Federation.
   a) A single citizenship
   b) A federal supremecourt to interprete the constitution
   c) Three lists in the constitution
   d) Dual judiciary

3. The preamble in the constitution of independent India is modified version of which of the following :
   a) Bill of Rights in USA
   b) British MagnaCarta
   c) Objectives resolution moved by Jawaharlal Nehru
   d) Ideals of communism

4. In the Indian constitution, the Right to Equality is granted by,
   a) Article 16 – 20
   b) Article 15 – 19
   c) Article 14 – 18
   d) Article 13 – 17

5. Uniform civil code is one of the,
   a) Fundamental rights
   b) Directive principle of state policies
   c) Fundamental duties
   d) None of these

-A1-

6. Concept of fundamental duties copied from which country's constitution,
   a) USSR
   b) USA
   c) UK
   d) JAPAN

7. Who is said to be an integral part of the Union Legislature (Parliament)?
   a) Speaker of LokSabha
   b) Chairman of Rajya Sabha
   c) President
   d) Prime Minister

8. With reference to Vice-President, consider the following statements:
   i) The removal proceedings of Vice-President can be begin in lower house of parliament.
   ii) There is no specific provision in the Indian constitution regarding election of Vice-President.
   Which of the statements given is/are correct?
   a) (i) only
   b) (ii) only
   c) Both (i) and (ii)
   d) Neither (i) nor (ii).

9. The Supreme court of India tenders advice to the President on a matter of law or fact.
   a) On its own initiative
   b) Only if he seeks such advice
   c) Only if the matter relates to the extent of powers of the Union
   d) Only if the issue relates to international treaty or agreement

10. Consider the following statements:
    i) The oath of Governor is conducted by the Chief Minister of the respective state.
    ii) The constitution does not fix any tenure for the post of Governor of a state.
    Which of statements given above is / are correct?
    a) (i) only
    b) Both (i) and (ii)
    c) (ii) only
    d) Neither (i) or (ii)

11. When it comes to the passage of Money Bills, how is the situation in the Union Parliament different from that in the State Legislature?
    a) At the Union level, Money Bill can be introduced only in the Lok-Sabha, but at the state level, it can be introduced either house of state Legislature.
    b) The time limit within which the upper house can return a money bill is 14 days, in case of the Union and one month in State Legislature.
    c) In Parliament, there is no provision for joint session in case of Money Bills, but there can be joint session over money Bill in State Legislature.
    d) None of the above

12. Judge of the High Court can be impeached on the ground of,
    a) Proved misbehaviour
    b) Corruption
    c) High crimes
    d) Emergency

13. Nomination papers shall be submitted with,
    a) The Chief Election Commissioner
    b) The Regional Election Commissioner
    c) The Returning Officer
    d) None of these

14. 73rd Amendment provides establishment of,
    a) High courts
    b) Rural local self Government
    c) Lokayukta
    d) Start ups

-A2-

15. A college student desires to get elected to the Municipal council of his city. The validation of his nomination would depend on the important condition, among others, that
   a) He has attained the maturity
   b) He is a member of a political party
   c) His name figures in the Voter's list
   d) He is the topper to the class

16. To declare emergency _____ consent is must.
   a) Prime Minister
   b) Cabinet headed by the Prime Minister
   c) Speaker of Lok Sabha
   d) Chief Justice of the Supreme Court

17. It is not the effect of State emergency,
   a) State legislature can be dissolved
   b) President assumes the state executive power
   c) Parliament may make law over state list
   d) Effects on state Judiciary

18. Which of following statements is / are correct in respect of co-operative societies:
   i) Part IX-B of the constitution deals.
   ii) Right to form a co-operative society is a fundamental under the constitution.
   iii) Co-operative societies also mentioned under Directive Principles of state policy
   Select the correct answer using the code given here.
   a) (i) only
   b) (ii) only
   c) (i) and (iii) only
   d) (i), (ii) and (iii)

19. What day do countries celebrate as Human Rights Day?
   a) 1 January
   b) 10 December
   c) 2 March
   d) 6 June

20. What does the International Bill of Human Rights provide?
   a) A list of economic human rights.
   b) The rights that all citizens hold
   c) A list of indivisible human rights covering civil and political rights.
   d) An authoritative list of universal human rights covering civil and political rights and economic, social and cultural rights.

21. _____ is the watch dog of human rights in India.
   a) High court
   b) Parliament
   c) National Human Rights Commission
   d) None of these

22. Engineering Ethics is a,
   a) Developing ethics
   b) Preventive ethics
   c) Natural ethics
   d) Scientifically developed ethics

23. For engineering profession _____ is considered as its foundation.
   a) Honesty
   b) Hard work
   c) Sound common sence
   d) None of these

24. A compound measure of the probability and magnitude of the adverse effect is known as,
   a) Benefit
   b) Compensation
   c) Risk
   d) Both (a) and (b)

-A3-

25. 'Trimming' is,
    a) Retaining the entire data
    b) Consolidating the data
    c) Smoothing of irregularities to make the data to appear accurate and precise
    d) All the above

26. A fault tree is used to,
    a) Access the risk involved
    b) Improve safety
    c) Take free consent
    d) Claim compensation

27. The formula of a soft drink is an example of,
    a) Copyright
    b) Trade secret
    c) Patent
    d) Trade mark

28. An author retains copyright of his book for,
    a) 25 years
    b) 50 years
    c) Life time + 60 years
    d) 100 years

29. This is not dishonesty in engineering,
    a) Forging
    b) Blending
    c) Cooking
    d) Trimming

30. This is not implement to responsibility,
    a) Fear
    b) Self respect
    c) Self deception
    d) Ignorance.

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