CBCS SCHEME

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BEC401

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Electromagnetics Theory

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	State and explain spherical coordinate system in detail.	5	L2	CO1
	b.	Four point charges each of 10 μC are placed in free space at the points (1, 0, 0), (-1, 0, 0), (0, 1, 0) and (0, -1, 0) m respectively. Determine the force on a point charge of 30 μC located at a point (0, 0, 1) m.	8	L3	CO1
	c.	Show that electric field intensity at a point, due to 'n' number of point charges, is given by, $E = \frac{1}{4\pi\varepsilon_0}\sum_{i=1}^{n}\frac{Q_i}{R_i^2}a_{R_i}$ V/m	7	L3	CO1
		OR			
Q.2	a.	Define electric field intensity. Derive the expression for electric field intensity due to infinite line charge.	9	L1	CO1
	b.	Given the two points $A(\rho = 4.4, \phi = -115^\circ, Z = 2)$ and B(x = -3.1, y = 2.6, z = -3), find (i) The rectangular coordinate of point A (ii) The cylindrical coordinate of point B (iii) The distance between A and B.	5	L3	CO1
	c.	Find E at P(1, 5, 2) m in free space if a point charge of 6 μC is located at (0, 0, 1), the uniform line charge density $\rho_L = 180$ nC/m along x axis.	6	L3	CO1
		Module – 2			
Q.3	a.	State and prove Gauss's law for point charge.	6	L3	CO2
	b.	Calculate the divergence of D at the point specified if, (i) $D = (2xyz - y^2)a_x + (x^2z - 2xy)a_y + x^2ya_z$ C/m^2 at P_A (2, 3, -1) (ii) $D = 2\rho Z^2\sin^2\phi a_\rho + \rho Z^2\sin 2\phi a_\phi + 2\rho^2 Z\sin^2\phi a_z$ C/m^2 at $P_B(\rho = 2, \phi = 110^\circ, Z = -1)$ (iii) $D = 2r\sin\theta\cos\phi a_r + r\cos\theta\cos\phi a_\theta - r\sin\phi a_\phi$ C/m^2 at $P_C(r = 1.5, \theta = 30^\circ, \phi = 50^\circ)$	9	L3	CO2
	c.	Find electric field intensity at the point A(1, 2, -1) given the potential $V = 3x^2y + 2y^2z + 3xyz$	5	L3	CO2
		OR			
Q.4	a.	Evaluate both sides of divergence theorem if $D = \frac{5r^2}{4}a_r$ C/m^2 in spherical co-ordinate for the volume enclosed by r = 4 m and $\theta = \frac{\pi}{4}$ radians.	8	L3	CO2

	b.	Calculate the work done in moving a charge 4C from B(1, 0, 0) to A(0, 2, 0) along the path $y = 2 - zx$, $z = 0$ in the field (i)$E = 5a_x$ V/m (ii) $E = 5xa_x$ V/m (iii) $E = 5xa_x + 5ya_y$ V/m	6	L3	CO2
	c.	Electrical potential at an arbitrary point in free space is given as, $V = 2(x+1)^2(y+2)^2(z+3)^2$ volt at a point P(2, -1, 4). Find (i) V (ii) E (iii) $\|E\|$ (iv) $\|D\|$ (v) ρ_V	6	L3	CO2
		Module – 3			
Q.5	a.	Evaluate the expression for capacitance of two uniformly charged parallel planes of infinite extent.	8	L2	CO3
	b.	Determine whether or not the potential equations satisfies Laplaces equation : (i) $V = 2x^2 - 4y^2 + z^2$ (ii) $V = \phi\cos\phi + z$ (iii) $V = r^2\cos\phi + \theta$	5	L3	CO3
	c.	An assembly of two concentric spherical shell is considered. The inner spherical shell is at a distance of 0.1 m and is at a potential of 0 volts. The outer spherical shell is at a distance of 0.2 m and at a potential of 100 V. The medium between them is a free space. Find E and D using spherical co-ordinate system.	7	L3	CO3
		OR			
Q.6	a.	State and explain Biot-Savarts law applicable to magnetic field.	6	L2	CO3
	b.	Evaluate both sides of the stokes theorem for the field, $H = 6xya_x - 3y^2a_y$ A/m and the rectangular path around the region, $2 \le x \le 5$, $-1 \le y \le 1$, $Z = 0$. Let the positive direction of ds be a_z.	8	L3	CO3
	c.	Let $A = (3y - z)a_x + 2xza_y$ wb/m in a certain region of free space. (i) Show that $\nabla.A = 0$ (ii) At P(2, -1, 3) find A, B, H and J.	6	L3	CO3
		Module – 4			
Q.7	a.	Obtain the expression for magnetic force between differential current elements.	6	L1	CO4
	b.	The point charge $Q = 18$nC has a velocity of 5×10^6 m/s in the direction $a_V = 0.60a_x + 0.75a_y + 0.30a_z$. Calculate the magnitude of force exerted on the charge by the field. (i) $B = -3a_x + 4a_y + 6a_z$ mT (ii) $E = -3a_x + 4a_y + 6a_z$ KV/m	6	L3	CO4
	c.	The magnetization in a magnetic material for which $\chi_m = 8$ is given in a certain region as $150\ Z^2a_x$ A/m. At Z = 4 cm, find the magnitude of, i) J_T ii) J iii) J_b.	8	L3	CO4
		OR			
Q.8	a.	Obtain the magnetic boundary conditions at interface between two different magnetic material.	8	L2	CO4
	b.	Two differential current elements $I_1dl_1 = 10^{-4}a_z$Am at $P_1(1, 0, 0)$ and $I_2dl_2 = 3\times10^{-6}(-0.5a_x+0.4a_y+0.3a_z)$ Am at $P_2(2, 2, 2)$ are located in free space. Find the vector force exerted on, (i) I_2dl_2 by I_1dl_1 (ii) I_1dl_1 by I_2dl_2	6	L3	CO4

	c.	The interface between two different regions is normal to one of three Cartesian axes. If $B_1 = \mu_0(43.5a_x + 24.0a_z)$ and $B_2 = \mu_0(22a_x + 24a_z)$. What is the ratio $\frac{\tan\theta_1}{\tan\theta_2}$?	6	L3	CO4
		Module – 5			
Q.9	a.	For the given medium $\varepsilon = 4\times10^{-9}$ F/m and $\sigma = 0$. Find K so that the following pair of fields satisfies Maxwell's equation, $E = (20y - Kt)a_x$ V/m, $H = (y + 2\times10^6 t)a_z$ A/m.	6	L3	CO5
	b.	Within a certain region $\varepsilon = 10^{-11}$ F/m and $\mu = 10^{-5}$ H/m, If $B = 2\times10^{-4}\cos10^5 t \sin10^{-3} y$ T ; (i) Find E (ii) Find total magnetic flux passing through the surface x = 0, 0 < y < 40 m, 0 < z < 2m at t = 1 μsec.	8	L3	CO5
	c.	State and explain pointing theorem.	6	L2	CO5
		OR			
Q.10	a.	Derive the modified Ampere's law by Maxwells for time varying fields.	5	L2	CO5
	b.	Show that the intrinsic impedance of the perfect dielectric $\eta = \frac{\lvert E\rvert}{\lvert H\rvert} = \sqrt{\frac{\mu}{\varepsilon}}$ and show that its value in free space is 377 Ω	7	L2	CO5
	c.	A plane electromagnetic wave having a frequency of 10 MHz has an average pointing vector of 1 W/m^2. If medium is lossless with relative permeability of 2 and relative permittivity of 3 find (i) The velocity of propagation. (ii) Wavelength. (iii) Impedance of the medium (iv) rms electric field.	8	L3	CO5

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BEC402

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Principles of Communication Systems

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is conditional probability? Prove that $P(B/A) = P(A/B) \cdot P(B)/P(A)$	05	L2	CO1
	b.	Define the autocorrelation and cross correlation. Discuss the properties of autocorrelation.	10	L2	CO1
	c.	Develop a program to generate the probability density function of Gaussian distribution function.	05	L3	CO1
		OR			
Q.2	a.	Define auto-covariance, random variable, cumulative distribution function and probability distribution function.	08	L1	CO1
	b.	The random variable its plot is given as $f_x(x) = 2.e^{-2x}$ for $x \geq 0$. Find the probability that it will take value between 1 and 3.	04	L3	CO1
	c.	Define probability with an example. Discuss their properties (axioms).	08	L2	CO1
		Module – 2			
Q.3	a.	Explain amplitude modulation with necessary equations and sketches in time domain and frequency domain.	08	L3	CO2
	b.	Define modulation index and percentage of modulation. Explain over modulation and distortion.	06	L2	CO2
	c.	Derive the expression for Amplitude Modulation (AM) power in terms of modulation index.	06	L2	CO1
		OR			
Q.4	a.	Explain a general block diagram of a frequency division multiplexing.	06	L1	CO2
	b.	Explain the working principle of lattice type balanced modulator with circuit diagram.	07	L1	CO2
	c.	With neat diagrams, explain high level collector modulator.	07	L2	CO2
		Module – 3			
Q.5	a.	With a neat block diagram, explain converting a phase modulated signal into a frequency modulated signal.	07	L1	CO3
	b.	Determine the frequency modulated signal $v_{FM} = V_C \sin(2\pi f_c t + m_f \sin 2\pi f_m t)$ interms of Bessel functions. Write the amplitude of sideband frequencies (J_n) interms of modulation index (m_f).	06	L3	CO3
	c.	Identify the noise suppression of frequency modulated signal.	07	L2	CO3
		OR			
Q.6	a.	What is the maximum bandwidth of an FM signal with a deviation of 30 kHz and a maximum modulating signal of 5 kHz. (i) Using number of sidebands N = 9 (ii) Using Carson's rule	04	L2	CO3
	b.	Define phase locked loop. Explain with neat circuit diagram of FM demodulator using the IC 565.	08	L2	CO3
	c.	With neat block diagram, explain the concept of frequency modulation with an IC voltage controlled oscillator (IC NE566)	08	L2	CO3

		Module – 4			
Q.7	**a.**	Why digitize the analog signals? Explain the different processes used to convert the analog signal to digital signal.	**06**	**L2**	**CO4**
	b.	What is quantization process? Explain the different types of quantization with their important characteristics.	**07**	**L2**	**CO4**
	c.	Explain the concept of Time division multiplexing with a neat block diagram.	**07**	**L2**	**CO4**
		OR			
Q.8	**a.**	Define PCM (Pulse Code Modulation). Explain the basic elements of a PCM system with neat diagrams.	**06**	**L2**	**CO4**
	b.	For the data stream 01101001. Draw the following line code waveforms: (i) Unipolar NRZ (ii) Polar NRZ (iii) Unipolar RZ (iv) Bipolar RZ (v) Manchester code (vi) Differential coding	**09**	**L3**	**CO4**
	c.	State and prove the sampling theorem. Explain with neat sketches and equations.	**05**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Develop a code to generate and plot eye diagram.	**06**	**L3**	**CO5**
	b.	Define noise factor and noise figure. Also explain noise in cascade connection.	**06**	**L2**	**CO5**
	c.	Define Inter Symbol Interference (ISI). Outline baseband binary data transmission system with neat block diagram and equations.	**08**	**L1**	**CO5**
		OR			
Q.10	**a.**	Explain bandwidth requirements of TI systems.	**06**	**L1**	**CO5**
	b.	Write short notes on: (i) Signal to noise ratio (ii) External noise (iii) Internal noise	**08**	**L1**	**CO5**
	c.	An RF amplifier has an S/N ratio of 8 at the input and an S/N ratio of 6 at the output. What are the noise factor, noise figure and noise temperature?	**06**	**L3**	**CO5**

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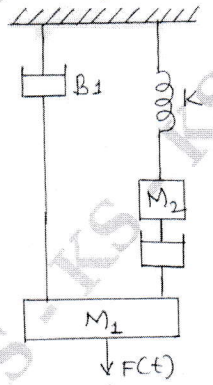
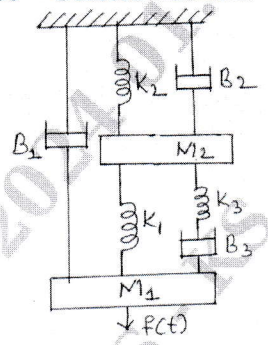
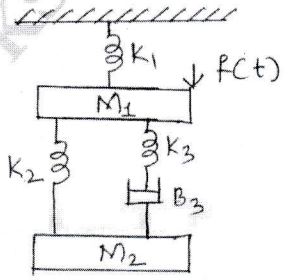
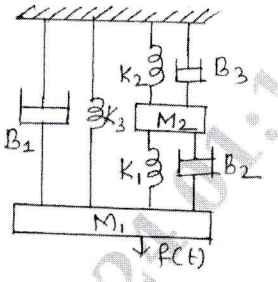
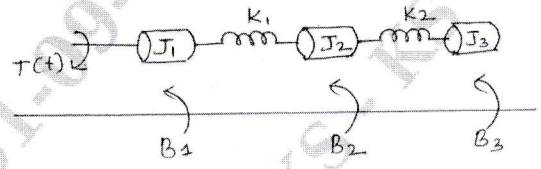
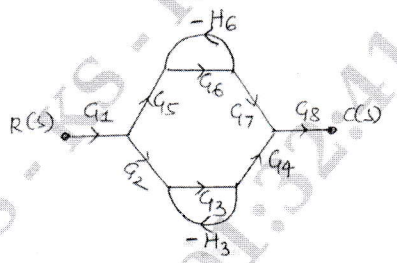
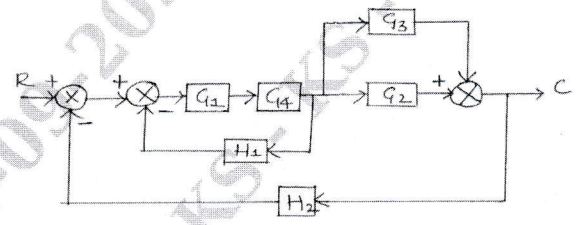
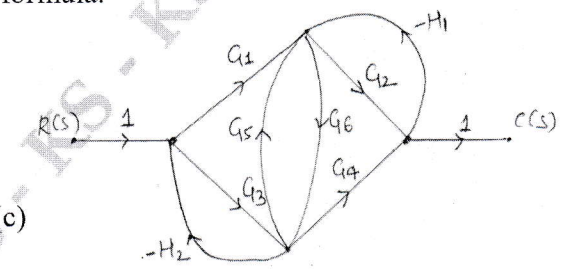
BEC403

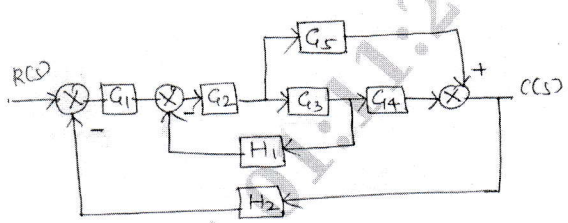
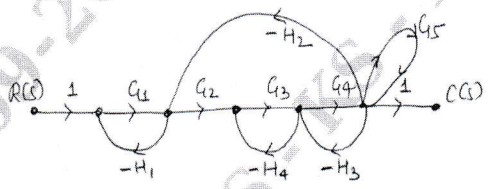
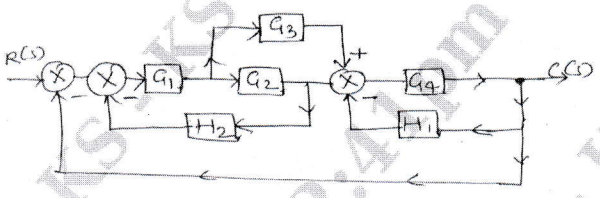
Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Control Systems

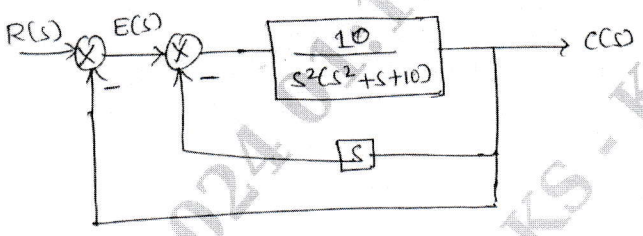
Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Define Control system. Write down any four differences between Open Loop Control System and Closed Loop Control System.	4	L2	CO1
	b.	For the mechanical system shown in Fig. Q1(b), obtain the equivalent electrical system using Force – Voltage method.  Fig. Q1(b)	8	L2	CO1
	c.	For the mechanical system, shown in Fig. Q1(c), obtain the equivalent electrical system using Force – Current method.  Fig. Q1(c)	8	L2	CO1
		OR			
Q.2	a.	For the mechanical system shown in Fig. Q2(a), obtain the equivalent electrical system using Force – Voltage method.  Fig. Q2(a)	7	L2	CO1

	b.	For the mechanical system shown in Fig. Q2(b), obtain the equivalent electrical system using Force – Voltage method.  Fig. Q2(b)	**7**	**L2**	**CO1**
	c.	Draw the electrical network based on torque – current analogy and write performance equation for the mechanical system of Fig. Q2(c).  Fig. Q2(c)	**6**	**L2**	**CO1**
		Module – 2			
Q.3	**a.**	Find $\frac{C(s)}{R(s)}$ by Mason's gain formula for Fig. Q3(a).  Fig. Q3(a)	**6**	**L3**	**CO3**
	b.	Determine the transfer function $\frac{C(s)}{R(s)}$ of the system shown in Fig. Q3(b).  Fig. Q3(b)	**6**	**L3**	**CO3**
	c.	For the single flow graph of Fig. Q3(c), find the transfer function using Mason's gain formula.  Fig. Q3(c)	**8**	**L3**	**CO3**

		OR			
Q.4	**a.**	Reduce the block diagram to its canonical form and obtain C(s)/R(s) of the system of Fig. Q4(a).  Fig. Q4(a)	**6**	**L3**	**CO3**
	b.	Obtain the transfer function of the single flow graph shown in Fig. Q4(b), using Mason's gain formula.  Fig. Q4(b)	**6**	**L3**	**CO3**
	c.	Reduce the block diagram of Fig. Q4(c) to its simple form and obtain C(s)/R(s).  Fig. Q4(c)	**8**	**L3**	**CO3**
		Module – 3			
Q.5	**a.**	With the help of graphical representation and mathematical expression, explain the following test signals : i) Step signal ii) Ramp signal iii) Impulse signal iv) Parabolic signal.	**8**	**L3**	**CO2**
	b.	Find Kp , Kv , Ka and steady state error for a system with Open loop transfer function $G(s)\,H(s) = \frac{10(s+2)(s+3)}{s(s+1)(s+4)(s+5)}$, where $r(t) = 3 + t + t^2$.	**6**	**L3**	**CO2**
	c.	The Open loop transfer function of a servo system with unity feedback is given as $G(s) = \frac{10}{s(0.1s+1)}$. Find out static error constants and obtain steady state error when an input $r(t) = A_0 + A_1 t + \frac{A_2}{2} t^2$ is applied.	**6**	**L3**	**CO2**
		OR			
Q.6	**a.**	For a unity feedback control system with $G(s) = \frac{64}{s(s+9.6)}$, write the output response to a unit step input. Determine 1) The response at t = 0.1 set 2) Maximum value of response and the time at which it occurs. 3) Settling time.	**10**	**L2**	**CO3**

	b.	For the system shown in Fig. Q6(b), 1) Identify the type of C(s) / E(s) 2) Find values of Kp , Kv , Ka. 3) If r(t) = 10u(t), find steady state value of the output.  Fig. Q6(b)	**10**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Find the number of roots with positive real part, zero real part and negative real part for a system $s^6 + 4s^5 + 3s^4 - 16s^2 - 64s - 48 = 0$.	**6**	**L2**	**CO4**
	b.	For a unity feedback system , $G(s) = \frac{K}{s(1+0.4s)(1+0.25s)}$, find range of values of K, Marginal value of K and frequency of sustained oscillations.	**6**	**L2**	**CO4**
	c.	Explain the angle condition in Root locus. Test the following points using angle condition for the system $G(s)\,H(s) = \frac{K}{s(s+2)(s+4)}$. i) s = - 0.75 ii) s = -1 + j4.	**8**	**L2**	**CO4**
		OR			
Q.8	**a.**	Sketch the complete root locus and comment on the stability of the system $G(s)\,H(s) = \frac{K}{s(s+1)(s+2)(s+3)}$.	**12**	**L2**	**CO4**
	b.	Sketch the Bode plot for the transfer fl. Find value of 'K' for W_{gc} = 5 rad/sec. $G(s) = \frac{K\,s^2}{(1+0.2s)(1+0.02s)}$	**8**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	For a certain control system $G(s)\,H(s) = \frac{K}{s(s+2)(s+10)}$, sketch the Nyquist plot and hence calculate the range values of K for stability.	**10**	**L2**	**CO5**
	b.	Explain the Lag compensator and Lead compensator with the help of a circuit diagram.	**10**	**L2**	**CO5**
		OR			

Q.10	**a.**	Construct the state model using phase variables if the system is described by the differential equation $\frac{d^3y(t)}{dt^3}+4\frac{d^2y(t)}{dt^2}+7\frac{dy(t)}{dt}+2y(t)=5u(t)$. Also draw the state diagram.	**6**	**L2**	**CO5**
	b.	The transfer function of a control system is $\frac{Y(s)}{U(s)}=\frac{s^2+3s+4}{s^3+2s^2+3s+2}$. Obtain the State model using signal flow graph.	**7**	**L2**	**CO5**
	c.	Find the state transition matrix for $A=\begin{bmatrix}0 & -1\\ +2 & -3\end{bmatrix}$	**7**	**L1**	**CO5**

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BEC405A

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Microcontrollers

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Bring out the difference between Microprocessor and Microcontroller.	6	L2	CO1
	b.	With a neat Architecture diagram, explain the Architecture of 8051 Microcontroller.	10	L2	CO1
	c.	Explain : (i) RST (ii) INT Pins of 8051	4	L1	CO1
		OR			
Q.2	a.	Differentiate between CISC and RISC.	6	L2	CO1
	b.	With a neat diagram, explain the Internal Memory Structure and Programming Model of 8051 Microcontroller.	10	L2	CO1
	c.	List out special features of 8051 Microcontroller.	4	L2	CO1
		Module – 2			
Q.3	a.	Define Addressing Mode. Explain different addressing modes with example.	10	L2	CO2
	b.	Write an ALP to add two 16-bit numbers loaded in R_1R_0 and R_3R_2. Store the result in R_6R_5 and R_4 from MSB to LSB.	10	L3	CO2
		OR			
Q.4	a.	Define Stack. Explain the operation of Stack using Stack Pointer, PUSH and POP Instructions.	10	L2	CO2
	b.	Write an ALP to find largest of N numbers.	10	L3	CO2
		Module – 3			
Q.5	a.	Explain : (i) TMOD (ii) TCON register of 8051.	10	L2	CO3
	b.	Assume XTAL = 22 MHz. Write an ALP to generate a square of frequency 1 kHz on Pin P1.2.	10	L2	CO3
		OR			
Q.6	a.	Explain : (i) SCON register (ii) Importance of TI Flag	10	L2	CO3
	b.	Write a C program to transfer "YES" serially at 9600 baud rate, 8 bit data, 1 stop bit, do this continuously.	10	L3	CO3
		Module – 4			
Q.7	a.	Define Interrupt. List the steps involved in Executing an Interrupt.	10	L2	CO4
	b.	Explain Interrupt Vector table of 8051 Microcontroller.	5	L2	CO4
	c.	Explain Interrupt enable register.	5	L2	CO4
		OR			
Q.8	a.	Explain Interrupt Control used in 8051.	10	L2	CO4
	b.	Explain the steps involved in programming serial communication Interrupt.	5	L2	CO4

	c.	Explain how multiple Interrupts are handled in 8051.	5	L2	CO4
		Module – 5			
Q.9	a.	Explain DAC Interface with a neat diagram and also write a program to generate staircase waveform.	10	L3	CO5
	b.	With a neat diagram, write a program to Interface Stepper Motor to 8051 Microcontroller.	10	L3	CO5
		OR			
Q.10	a.	Explain the Interfacing of DC motor using C programming.	10	L3	CO5
	b.	With a neat diagram, write a ALP to Interface LCD to 8051 Microcontroller.	10	L3	CO5

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CBCS SCHEME

BCS456C

USN | | | | | | | | | | |

Question Paper Version : B

Fourth Semester B.E. Degree Examination, June/July 2024
UI/UX

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** 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. Some of the guidelines and much of practical user performance depend on
   a) The concepts of over satisfaction b) The concepts of UX guidelines
   c) The concepts of human working memory d) All of these

2. Sensory memory is of _____
   a) Small brief duration b) Large brief duration
   c) Very brief duration d) None of these

3. The selected UX design guidelines are generally organized by the _____
   a) UAF structure b) API structure
   c) GUI structure d) All of these

4. Design examples of UX guidelines from everyday things such as
   a) Hair dryers b) Automobiles
   c) Public doorways d) All of these

5. Planning guidelines are the support _____
   a) Users b) Servants c) Public d) None of these

6. User actions to determine _____
   a) When tasks or steps to do b) What tasks or steps to do
   c) How tasks or step to do d) Why tasks or steps to do

7. Translation guidelines are to support _____
   a) Users b) Customers c) Peoples d) None of these

8. Including human memory support in the task structure _____
   a) Design simplicity
   b) Flexibility
   c) Efficiency
   d) Concurrency

9. Physical actions guidelines support users is doing physical actions including _____
   a) Typing
   b) Clicking
   c) Dragging in a GUI, scrolling on a web page
   d) All of these

10. The outcomes part of the interaction cycle is about supporting _____
   a) Users through complete and correct "backend" functionality
   b) User's interaction cycle functionality
   c) Dragging in a GUI, scrolling on a web page functionality
   d) All of these

11. A sense is a design representation is
   a) Interaction design
   b) Wire frame
   c) Prototype
   d) Design thinking

12. The ideas of prototyping is _____
   a) Timeless and universal
   b) Build and real thing
   c) Choice and approach
   d) all of these

13. Which prototype is demonstrating the product concept and for conveying an early product overview?
   a) Vertical prototype
   b) Upper prototype
   c) Horizontal prototype
   d) None of these

14. In which prototype combines the advantages of both horizontal and vertical, offering a good compress for system evaluation?
   a) 'R' prototype
   b) 'Y' prototype
   c) 'T' prototype
   d) 'D' prototype

15. A vertical prototype is associated with _____
   a) User actions, in depth
   b) Customer actions, in depth
   c) Stake holder actions in depth
   d) All of these

16. Prototype that are not faithful representations of the details of look, feel and behavior is _____
   a) Vertical prototype
   b) Local prototype
   c) Horizontal prototype
   d) Low fidelity prototype

17. In which prototype are more detailed representation of designs _____
   a) High fidelity prototype
   b) Local prototype
   c) Horizontal prototype
   d) Low fidelity prototype

18. Which one of the fidelity is not independent _____
   a) Interactivity of prototype
   b) Local prototype
   c) Horizontal prototype
   d) Low fidelity prototype

19. Paper prototype can act as _____
a) Coding blocker
b) View blocker
c) Prototype blocker
d) All of these

20. A 'T' prototype combines _____
a) Both paper and local prototype
b) Both horizontal and local prototype
c) Both low fidelity and high fidelity
d) None of these

21. Design concept includes _____
a) Usability b) Accessibility c) Both (a) and (b) d) None of these

22. _____ is a human centered approach to problems solving that emphasizes empathy, creativity and collaboration.
a) Design b) Design thinking c) User perspectives d) User collaboration

23. Generation of new idea is _____
a) Critiquing b) Designing c) Idea creation d) Sketching

24. Interaction perspective is _____
a) How the system work
b) How the user operate the system
c) How the system communicate
d) How a system interface

25. The long term design documentation is _____
a) Sketching b) Design c) Drawing d) ideation

26. Critiquing is about _____
a) Review and judgment
b) Joy and enjoyment
c) Idea creation
d) Theme or ideas

27. Rapid creation of freehand drawing is _____
a) Drawing
b) Sketching
c) Designing
d) Intellectual drawing

28. Story board is a sequence of _____
a) Frame clips
b) Visual frames
c) Sketches
d) Graphics frames

29. Ideation is an _____
a) Active b) Fast moving c) Collaboration d) All of these

30. Use mental model is a description of
a) How the system work
b) Explanation of someone's thought
c) Something works in the real world
d) None of these

31. Usability is an established, as a part of the _____
a) Technology World
b) Computation World
c) Designer's World
d) None of these

32. Example of extracting a requirement statement for _____
a) Ticket Kiosk system
b) Software system
c) Website design system
d) All of these

33. The term translate each user need into one or more introduction design that is ____
    a) Extracting statement
    b) Requirement statement
    c) Requirement structure
    d) Terminology statement

34. What UX encompasses of ____
    a) Only visual elements
    b) Only functional element
    c) Both visual and functional element
    d) Either visual nor functional element

35. A business – a – case a user experience typically includes
    a) Technical specification of the product
    b) Analysis of competitor pricing strategies
    c) Justification of investment based on quotation of ROI
    d) Historical data on employee turn over rate.

36. The primary goal of UI design is to _____
    a) To maximize user satisfaction and usability
    b) To optimize loading times
    c) To minimize user engagement
    d) All of these

37. Which of the following is not a usability principle?
    a) Learn ability
    b) Efficiency
    c) Memorability
    d) Cost-effectiveness

38. In concern to design UI stands for _____
    a) User involvement
    b) User interface
    c) User interaction
    d) User inspection

39. The difference between UI and UX is/are:
    a) UI focuses on virtual elements, while UX focuses on functionality and user satisfaction
    b) UI and UX are interchangeable terms
    c) UI focuses on functionality, while UX focuses on elements
    d) UI focus on functionality, while UX focuses on user satisfaction

40. Emotional impact is user experience design refers to:
    a) The psychological effects of color choices on users
    b) How user feel when they interact with a product or service
    c) The technical performance of the website or app
    d) The number of features available to users.

41. The purpose of wire framing in UI/UX design is to _____
    a) to create a final polished design
    b) to communicate layout and functionality
    c) to select color schemes
    d) to add animations

42. UX measure is _____
    a) Usage of your interaction design
    b) Usage of conceptual design
    c) Usage of design thinking
    d) Usage of ideations

43. Measuring instrument is a description of _____
    a) Providing values for the particular UX measure
    b) Providing values for the UX targets
    c) Providing values for the UX metrics
    d) Providing values for UX goals.

44. Detailed design includes _____
a) Visual frames
b) Visual clips
c) Visual comps
d) Visual wire frames

45. Bread and butter tool of interaction design is _____
a) Sketching
b) Wireframes
c) Detailed design
d) None of these

46. In which software tool is used in wireframe _____
a) Adobe XD
b) Keil
c) Xlinx
d) None of these

47. Subjective of the UX design is ____
a) UX metrics
b) UX goals
c) UX measure
d) UX target

48. Quantitative statement is ____
a) UX metrics
b) UX goals
c) UX measure
d) UX target

49. Wire frames are _____ frames
a) Low fidelity wire frames
b) High fidelity wireframes
c) Median fidelity wireframes
d) None of these

50. The drawing aspects of wireframes are user of _____ boxes
a) Square boxes
b) Paralleogram boxes
c) Rectangular boxes
d) None of these

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CBCS SCHEME

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BBOC407

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Biology for Engineers (CSE)

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Discuss the various components of Eukaryotic cells.	10	L3	CO1
	b.	Identify the applications of stem cells.	5	L2	CO1
	c.	Explain the functions of vitamins.	5	L2	CO1
		OR			
Q.2	a.	Compare Prokaryotic and Eukaryotic cells.	10	L3	CO1
	b.	Explain the properties of Carbohydrates.	5	L2	CO1
	c.	Explain the functions of Lipids.	5	L2	CO1
		Module – 2			
Q.3	a.	Highlighting the properties of cellulose, justify cellulose as an effective water filter.	10	L3	CO1
	b.	Explain the working and development of DNA vaccines by taking suitable example.	10	L2	CO1
		OR			
Q.4	a.	What are Bioplastics? Justify the use of PHA as Bioplastic mentioning its properties and applications.	10	L3	CO1
	b.	Discuss the following : (i) Meat analogs of protein. (ii) Lipids as cleaning agents.	10	L2	CO1
		Module – 3			
Q.5	a.	What is Electro Encephalogram (EEG)? Discuss the types of Brain activity detected with EEG. Write any three applications.	10	L3	CO2
	b.	What are Pace Makers? Explain basic design and construction of Pace Makers.	10	L2	CO2
		OR			
Q.6	a.	Justify Lungs as purification system.	10	L3	CO2
	b.	Explain architecture of Rod and Core cells with suitable diagram.	10	L2	CO2
		Module – 4			
Q.7	a.	What is ultrasonography? Explain the uses and working principle.	10	L2	CO3
	b.	What is lotus leaf effect? Explain the mechanism and applications of super Hydrophobic effect.	10	L2	CO3
		OR			
Q.8	a.	The structure and design of Kingfisher beak lead to the design of Bullet trains. Explain.	10	L2	CO3
	b.	Explain the working and applications of Bionic Leaf Technology.	10	L2	CO3

Module – 5					
Q.9	a.	Explain the use of Electrical tongue in food science.	10	L2	CO4
	b.	Explain the advantages and limitations of Artificial Intelligence for disease diagnosis.	10	L2	CO4
OR					
Q.10	a.	Explain Bioengineering solutions for muscular dystrophy and Osteroporosis.	10	L2	CO4
	b.	Explain most commonly used Bioprinting Techniques.	10	L2	CO4

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CBCS SCHEME

BUHK408

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Question Paper Version : C

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Universal Human Values Course

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** 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 All the units of nature can be classified into _____ orders
a) Two b) Three c) Four d) Six

2 Which of the following does not form an order in nature?
a) BIO b) Animal c) Consciousness d) Human

3 Which of the following statements is true,
a) Material units have only two kinds of activities recognizing and fulfilling
b) Material units have three kinds of activities assuming, recognizing and fulfilling
c) Material units have only four kinds of activities knowing, assuming, recognizing and fulfilling
d) None of the statement

4 Which of the following statement is not true?
a) There is inter connectedness in nature
b) There is recyclability and self regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

5 According to quantity, which of the following is true for the orders in nature
a) Bio order >> Physical order >> Animal order >> Human order
b) Animal order >> Bio order >> Physical order >> Human order
c) Physical order >> Bio order >> Animal order >> Human order
d) None of the above

6 What are the fundamental components of ecosystems?
a) Plants and Animals b) Air and water
c) Rocks and minerals d) All of these

7 The third order of nature is
a) Material order b) Animal order c) Plant order d) Human order

8 The activities in human body are
a) Composition b) Decomposition c) Respiration d) All of these

9 The systems in nature are
a) Cyclic b) Mutually fulfilling c) Both a and b d) None of these

10 The natural characteristics/Svabhava of a human being are
a) Perseverance b) Bravery c) Generosity d) All of these

11 The purpose of value –Education is to
a) Foster universal core values b) Make syllabus easy
c) Develop values in individual d) Both A and C

12 Self exploration uses two mechanisms i) Natural Acceptance ii) ---------?
a) Experiential validation b) Reason
c) Logical Thinking d) Theoretical concept

13 Once we know what is valuable to us, these values becomes the basis, the anchor for _____
a) Knowledge b) Actions c) Society d) None of these

14 To fulfill Human Aspirations, what are necessary
a) Both values and skills b) Values
c) Skills d) None of these

15 Which the following are the encompassing principles underlying the successful implementation of value education?
A) Conviction B) Connection C) Critical thinking D) Commitment
choose the most appropriate answer from the options given below :
a) A, C and D only b) B, C and D only c) A, B and D only d) None of these

16 Value and skills should go hand in hand
a) True b) False c) Cannot tell d) None of these

17 Are the content of self – exploration
a) Program b) Desire c) Both a and b d) None

18 Human life is lived at four levels individual, Family, Society and _____
a) Nature b) Nurture c) World d) Universe

19 Any course content on value education needs to be
a) Universal b) Rational c) Natural d) All of these

20 Value education enables us to
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

21 The only effective way to ensure professional ethics is by developing
a) Knowledge b) Ethical conduct
c) Ethical competence d) Professional activities

22 How does unethical practices in various professions can be resolved
a) Through skills b) Through knowledge
c) Through practical d) Via right understanding

23 What provides clear guidance and policy frame work conducive to the development of an un-fragmented human society and a universal human order
a) Humanistic education b) Humanistic constitution
c) Profession d) Ethical Human conduct

24 The right understanding gained through self exploration also enables us to identify the definitiveness of human conduct. What is this called?
a) Ethical Human conduct b) Values
c) Policy d) Utility values

25 Primary step to move towards the holistic alternative is to develop the right understanding among humans and the commitment to
a) Do practical b) Remain calm c) Live accordingly d) Teach others

26 The right understanding helps us identify the comprehensive human goal in terms of
a) Samadhan b) Samridhi c) Sah-astitva d) All of these

27 The humanistic education will facilitate the process of self exploration which will lead to continuous
a) Education b) Self evolution c) Development d) People friendly

28 The values of human being can be enumerated as
a) Nine b) Thirty c) Eighteen d) Twenty four

29 Which of the following is not a characteristic of professionalism?
a) Kindness b) Competency c) Morality d) Complacency

30 There are six characteristics of a professional style which is not a professional style?
a) Ethical b) Emotional c) Responsible d) Intellectual.

31 Harmony should be maintained in
a) Between body and life
b) Between self and society
c) Between life and environment
d) All of the above

32 The foundational value in relationship is
a) Respect b) Love c) Trust d) Glory

33 Ensuring right understanding and feeling in the others is called
a) Care b) Affection c) Gratitude d) Guidance

34 Harmony in the family is the building block for harmony in the
a) Society b) Individual c) Friend d) Relative

35 The total numbers of feelings in human relationship
a) 5 b) 10 c) 9 d) 8

36 Comprehensive human goal is right understanding prosperity, trust (fearlessness) and
a) Co-existance b) Happiness c) Abhay d) None

37 There is justice in relationship when there is
a) Mutual fulfillment b) Self regulation c) Freedom d) None

38 The extension of family is
a) Self b) Body c) Society d) Nature

39 The feeling of relatedness to all human beings is called
a) Love b) Affection c) Gratitude d) Respect

40 Acceptance of excellence in others is called
a) Reverence b) Glory c) Gratitude d) Guidance

41 Harmony should be maintained in
a) Between body and life
b) Between self and society
c) Between life and environment
d) All of these

42 I being the
a) does, seer and Enjoyer b) doer
c) seer d) enjoy

43 Which of the following is NOT response of the self?
a) Knowing b) Assuming
c) Recognizing d) Preconditioning

44 Activities of self (I) are
a) Happiness b) Prosperity
c) Desire, thought and expectation d) None

45 The requirement of body is right utilization and nurturing
a) Desire b) Protection c) Thought d) Expectation

46 The _____ is an instrument of _____
a) I, Body b) Body, I c) Both a and b d) None

47 The activity of desire, thought and expecting together is called as
a) Body b) Health c) Imagination d) Future

48 Imaging is _____ with time
a) Continuous b) Discontinuous c) Random d) Different

49 Where there is harmony among the parts of the body it is known as
a) Swasthya b) Sanyam c) Prosperity d) None

50 Knowing means having the
a) Assumption
b) Right understanding
c) Right feeling
d) None

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