CBCS SCHEME

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

BMATS101

First Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Mathematics – I for CSE Stream

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. VTU Formula Hand Book is permitted.
3. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	With usual notations, prove that $\tan\phi = r\dfrac{d\theta}{dr}$.	6	L2	CO1
	b.	Show that the curves $r = a(1 + \sin\theta)$ and $r = b(1 - \sin\theta)$ intersect each other orthogonally.	7	L2	CO1
	c.	Find the radius of curvature at the point $\left(\dfrac{39}{2}, \dfrac{39}{2}\right)$ for the curve $x^3 + y^3 = 3axy$.	7	L3	CO1
		OR			
Q.2	a.	With usual notations prove that $\rho = \dfrac{\left[1 + y_1^2\right]^{3/2}}{y_2}$	8	L2	CO1
	b.	Find the pedal equation of the curve : $r^n = a^n \cos n\theta$.	7	L1	CO1
	c.	Using modern mathematical tool, write a program/code to plot the curve $r = 2\lvert\cos 2\theta\rvert$.	5	L1	CO5
		Module – 2			
Q.3	a.	Obtain the Maclaurin's expansion of $\log(1 + e^x)$ upto the term containing x^4.	6	L2	CO1
	b.	If $u = f[2x - 3y, 3y - 4z, 4z - 2x]$ then find the value of $\dfrac{1}{2}\dfrac{\partial u}{\partial x} + \dfrac{1}{3}\dfrac{\partial u}{\partial y} + \dfrac{1}{4}\dfrac{\partial u}{\partial z}$	7	L1	CO1
	c.	Find the maximum and minimum value of the function, $f(x, y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$.	7	L1	CO1
		OR			
Q.4	a.	Evaluate $\lim\limits_{x \to 0}\left(\dfrac{a^x + b^x + c^x + d^x}{4}\right)^{\frac{1}{x}}$	7	L2	CO1

	b.	If $u = x^2 - y^2$, when $x = e^t \cos t$, $y = e^t \sin t$, show that $\frac{\partial u}{\partial t} = 2e^{2t}[\cos 2t - \sin 2t]$.	8	L2	CO1
	c.	Using modern mathematical tool write a program/code to show that $u_{xx} + u_{yy} = 0$, given $u = e^x[x\cos y - y\sin y]$.	5	L3	CO5
		Module – 3			
Q.5	a.	Solve: $\frac{dy}{dx} + \frac{y}{x} = y^2 x$	6	L3	CO2
	b.	Find the orthogonal trajectories of $\frac{x^2}{a^2+x} + \frac{y^2}{b^2+x} = 1$ where λ is a parameter.	7	L1	CO2
	c.	Solve : $x^2p^2 + xyp - 6y^2 = 0$	7	L3	CO2
		OR			
Q.6	a.	Solve : $(y^4 + 2y)dx + (xy^3 + 2y^4 - 4x)dy = 0$.	6	L2	CO2
	b.	Solve the differential equation $L\frac{di}{dt} + Ri = 200\sin 300t$ when L = 0.05 and R = 100 and find the value of the current I at any time t, if initially there is no current in the circuit. What value does i approach after a long time.	7	L3	CO2
	c.	Find the general and singular solution of $(a^2 - x^2)p^2 + 2xyp + b^2 - y^2 = 0$	7	L2	CO2
		Module – 4			
Q.7	a.	(i) Find the remainder when 41^{75} is divided by 3, (ii) Find the last digit in 7^{289}.	6	L2	CO3
	b.	Find the solution of the linear congruence $18x \equiv 30 \pmod{42}$	7	L2	CO3
	c.	Using RSA algorithm find public key and private key with respect to $p = 3$, $q = 11$ and $m = 31$	7	L3	CO3
		OR			
Q.8	a.	Show that $8^{30} - 1$ is divisible by 31 using Fermet to little theorem.	6	L2	CO3
	b.	Solve the system of linear congruence's using CRT $x \equiv 2 \pmod 3$, $x \equiv 3 \pmod 5$, $x \equiv 2 \pmod 7$.	7	L3	CO3
	c.	(i) Find the remainder when $349 \times 74 \times 36$ is divided by 3. (ii) Find the roots of $x^2 + 2x - 3 \equiv 0 \pmod 5$	7	L2	CO3
		Module – 5			
Q.9	a.	Find the rank of the matrix $\begin{bmatrix} -2 & -1 & -3 & -1 \\ 1 & 2 & 3 & 1 \\ 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}$.	6	L2	CO4

	b.	Test for consistency and solve $5x+3y+7z=4$, $3x+26y+2z=9$, $7x+2y+10z=5$	7	L3	CO4
	c.	Find the largest Eigen value and the corresponding Eigen vector, $A=\begin{bmatrix}6 & -2 & 2\\ -2 & 3 & -1\\ 2 & -1 & 3\end{bmatrix}$ with initial vector $[1\ 1\ 1]^T$ carry out 5 iterations.	7	L1	CO4
		OR			
Q.10	**a.**	Solve the system of equations by Gauss Seidal method $83x+11y-4z=95$, $7x+52y+13z=104$, $3x+8y+29z=71$. Carry out three iterations.	8	L4	CO3
	b.	Solve the system of equations by using Gauss-Jordan method: $x+2y+z=8$ $2x+3y+4z=20$, $4x+3y+2z=16$	7	L3	CO4
	c.	Using modern mathematical tool, write a program/code to find the largest eigen value of $A=\begin{bmatrix}1 & 1 & 3\\ 1 & 5 & 1\\ 3 & 1 & 1\end{bmatrix}$	5	L3	CO5

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CBCS SCHEME

USN | | | | | | | | | | BMATS201

Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Mathematics – II for CSE Stream

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. VTU Formula Hand Book is permitted.
3. M : Marks , L: Bloom's level , C: Course outcomes.

		M	L	C
	Module – 1			
Q.1	**a.** Evaluate $\int_{-1}^{+1}\int_{0}^{z}\int_{x-z}^{x+z}(x+y+z)\,dy\,dx\,dz$.	7	L2	CO1
	b. Evaluate $\int_{0}^{a}\int_{x}^{a}(x^2+y^2)\,dy\,dx$ by changing the order of integration.	7	L3	CO1
	c. Show that $\beta(m,n)=\frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$.	6	L2	CO1
	OR			
Q.2	**a.** Evaluate $\int_{0}^{1}\int_{0}^{\sqrt{1-y^2}}(x^2+y^2)\,dy\,dx$ by changing into polar co-ordinates.	7	L3	CO1
	b. Find the area between the parabolas $x^2=y$ and $y^2=x$ using double integration.	7	L3	CO1
	c. Using mathematical number's, write a code to find the area of an ellipse $\frac{x^2}{a^2}+\frac{x^2}{b^2}=1$ by double integration.	6	L3	CO5
	Module – 2			
Q.3	**a.** Find the directional derivative of $\phi=4xz^3-3x^2y^2z$ at (2, -1, 2) in the direction of the vector $2\hat{i}-3\hat{j}+6\hat{k}$.	7	L2	CO2
	b. If $\vec{F}=\nabla(x^3+y^3+z^3-3xyz)$ find div $\vec{F}$ and curl $\vec{F}$.	7	L2	CO2
	c. Prove that spherical co-ordinate system is orthogonal.	6	L3	CO2
	OR			
Q.4	**a.** Find the angle betwen the normals to the surface $xy=z^2$ at the points (4, 1, 2) and (3, 3, -3).	7	L2	CO2
	b. If $\vec{F}=(x+y+az)\hat{i}+(bx+2y-z)\hat{j}+(x+cy+2z)\hat{k}$, find a, b, c such that curl $\vec{F}=0$.	7	L2	CO2
	c. Using mathematical tool write a code to find the curl of $\vec{F}=x^3\hat{i}+y^3\hat{j}+z^3\hat{k}$.	6	L3	CO5
	Module – 3			
Q.5	**a.** Prove that the set $w=\left\{(x,y,z)/x-3y+4z=0\right\}$ is a subspace of $V_3(R)$.	7	L2	CO3

	b. Express the matrix $M=\begin{bmatrix}4 & 7\\ 7 & 9\end{bmatrix}$ as a linear combination of the matrices, $P=\begin{bmatrix}1 & 1\\ 1 & 1\end{bmatrix}, Q=\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}, R=\begin{bmatrix}1 & 1\\ 4 & 5\end{bmatrix}$	7	L2	CO3
	c. Find the basis and dimension of subspace spanned by the vectors, $\{(1,-2,3),(1,-3,4),(-1,1,-2)\}$ of $V_3(R)$.	6	L3	CO3
	OR			
Q.6	**a.** Find the matrix of linear transformation, $T: R^2 \to R^2$ defined by, $T(x,y)=(2x+3y, 4x-5y)$ with respect to the basis, $B_1=\{(1,2),(2,5)\}$ of R^2.	7	L2	CO3
	b. The transformation $G: R^3 \to R^3$ is defined as G(x,y,z)=(x+2y-z, y+z, x+2y-2z). Find the basis and dimension of Im(G).	7	L2	CO3
	c. If $f(t)=t+2$, $g(t)=3t-2$, $h(t)=t^2-2t-3$ and $\langle f,g\rangle=\int_0^1 f(t)g(t)dt$, find (i) $\langle f,g\rangle$ (ii) $\langle f,h\rangle$ (iii) $\|f\|$ and $\|g\|$	6	L3	CO3
	Module – 4			
Q.7	**a.** Find the real root of the equation $x^3-2x-5=0$, correct to three decimal places using Regula-Falsi method. Carry out three iteration.	7	L2	CO4
	b. Using Newton's forward interpolation formula find y at x = 5 from the following table:	7	L2	CO4
	c. Evaluate $\int_0^1 \frac{dx}{1+x^2}$ by using Simpson's $\frac{3}{8}^{th}$ rule taking six equal intervals.	6	L3	CO4
	OR			
Q.8	**a.** Find the real root of the equation, $xe^x-2=0$, correct to three decimal places using Newton-Raphson method. Carry out three iterations.	7	L2	CO4
	b. Using Lagrange's interpolation formula find f(4) given,	7	L2	CO4
	c. Evaluate $\int_0^1 \frac{x}{1+x^2}dx$ by trapezoidal rule considering six equal intervals.	6	L3	CO4
	Module – 5			
Q.9	**a.** Employ Taylor's series method to obtain approximate value of y at x = 0.1 for the differential equation, $\frac{dy}{dx}=2y+3e^x$, $y(0)=0$	7	L2	CO4
	b. Apply Runge-Kutta method of 4^{th} order to find an approximate value of y at x = 0.2, given that $\frac{dy}{dx}=\frac{y-x}{y+x}$, $y(0)=1$.	7	L2	CO4
	c. Apply Milne's method to find y(1.4) given $\frac{dy}{dx}=x^2+\frac{y}{2}$ and the following data : $y(1)=2$, $y(1.1)=2.2156$, $y(1.2)=2.4649$, $y(1.3)=2.7514$.	6	L3	CO5

x:	0	2	4	6	8	10
y:	0	4	56	204	496	980

x :	0	2	3	6
f(x) :	-4	2	14	158

		OR			
Q.10	**a.**	Using modified Euler's method, find $y(0.1)$ given $\frac{dy}{dx} = x - y^2$, $y(0) = 1$. Carry out 3 iterations.	7	L2	CO4
	b.	Using Runge-Kutta method of fourth order solve $\frac{dy}{dx} = \frac{1}{x+y}$, $y(0.4) = 1$ at $x = 0.5$.	7	L2	CO4
	c.	Using mathematical tool, write a code to solve the differential equation $\frac{dy}{dx} = x^2 + y^2$ with $y(0) = 0$, using Taylor's series method at $x = 0.1$.	6	L3	CO5

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CBCS SCHEME

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BESCK204C/ BESCKC204

Second Semester B.E/B.Tech. Degree Supplementary Examination, June/July 2024

Introduction to Electronics and Communication

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
1	a.	What is a regulated power supply? Draw the block diagram of DC power supply and explain the individual blocks with principal components.	8	L2	CO1
	b.	Draw the circuit diagram of voltage doublers and the working principle.	6	L2	CO1
	c.	Mention the advantages of negative feedback in amplifier circuits. With relevant equations and diagram, explain the concept of negative feedback.	6	L2	CO1
		OR			
2	a.	With a neat circuit diagram and waveform explain the working of a full wave bridge rectifier.	8	L2	CO1
	b.	What is an amplifier? Explain its types.	5	L2	CO1
	c.	What is voltage regulator? Draw the circuit diagram of voltage regulator and explain the operation.	7	L2	CO1
		Module – 2			
3	a.	Draw the circuit diagram and input and output waveform of the following operational amplifier circuits. i) Differentiator ii) Integrator iii) Voltage follower.	9	L2	CO2
	b.	Write a note on ideal characteristics of an op-amp.	6	L2	CO2
	c.	What is oscillator? Mention the condition of oscillators.	5	L1	CO2
		OR			
4	a.	With circuit diagram, explain the operation of a Wien bridge oscillator.	8	L2	CO2
	b.	Explain the single state astable oscillator with circuit diagram.	8	L1	CO2
	c.	Define the following operational amplifiers parameters and write their typical values : i) Slew rate ii) Input offset voltage.	4	L1	CO2
		Module – 3			
5	a.	Implement full adder using two half address and one or gate. Reduce the equations for sum and carry.	8	L3	CO3
	b.	Convent the following : i) $(110.1101)_2 = (?)_{10}$ ii) $(847.951)_{10} = (?)_8$ iii) $(CAD.BF)_{16} = (?)_{10}$.	6	L2	CO3
	c.	Write the step-by-step procedure to design a combinational circuit.	6	L1	CO3

		OR			
6	a.	State and prove De Morgan's theorem with its truth table for 2 variables.	**8**	**L1**	**CO3**
	b.	i) Subtract using (r – 1)'s complement method : a) $4456_{10} - 34234_{(10)}$ ii) Subtract using r's complement method a) $1010100_{(2)} - 1000100_{(2)}$.	**6**	**L3**	**CO3**
	c.	Using basic Boolean theorems, prove, i) $(x + y)(x + z) = x + yz$ ii) $xy + xz + y\bar{z} = xz + y\bar{z}$.	**6**	**L3**	**CO3**
		Module – 4			
7	a.	What is an embedded system? Differentiate between embedded system and general purpose computing system.	**8**	**L2**	**CO4**
	b.	Discuss the typical embedded system elements.	**7**	**L2**	**CO4**
	c.	Write a note on classification of embedded systems.	**5**	**L1**	**CO4**
		OR			
8	a.	List the comparison between microprocessor and microcontroller.	**6**	**L1**	**CO4**
	b.	Write short notes on 7 – segment LED display.	**7**	**L2**	**CO4**
	c.	Write a note on transducers. Explain one type of sensor and actuator with its operation.	**7**	**L2**	**CO4**
		Module – 5			
9	a.	List out the advantages of digital communication over analog communication.	**5**	**L1**	**CO5**
	b.	Brief about modern communication system with its block diagram.	**7**	**L2**	**CO5**
	c.	Explain with a neat diagram, the concept of radio wave propagation and its different types.	**8**	**L2**	**CO5**
		OR			
10	a.	Describe the classification of RF (Radio Frequency) spectrum with applications in communication systems.	**7**	**L2**	**CO5**
	b.	Describe about ratio signal transmission and multiple access techniques.	**7**	**L2**	**CO5**
	c.	Explain the following with the help of waveforms : i) ASK ii) FSK iii) BPSK.	**6**	**L2**	**CO5**

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CBCS SCHEME

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Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Introduction to Internet of Things (IoT)

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 IoT. Explain the characteristics of IoT.	05	L2	CO1
	b.	Differentiate between point to point and point to multipoint connection type.	05	L2	CO1
	c.	Explain OSI model with neat block diagram.	10	L2	CO1
		OR			
Q.2	a.	With a neat diagram, explain the interdependency technology for IoT planes.	10	L2	CO1
	b.	Differentiate between IoT and M2M.	05	L1	CO1
	c.	Explain various networking components of IoT.	05	L2	CO1
		Module – 2			
Q.3	a.	Outline the basic differences between transducers sensors and actuators.	05	L2	CO2
	b.	List and explain characteristics of sensor.	05	L1	CO2
	c.	List and explain the Actuators.	10	L2	CO2
		OR			
Q.4	a.	Explain sensorial deviation's with respect to analog and digital sensors.	10	L2	CO2
	b.	Differentiate basic differences between sensors and actuators.	05	L1	CO2
	c.	Outline a simple actuation mechanism.	05	L1	CO2
		Module – 3			
Q.5	a.	Elucidate the different data formats found in IoT network.	10	L2	CO3
	b.	How collaborative processing is different from remote processing?	10	L2	CO3
		OR			
Q.6	a.	Explain IoT device design and selection considerations.	10	L2	CO3
	b.	What is process off-loading? Infer the different data off-loading method.	10	L2	CO3
		Module – 4			
Q.7	a.	Define cloud computing. Describe the advantages of cloud computing.	10	L2	CO4
	b.	With a neat diagram, explain architecture of sensor cloud platform.	10	L2	CO4
		OR			
Q.8	a.	Define Service Level Agreement (SLA). Explain its importance and metrics used while defining SLA.	10	L2	CO4
	b.	With a neat diagram, explain the components of an agriculture IoT.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain the architecture of Healthcare IoT.	10	L2	CO5
	b.	List and brief the advantages of vehicular IoT.	10	L1	CO5
		OR			
Q.10	a.	List the applications of IoT in transportation.	10	L1	CO5
	b.	Define machine learning. List out the advantages of machine learning with diagram.	10	L2	CO5

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CBCS SCHEME

BPWSK106/206

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

Question Paper Version : A

First/Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Professional Writing Skills in English

Time: 1 hrs.] [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. Identify the sentence with a parts of speech error:
   a) She plays the piano very well
   b) They are listening to music
   c) He are playing soccer
   d) We is going to the movies.

2. Which sentence contains a parts of speech error?
   a) He are a good student.
   b) She sings beautifully.
   c) We will eat pizza for dinner.
   d) They are playing soccer outside.

3. In which sentence is the error in parts of speech?
   a) She is reading an interesting book.
   b) I can swimming very well.
   c) They are watching a movie.
   d) He plays the guitar

4. What is the grammatical term for a word that connects words, phrases, or clauses?
   a) Conjunction b) Preposition c) Adverb d) Interjection

5. In the sentence, "I saw him running down the street, "what is the function of the word "running"?
   a) Adjective b) Adverb c) Gerund d) Infinitive

6. What is the function of a participle in a sentence?
   a) To modify a noun or pronoun
   b) To express an action
   c) To function as the subject of a verb
   d) To function as the object of a verb

7. In the sentence, "The book on the table is mine," what is the function of the phrase "on the table"?
   a) Adjective
   b) Adverb
   c) Prepositional phrase
   d) Gerund phrase

8. Which sentence has a grammatical error?
   a) He enjoy playing basketball.
   b) They is going to the beach.
   c) She have finished her homework.
   d) We am going to the park.

9. What is the grammatical mistake in the sentence: "The dog laying in the sun"?
   a) Verb tense
   b) Subject-verb agreement
   c) Verb form
   d) Word choice

10. What is the grammatical mistake in the sentence: "The car is blue, and the truck is red color"?
   a) Run-on sentence
   b) Comma splice
   c) Redundancy
   d) Fragment sentence

11. Which sentence contains a grammatical error?
   a) The cat is sleeping on the couch.
   b) She are a doctor.
   c) They is going to the park.
   d) I like to sing.

12. What is the grammatical error in the sentence: "He don't have any money"?
   a) Subject-verb agreement
   b) Pronoun usage
   c) Tense consistency
   d) Sentence structure

13. Which of the following sentences has a grammatical error?
   a) She sings beautifully.
   b) We am going to the park.
   c) They are watching a movie.
   d) He plays basketball every weekend.

14. Which sentence demonstrates correct subject-verb agreement?
   a) The dogs barks loudly in the park.
   b) The dog bark loudly in the park.
   c) The dogs bark loudly in the park.
   d) The dog barks loudly in the park.

15. Which option demonstrates correct subject-verb agreement?
   a) The team are playing well this season.
   b) The team is playing well this season.
   c) The team were playing well this season.
   d) The team am playing well this season.

16. Which of the following sentences is in the present perfect tense?
   a) She will go to the store.
   b) She is going to the store.
   c) She went to the store.
   d) She has gone to the store.

17. What is the future tense of the verb "to swim"?
   a) Swim
   b) Swam
   c) Swimming
   d) Will swim

18. Which tense is used to describe actions that are ongoing or happening at the moment?
   a) Present simple
   b) Past simple
   c) Present continuous
   d) Past continuous

19. What is the past tense of the verb "to eat"?
   a) Eating
   b) Eaten
   c) Ate
   d) Eat

20. In the sentence, "I have lived here for ten years," which tense is used for the verb "have lived"?
   a) Present simple
   b) Present perfect
   c) Past simple
   d) Past perfect

21. What is the future tense of the verb "to run"?
a) Runs b) Running c) Ran d) Will run

22. Which of the following sentences is in the past continuous tense?
a) She has been studying all day.
b) She studied for the exam last night.
c) She was studying when the phone rang.
d) She will study tomorrow.

23. Which of the following refers to words that have similar meanings?
a) Synonyms b) Antonyms c) Homonyms d) Homophones

24. What term describes words that are spelled the same but have different meanings and sometimes different pronunciations?
a) Synonyms b) Antonyms c) Homonyms d) Homophones

25. Complete the analogy: Cat is to kitten as dog is to ____.
a) Cub b) Puppy c) Foal d) Chick

26. Choose the correct usage: "Yours" versus "You're".
a) Your going to love the party.
b) You're going to love the party.
c) Youre going to love the party.
d) You are going to love the party.

27. Choose the correct usage: "Its" versus "It's".
a) Its a beautiful day outside.
b) It's a beautiful day outside.
c) Its raining heavily
d) It is raining heavily.

28. Choose the correct collocation:
a) Make an appointment.
b) Do an appointment.
c) Take an appointment.
d) Give an appointment.

29. Identify the correct collocation:
a) Take a decision
b) Make a decision
c) Do a decision
d) Give a decision

30. Which contraction is correct for "they have"?
a) they've b) they're c) they'd d) they'll

31. Choose the correct contraction for "we will":
a) we're b) we've c) we'd d) we'll

32. What is the contraction of "cannot"?
a) can't b) couldn't c) can've d) can't've

33. Rearrange the words to form a grammatically correct sentence" "Yesterday, went, to, I, store, the."
a) Yesterday I went to store the.
b) Went I to the store yesterday.
c) Yesterday I went to the store.
d) I went to the store yesterday.

34. Rearrange the words to form a coherent sentence: "She books, enjoys, reading, many, by, written, different, authors."
a) She enjoys reading many books by different authors written.
b) She enjoys readings by many books written different authors.
c) She enjoys reading many books written by different authors.
d) She by different enjoys readings many books written authors.

45. Where is the error in the sentence: "Their going to the beach tomorrow."
a) Their b) going c) to the beach d) tomorrow

46. Identify the error in the sentence: "The book is laying on the table."
a) The b) book c) is laying d) on the table

47. Which option improves the sentence: "He plays good football."
a) He plays well football. b) He plays football good.
c) He plays football well. d) He plays football goodly.

48. Choose the improved version of the sentence" "The weather is too much hot today."
a) The weather is very hot today. b) The weather is too hot today.
c) The weather is much hot today. d) The weather is hot too much today.

49. Which option corrects the sentence: "I am not feeling good today."
a) I am not feeling well today. b) I am not feeling goodly today.
c) I am not feeling better today. d) I am not feeling good today.

50. Choose the corrected version of the sentence: "He goes to gym regular."
a) He goes to gym regularly. b) He goes to the gym regular.
c) He goes to the gym regularly. d) He goes to gym regulars.

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35. Rearrange the words to form a grammatically correct sentence: "In, I, morning, the go, always, for, a, run."
a) Always in the morning go I for a run.
b) In the morning always I go for a run.
c) I always go for a run in the morning.
d) In the always morning I go for a run.

36. Rearrange the words to form a coherent sentence: "Hiking, in, we, enjoyed, the, mountains, beautiful, the."
a) We enjoyed hiking in the mountains the beautiful.
b) In the mountains we enjoyed hiking the beautiful.
c) We enjoyed the beautiful mountains in the hiking.
d) The beautiful mountains in the hiking we enjoyed.

37. Identify the error in the sentence: "The dog wagged it's tail excitedly."
a) The b) dog c) wagged d) it's

38. What is the active voice form of the sentence: "The cake was baked by Sarah"?
a) Sarah has baked the cake. b) Sarah had baked the cake.
c) Sarah bakes the cake. d) Sarah will bake the cake.

39. Which option correctly transforms the sentence into passive voice: "The teacher teaches the students"?
a) The teacher is teaching by the students.
b) The students are being taught by the teacher.
c) The teacher was teaching the students.
d) The students were taught by the teacher.

40. What is the reported speech form of the direct speech: "He said, 'I am leaving for London tonight'"?
a) He said that he leaves for London tonight.
b) He said that he left for London tonight.
c) He says that he leaves for London tonight.
d) He says that he left for London tonight.

41. Choose the correct transformation of the sentence into reported speech: "She said, 'I have already finished my homework.'"
a) She said that she already finished her homework.
b) She says that she has already finished her homework.
c) She said that she has already finished her homework.
d) She says that she had already finished her homework.

42. Identify the error in the sentence: "He don't have enough money to buy a car."
a) He b) don't c) have d) enough

43. Which part of the sentence contains the error: "The student's scored high marks in the exam."
a) The b) student's c) scored high marks d) in the exam

44. Find the error in the sentence: "She sings beautiful."
a) She b) sings c) beautiful d) no error

CBCS SCHEME

USN | | | | | | | | | |

BPHYS102/202

First/Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Applied Physics for CSE Stream

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.	Obtain the expression for energy density using Einstein's coefficients of absorption and emission.	08	L2	CO1
	b.	Define angle of acceptance. Explain types of optical fibres with neat ray diagram and refractive index profile.	07	L2	CO1
	c.	Find the ratio of population of the two states in a He-Ne laser that produce light of wavelength 6328 A° at 27°C.	05	L3	CO1
		OR			
Q.2	a.	Derive an expression for numerical aperture of an optical fibre in terms of fraction of RI.	08	L2	CO1
	b.	What is active medium? Explain construction and working of semiconductor laser.	07	L2	CO1
	c.	For a 30 cm long fiber attenuation 0.8 dB/km, find the output power if a 200 μW power is launched?	05	L3	CO1
		Module – 2			
Q.3	a.	Define graph velocity, phase velocity, wave function and probability density.	08	L2	CO2
	b.	Derive time-independent Schrödinger wave equation.	07	L2	CO2
	c.	Which has shorter wavelength, a 10 eV photon or a 10 eV electron? Explain.	05	L2	CO2
		OR			
Q.4	a.	State and explain Heisenberg's uncertainty principle. Explain principle of complimentarity.	07	L2	CO2
	b.	Derive the wave function of a particle inside infinite potential well of width 'a' using normalization condition.	08	L2	CO2
	c.	Compute the energy of the lowest three levels for an electron in a square well of width 3 A°.	05	L3	CO2
		Module – 3			
Q.5	a.	What is Block Sphere? Represent | 0 > and |1 > on the Bloch sphere.	08	L2	CO1
	b.	Explain probability, normalization and quantum superposition.	07	L2	CO1
	c.	Using two X-gates in series, show that two not gates in series are equivalent to a quantum wire.	05	L2	CO1
		OR			
Q.6	a.	Discuss two qubit quantum NOT gate or controlled NOT gate with four different input states.	08	L2	CO3
	b.	State Moore's law. Show that S gate can be formed by connecting two T gates in series.	07	L3	CO3
	c.	Find the inner product basis of states | 1 > and | 0 >, and draw conclusions on the result.	05	L3	CO3

		Module – 4			
Q.7	**a.**	State Mathiessen's rule. Discuss variation of Fermi factor with temperature and energy.	**08**	**L2**	**CO4**
	b.	Define critical field. Write a note on high temperature super conductors.	**07**	**L1**	**CO4**
	c.	In a solid, consider the energy level lying 0.01 eV below the fermilevel. What is the probability of this level not being occupied by an electron?	**05**	**L3**	**CO4**
		OR			
Q.8	**a.**	Define super conductors. Give brief account on BCS theory of super conductors.	**08**	**L2**	**CO4**
	b.	What is density of states? Explain failures of classical free electron theory.	**07**	**L2**	**CO4**
	c.	Find the transition temperature of a metal whose critical magnetic field is 5×10^3 A/m at 6 K and 2×10^4 A/m at 0 K.	**05**	**L3**	**CO4**
		Module – 5			
Q.9	**a.**	What are frames and frames per seconds? Explain how the odd rule can be applied to place the object in specific frames.	**08**	**L2**	**CO5**
	b.	Explain Monte-Carlo method applied to approximating the value of x.	**07**	**L2**	**CO5**
	c.	While animating a speeding up car the total distance travelled over 6 frames is 25 m, calculate the basic distance.	**05**	**L2**	**CO5**
		OR			
Q.10	**a.**	Define jump magnification. Explain how to calculate jump timing.	**07**	**L2**	**CO5**
	b.	Explain Poisson and normal distribution with their probability functions.	**08**	**L2**	**CO5**
	c.	The number of particles emitted per second by a random radioactive source has a Poison distribution with $\alpha = 4$. Calculate the probability of P(x = 0), P(x = 1) and P(x = 2).	**05**	**L3**	**CO5**

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CBCS SCHEME

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BPOPS103/203

First/Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Principles of Programming Using C

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.

			M	L	C
		Module – 1			
Q.1	a.	Discuss the structure of 'C' program with an example.	8	L2	CO1
	b.	What are Variables? Write the rules to declare a variable.	6	L2	CO2
	c.	What are escape sequences? Mention the escape sequences of 'C' language with their meaning.	6	L2	CO2
		OR			
Q.2	a.	Explain any two output devices in detail.	6	L2	CO1
	b.	With an example, explain Input – Output statements in 'C'.	6	L2	CO2
	c.	Discuss the classification of Computers.	8	L2	CO1
		Module – 2			
Q.3	a.	List all decision control statements in 'C'. Explain else – if ladder and nested if with its syntax and example.	8	L2	CO2
	b.	Write a 'C' program to simulate a calculator using switch statement.	6	L3	CO2
	c.	Explain break and continue statement with example.	6	L3	CO2
		OR			
Q.4	a.	Explain the for Loop with its syntax. Write a 'C' program to find whether a given number is prime or not.	8	L3	CO2
	b.	Differentiate while and do – while loops with example.	6	L3	CO2
	c.	What are nested loops? Give example. Write a 'C' program to display the pattern shown below. 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5	6	L3	CO2
		Module – 3			
Q.5	a.	Define Function. Write the syntax of a function. Explain the categories of function with examples.	10	L2	CO2

	b.	Briefly explain the storage classes supported by 'C' language.	10	L2	CO2
		OR			
Q.6	a.	Differentiate pass by value end pass by address parameter passing techniques.	5	L3	CO3
	b.	How 2 – dimensional arrays are declared and initialized? Write a 'C' program to find the transpose of a matrix.	7	L4	CO3
	c.	Define Recursion. Mention the properties of Recursion function. Write a 'C' program to find GCD of 2 numbers using recursive function.	8	L4	CO3
		Module – 4			
Q.7	a.	What are Strings? Explain the 'C' function used to read and write characters.	6	L2	CO3
	b.	Write a program to find length of given string without using built in function.	6	L3	CO2
	c.	What is a Pointer? How pointer are declared and initialized? Mention the various operations that are carried out on pointers.	8	L4	CO4
		OR			
Q.8	a.	Write a program to copy and concatenate from one string to another.	8	L3	CO5
	b.	Explain any 6 string manipulation functions.	6	L3	CO4
	c.	Write a 'C' program to find sum, mean, standard deviation of all elements in an array using pointers.	6	L5	CO5
		Module – 5			
Q.9	a.	What is Union? Give its syntax. Differentiate unions and structures.	8	L2	CO4
	b.	Explain with an example array of structures and arrays within structure.	6	L2	CO4
	c.	Write a note on Structures and Functions.	6	L3	CO4
		OR			
Q.10	a.	What is a File? Explain different modes of File with example.	8	L2	CO5
	b.	Write a note on Enumerated Data type.	6	L2	CO4
	c.	Write a 'C' program to copy the contents from one file to another.	6	L4	CO5

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CBCS SCHEME

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BESCK204D/BESCKD204

Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Introduction to Mechanical Engineering

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.

			M	L	C
		Module – 1			
Q.1	**a.**	Discuss the Role of Mechanical Engineer in society.	**5**	**L2**	**CO1**
	b.	Explain the trends in mechanical engineering industry.	**7**	**L2**	**CO1**
	c.	Enumerate the importance of mechanical Engineer in Manufacturing and Automobile industry.	**8**	**L2**	**CO1**
		OR			
Q.2	**a.**	Briefly explain the causes for Global warming.	**5**	**L2**	**CO1**
	b.	Sketch and explain Wind mill working.	**7**	**L2**	**CO1**
	c.	Explain the construction of Hydel power plant with a neat sketch.	**8**	**L2**	**CO1**
		Module – 2			
Q.3	**a.**	Explain the knurling operation.	**5**	**L2**	**CO2**
	b.	Explain the Drilling and Boring operation with suitable sketches.	**7**	**L2**	**CO2**
	c.	Briefly explain the following milling operation : (i) Plane milling (ii) Slot milling	**8**	**L2**	**CO2**
		OR			
Q.4	**a.**	Write the advantages and applications of CNC.	**5**	**L1**	**CO2**
	b.	Explain briefly the CNC configuration with a block diagram.	**7**	**L2**	**CO2**
	c.	Discuss the steps in 3D printing.	**8**	**L2**	**CO2**
		Module – 3			
Q.5	**a.**	Sketch and explain the IC Engine components.	**4**	**L2**	**CO3**
	b.	Briefly explain 4-stroke petrol engine.	**8**	**L2**	**CO3**
	c.	Explain the 4-stroke diesel engine with appropriate sketches.	**8**	**L2**	**CO3**
		OR			
Q.6	**a.**	List the advantages, disadvantages and applications of EV.	**6**	**L1**	**CO3**
	b.	Explain briefly the components of EV with a sketch.	**7**	**L2**	**CO3**
	c.	Discuss the types of EV.	**7**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Discuss the characteristics and applications of Aluminium alloy.	**6**	**L1**	**CO4**
	b.	Explain the following Engineering materials: (i) Ceramics (ii) Glass	**7**	**L2**	**CO4**
	c.	Write short note on : (i) Polymers (ii) SNA	**7**	**L2**	**CO4**

		OR			
Q.8	**a.**	Explain the types of flames in Gas Welding process.	**6**	**L2**	**CO4**
	b.	Differentiate between soldering, brazing and welding.	**7**	**L2**	**CO4**
	c.	With a neat sketch, explain Arc welding process.	**7**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Differentiate open loop and closed loop control system.	**6**	**L2**	**CO5**
	b.	Explain the types of automation.	**7**	**L2**	**CO5**
	c.	Explain the types of Robt configurations (any 2) with sketches.	**7**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain the characteristics of IOT.	**6**	**L2**	**CO5**
	b.	Discuss with a block diagram, the physical design of IOT.	**7**	**L2**	**CO5**
	c.	Explain the types of communication models.	**7**	**L2**	**CO5**

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CBCS SCHEME

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BPLCK205B/BPLCKB205

Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Introduction to Python Programming

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.	Explain elif, for, while statement in python with example for each.	06	L2	CO1
	b.	List and explain math operators used in python with example.	06	L2	CO1
	c.	Develop a program to read the name and year of birth of a person. Print whether person is senior citizen or not.	08	L3	CO1
		OR			
Q.2	a.	Explain local and global scope with example.	06	L2	CO1
	b.	With an example, explain the following built in function : (i) print( ) (ii) input( ) (iii) len( )	06	L2	CO1
	c.	Develop a program to generate Fibonacci number of length (N). Read N from the console.	08	L3	CO1
		Module – 2			
Q.3	a.	Explain the following list methods with example : (i) append( ) (ii) insert( ) (iii) sort( )	08	L2	CO2
	b.	Differentiate List and dictionaries.	04	L1	CO2
	c.	Develop a program using dictionary to print Ten most frequently appearing word in a text file.	08	L3	CO2
		OR			
Q.4	a.	Explain the following method with example: (i) key( ) (ii) values( ) (iii) items( ) in dictionary	08	L2	CO2
	b.	Show that List are Mutable.	04	L1	CO2
	c.	Develop a program to compute Mean, Variance, Standard deviation with message.	08	L3	CO2
		Module – 3			
Q.5	a.	Explain the following string method with example: (i) isalpha( ) (ii) isalnum( ) (iii) isdecimal( ) (iv) isspace( )	08	L1	CO3

	b.	Differentiate between absolute and relative path in specify file path.	04	L2	CO3
	c.	Write a program to accept string and display total number of alphabet.	08	L3	CO3
		OR			
Q.6	a.	Explain the following method with example: (i) upper( ) (ii) lower( ) (iii) is_upper( ) (iv) is_lower( )	08	L2	CO3
	b.	Explain how to save variable with Shelve module.	04	L2	CO3
	c.	Develop a program to sort the content of a text file and write the sorted content into separate file.	08	L2	CO3
		Module – 4			
Q.7	a.	How do you copy files and folders using Shutil module? Explain in detail.	10	L2	CO3
	b.	With suitable code, explain Backup a folder into a Zip files, clearly mention steps in detail.	10	L3	CO3
		OR			
Q.8	a.	What are assertions? Write the content of an assert statement. Explain then with example.	10	L2	CO3
	b.	Explain logging module with example how files and folder can be permanently deleted.	10	L2	CO3
		Module – 5			
Q.9	a.	What is a class? How to define class in python? How to initiate a class and how the class members are accessed?	10	L2	CO4
	b.	What is polymorphism? Demonstrate polymorphism with function to find histogram to count the number of times each letter appears in a word and in sentences.	10	L3	CO4
		OR			
Q.10	a.	Discuss operator overloading. Mention any five operators with respective special function to be overloaded in python.	10	L2	CO4
	b.	Define pure function. Illustrate with an example.	10	L3	CO4

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CBCS SCHEME

BICOK107/207

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Question Paper Version : A

First/Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

Indian Constitution

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. Ultimate source of authority under the Constitution lies in ____
   a) Parliament b) People of India
   c) Judiciary d) Executive

2. The Constitution of India was adopted by the Constituent Assembly in the year or date __
   a) 26 - 01-1950 b) 29 – 11 - 1949 c) 15 – 08 - 1947 d) 09 – 09 - 1946

3. The basic objectives of Indian Constitution are found in ____
   a) Fundamental Rights b) Directive Principles of State Policy
   c) Preamble d) Fundamental Duties

4. Who was the Permanent Chairman of the Constituent Assembly?
   a) Mahatma Gandhi b) Jawaharlal Nehru
   c) Dr. B.R. Ambedkar d) Dr. Rajendra Prasad

5. Who was the leader of the Extremist group to fight against British Rule?
   a) Sardar Vallabai Patel b) Mahatma Gandhi
   c) Subhash Chandra Bose d) Dr. Rajendra Prasad

6. Government of India set of 1919 introduced a system of ____
   a) Federal b) Diarchy c) Democracy d) Anarchy

7. The Cabinet mission came to India in the year _____
   a) 1935 b) 1944 c) 1945 d) 1946

8. How much time was taken by drafting Committee to draft the Indian Constitution?
   a) 2 years 11 months 18 days b) 3 years 11 months 8 days
   c) 2 years 8 months 11 days d) 1 year 11 months 18 days

9. How many members were appointed for the drafting Committee of the Constitution excluding Chairman?
a) 5 b) 6 c) 8 d) 7

10. The term 'Unitary' means :
a) Concentration of Powers
b) Division of Powers
c) Absolute Power
d) All of these

11. Which is the key to open the minds of the makers of the Constitution?
a) Fundamental Rights
b) Directive Principles
c) Fundamental Duties
d) Preamble

12. "Rights are not only privileges but they are the weapons in the hands of people to control Government", who gave this statement?
a) Dr. Rajendra Prasad
b) Dr. B.N. Rao
c) Dr. Ambedkar
d) S.V. Patel

13. The practice of untouchability is prohibited under ___
a) Article 14 b) Article 15 c) Article 16 d) Article 17

14. Right to Life under Art. 21 does not include
a) Right to Education
b) Right to Dignity
c) Right to Suicide
d) Right to Livelihood

15. Reasonable restrictions can be imposed by the State under :
a) Art. 19 (1) (a) to (g)
b) Art. 19 (2) to (6)
c) Art. 20 (a) to (c)
d) Art. 21

16. Fundamental Rights under Part – III can be protected by
a) Supreme Court
b) Parliament
c) Union Chief Executive
d) Attorney – General of India

17. 'Writ of Mandamers' cannot be issued against :
a) State Government
b) President of India
c) Prime Minister of India
d) Public Servant

18. An arrested person is to be produced before the Magistrate or Court within :
a) One month b) 3 month c) 24 hours d) 48 hours

19. No Person is to be punished twice for the same offence "is The Fundamental Right available under Article :
a) 19 b) 20 c) 21 d) 22

20. What is the meaning of "Habeas Corpus"?
a) You may have the body
b) To do a duty
c) On what Authority?
d) None of these

21. "Right to Press" (news media) is included under :
a) Right to Freedom of Speech and expression
b) Right to Assembly
c) Right to trade
d) Right to move

22. Right to Minorities are guaranteed under Articles :
a) 14 to 16 b) 21 to 24 c) Arts. 29 & 30 d) 17 and 18

23. The Directive principles of State Policy are :
a) Enforceable by Court b) Not enforceable by Court
c) Only a direction to State Government d) None of these

24. Which provision of the Constitution recognizes International Law?
a) Art. 39 b) Art. 48 c) Art. 51 d) Art. 44

25. DPSP (Part – IV) directs the State to secure to all workers :
a) Minimum wages b) Living wages c) Standard wages d) Fair wages

26. Who is having the duty to send the children to School?
a) State b) Parent / Guardian c) Zilla Panchayat d) None of these

27. Which Article enumerates Fundamental duties?
a) Art. 41 b) Art. 51 c) 51 - A d) Art. 52

28. How many members are nominated to Rajya Sabha by the President?
a) Two b) One c) Twelve d) Eight

29. Who can certify the money bill immediately after introducing in Lok Sabha?
a) Prime Minister b) Speaker c) Finance Minister d) Any one

30. Who can dissolve Lok Sabha?
a) Prime Minister b) Speaker c) President d) Vice - President

31. Who can pass an Ordinance in the State Government?
a) Governor b) Chief Minister c) Law Minister d) Speaker

32. Who can appoint the Chief Justice of Supreme Court?
a) Prime Minister b) Law Minister c) Vice - President d) President

33. What is the minimum age to become the member of Legislative Assembly?
a) 21 years b) 25 years c) 30 years d) 35 years

34. Special provisions are given for
a) Backward classes b) Women & Children
c) Senior Citizens d) Both 'a' and 'b'

35. How many kinds of emergencies are incorporated in the Constitution?
a) 5 Types b) 4 Types c) 3 Types d) 2 Types

36. Who is to act on the advice of the Council of Ministers?
a) Prime Minister b) President c) Vice - President d) Governor

37. The President cannot issue the proclamation of emergency after 1978 for the reason :
a) Internal disturbance b) Terrorism inside India
c) Armed rebellion d) Covid like Epidemic diseases

38. Who can recommend for the declaration of State emergency?
a) Chief Minister b) Governor c) State Cabinet d) None of these

39. Which are the Articles not to be suspended during National Emergency?
a) Arts. 14 to 16 b) Arts. 19 and 22 c) Arts. 20 and 21 d) Arts. 29 to 30

40. Who appoints the Chief Election Commissioner of India?
a) President b) Prime Minister
c) Chief Justice of India d) Cabinet

41. How many members are there in the Election Commission at present?
a) Seven b) Five c) Four d) Three

42. There is no provision in the Indian Constitution for the impeachment of :
a) President b) Chief Justice of Supreme Court
c) Chief Election Commissioner d) Governor

43. Election Commission does not conduct Election to
a) President b) Vice - President c) Speaker d) MPS

44. Who can amend the provisions of the Constitution?
a) Parliament b) Cabinet c) President d) State Legislative

45. The Amendment procedure laid down in the Indian Constitution under the Article :
a) Art. 324 b) Art. 360 c) Art. 368 d) Art. 378

46. Which one of the following Amendments decreased the age of voting from 21 years to 18 years.
a) 44th Amendment b) 61st Amendment c) 62nd Amendment d) 72nd Amendment

47. By which Amendment the Fundamental Duties of Citizens was included in the Constitution of India?
a) 44th b) 38th c) 41st d) 42nd

48. Who has been made responsible for free and fair Elections in the Country?
a) President b) Chief Justice of Supreme Court
c) Prime Minister d) Chief Election Commissioner

49. The duration of State emergency in the first instance is
a) One month b) Two months c) 3 months d) Six months

50. The concept of Election is based on ___
a) Federalism b) Secularism c) Socialism d) Democracy

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