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18EE51

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Management and Entrepreneurship

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define Management. What is meant by "Management Process"? **(05 Marks)**

b. Distinguish between management and administration. Comment on the nature of management. Is it science or an act? **(05 Marks)**

c. What are the roles of a Manager? Explain. **(10 Marks)**

OR

2 a. What is planning? What are the steps involved in it? Explain the importance of planning. **(06 Marks)**

b. Define vision, mission and values. What is the purpose of each? **(04 Marks)**

c. What are limitations of planning? Give any five differences between strategies planning and tactical planning **(10 Marks)**

Module-2

3 a. Differentiate between recruitment and selection. Describe the steps involved in the selection process. **(10 Marks)**

b. What is meant by departmentalization? List and explain different bases for departmentalization. **(06 Marks)**

c. What are the importance steps in the process of organizing? **(04 Marks)**

OR

4 a. Give any four differences between a leader and a manager. **(04 Marks)**

b. What are the important characteristics of leadership? **(06 Marks)**

c. Explain Maslow's need hierarchy theory. How does it compare with two factor theory? **(10 Marks)**

Module-3

5 a. Define Entrepreneurship. Explain the entrepreneurial development process. **(10 Marks)**

b. List and explain three entrepreneurial development models. **(10 Marks)**

OR

6 a. What is social audit? What are its benefits and limitations? **(05 Marks)**

b. Write short notes on: (i) Business ethics (ii) Corporate governance. **(05 Marks)**

c. Discuss the social responsibilities of business towards different groups. **(10 Marks)**

Module-4

7 a. Define SSI. What are the characteristics of SSI? **(06 Marks)**

b. Define the following:
(i) Tiny unit (ii) Ancillary unit (iii) Export oriented Unit
(iv) Small Scale Service and Business Enterprises (SSSBEs) **(04 Marks)**

c. Explain the Exogeneous and Endogeneous factors causing sickness in SSI. **(10 Marks)**

OR

8 a. List and explain all the services provided by SIDO. **(10 Marks)**

b. Write short notes on: (i) SFCs (ii) SSIDCs **(10 Marks)**

Module-5

9 a. What is project feasibility analysis? List and explain types of project feasibility analysis. **(10 Marks)**

b. What is the significance of a project report? List and explain the contents of a project report. **(10 Marks)**

OR

10 a. Discuss the concept and importance of network analysis. **(06 Marks)**

b. What are the steps involved in PERT? List its advantages and limitations. **(08 Marks)**

c. What is CPM? Explain. **(06 Marks)**

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18EE52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Microcontroller

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Draw and explain the architecture of 8051 microcontroller. **(08 Marks)**

b. Compare the microprocessor and microcontroller. **(06 Marks)**

c. Explain with the help of diagram, how to interface external code memory to 8051 microcontroller. **(06 Marks)**

OR

2 a. Describe the functions of various pins of 8051 microcontroller with pin diagram. **(08 Marks)**

b. Explain the various addressing modes of 8051 microcontroller examples. **(08 Marks)**

c. List and explain the criteria for choosing a microcontroller. **(04 Marks)**

Module-2

3 a. Define assembler directives. Explain the assembler directives of 8051 microncontroller with examples. **(08 Marks)**

b. Write a program to load the accumulator with the value 55H and complement the ACC 700 times. **(06 Marks)**

c. Write a program to count positive and negative numbers in a given array. **(06 Marks)**

OR

4 a. Explain the operation performed by the following instructions with examples.
i) DJNZ R1, rel ii) DA A iii) MOVX A, @ DPTR iv) SWAP A. **(08 Marks)**

b. Write a program to find factorial of a number. **(06 Marks)**

c. Write an assembly language program to toggle the bits of port P1. **(06 Marks)**

Module-3

5 a. Write 8051 program to generate square wave with t_{ON} = 3ms and t_{OFF} = 10ms an all pins of port 0. **(08 Marks)**

b. Explain the bit structure of TMOD register. **(06 Marks)**

c. Write an 8051 C program to convert FD hex to decimal and display the digits on P0, P1 and P2. **(06 Marks)**

OR

6 a. Explain Mode – 2 programming of 8051 timer. Describe the different steps to program in Mod 2. **(08 Marks)**

b. Write a 8051 C program to bring in a byte of data serially one bit at a time Via P2.0. The LSB should come in first. **(06 Marks)**

c. Write a 8051 C program to toggle all the bites of port P2 continuously with some delay in between. Use Timer 0, 16 bit mode to generate the delay. **(06 Marks)**

Module-4

7 a. Compare Interrupt and Polling. Explain the steps in executing an interrupt. **(08 Marks)**
b. Write an 8051 C program to transfer the message "YES" serially at 9600 baud, 8 bit data, 1 stop bit. Do this continuously. **(06 Marks)**
c. Explain the importance of TI and RI flags. **(06 Marks)**

OR

8 a. Explain the bit constants of SCON and PCON registers. **(08 Marks)**
b. Explain the various handshaking signals of RS232 communication standard. **(06 Marks)**
c. Write a 8051 C program using interrupts to generate 10000 Hz frequency on P2.1 using To 8 bit auto reload and also use Timer 1 as event counter to count up 1Hz pulse and display on P0. Pulse is connected to Ex1. Assume XTAL = 11.0592MHz. Baud rate = 9600. **(06 Marks)**

Module-5

9 a. Interface LCD to 8051 microcontroller and write an 8051 assembly/8051 C program to send VTU to LCD display using busy flag. **(08 Marks)**
b. Write an ALP to rotate stepper motor continuously. **(06 Marks)**
c. Explain the block diagram of 8255 chip. **(06 Marks)**

OR

10 a. Explain the H-Bridge configuration of DC motor and also show interfacing of 8051 microcontroller with DC motor through opto isolator. **(08 Marks)**
b. Show interfacing between 8051 microcontroller and keyboard and explain scanning and indentifying the key pressed. **(06 Marks)**
c. Explain the 8051 microcontroller interfacing to ADC. **(06 Marks)**

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18EE53

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Power Electronics

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With neat circuit diagram, input and output waveforms, explain the different types of power electronic converters. **(10 Marks)**

b. With block diagram, explain the peripheral effects of power electronics equipments. **(06 Marks)**

c. List the major applications of power electronics. **(04 Marks)**

OR

2 a. Explain the reverse recovery characteristics of power diode, with neat waveform. And also obtain an expression for peak reverse current. **(08 Marks)**

b. A single-phase full bridge diode rectifier is supplied from 230V, 50Hz source. The load consists of R = 10Ω and a large inductance so as to render the load current constant. Determine:

i) Average values of output voltage and output current.

ii) Average and rms values of diode currents

iii) rms values of output and input currents and pf. **(06 Marks)**

c. Explain the operation of single phase full wave rectifier with RL load. Derive the expression for RMS o/p current for continuous load current. **(06 Marks)**

Module-2

3 a. Explain the switching characteristics of BJT. **(10 Marks)**

b. A power transistor has its switching waveforms as shown in Fig.Q.3(b). If the average power loss in the transistor is limited to 300W, find the switching frequency at which this transistor can be operated. **(06 Marks)**

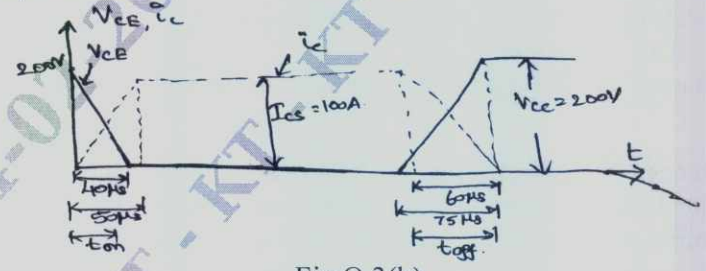

Fig.Q.3(b)

c. List the applications of BJT, MOSFET and IGBT. **(04 Marks)**

OR

4 a. With necessary waveforms explain switching characteristics of IGBT. **(05 Marks)**

b. Sketch the structure of n-channel enhancement type MOSFET and explain its working principle. **(10 Marks)**

c. With neat circuit diagram, explain pulse transformer and optscoupler. **(05 Marks)**

Module-3

5 a. Derive an expression for the anode current of thyristor with the help of two transistor analogy. **(05 Marks)**

b. With the help of neat sketch, explain the static V-I characteristics of an SCR. Define latching and holding current. **(10 Marks)**

c. For an SCR, gate-cathode characteristic is given by $V_g = 1 + 10Ig$. Gate source voltage is a rectangular pulse of 15V with 20μ sec duration. For an average gate power dissipation of 0.3W and a peak gate drive power of 5W, compute:

i) The resistance to be connected in series with the SCR gate.

ii) The triggering frequency

iii) The duty cycle of the triggering pulse. **(05 Marks)**

OR

6 a. Explain different methods of turning on of SCR. **(08 Marks)**

b. Explain the working of UJT triggering technique of SCR with neat waveform. **(06 Marks)**

c. For the circuit shown in Fig.Q.6(c) calculate:

i) The maximum values of di/dt and dv/dt for the SCR

ii) Find the rms and average current ratings of the SCR for firing angle delay of 90° and 150°.

iii) Suggest a suitable voltage rating of the SCR. **(06 Marks)**

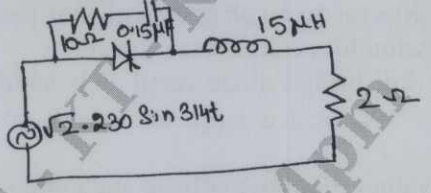

Fig.Q.6(c)

Module-4

7 a. A single phase half wave SCR circuit of RL load, draw waveforms for source voltage, load voltage, load current and voltage across the SCR for a given firing angle α. Hence obtain expressions for average and rms load voltages in terms of source voltage and firing angle. **(08 Marks)**

b. A single phase full converter is supplied from 230V, 50Hz source. The load consists of R = 10Ω, a large inductance so as to render the load current constant. For a firing angle delay of 30°, determine.

i) Average output voltage

ii) Average output current

iii) Average and rms values of SCR currents

iv) The power factor. **(06 Marks)**

c. With neat circuit diagram and waveforms explain dual converters. **(06 Marks)**

OR

8 a. With necessary waveforms, explain the operation of single phase AC voltage controller with RL load. Derive an expression for rms output voltage. **(08 Marks)**

b. A single phase voltage controller is employed for controlling the power flow from 230V, 50Hz source into a load circuit consisting of R = 3Ω, WL = 4Ω. Calculate:

i) The control range of firing angle

ii) Max value of rms load current

iii) Max values of average and rms SCR currents

iv) Max power and power factor

v) Max possible value of di/dt that may occur in SCR

vi) The conduction angle for α = 0° and α = 120° assuming a gate pulse of duration π radian. **(06 Marks)**

c. Briefly explain the application of AC voltage controller. **(06 Marks)**

Module-5

9 a. Classify the different types of choppers with the help of circuit and quadrant diagram. Explain the operation of two quadrant chopper. **(08 Marks)**

b. Derive an expression for average output voltage with a neat circuit and waveform of step up chopper. **(08 Marks)**

c. A step-up chopper has input voltage of 220V and output voltage of 660V. If the non-conducting time of thyristor-chopper is 100μs, compute the pulse width of output voltage. Incase pulse width is halved for constant frequency operation, find the new output voltage. **(04 Marks)**

OR

10 a. With circuit diagram, explain the operation of single phase full bridge inverter. **(10 Marks)**

b. With neat circuit diagram and waveforms explain the operations of transistorized current source inverter. **(10 Marks)**

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18EE54

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Signals and Systems

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Determine whether the following signals are energy or power signals or neither. Justify your answer.

i) $x(t) = e^{j(t+\pi/2)}$ ii) $x(t) = 8\cos(4t) \cdot \cos(6t)$. **(10 Marks)**

b. Sketch the following signals :

i) $x_1(t) = -u(t+3) + 2u(t+1) - 2u(t-1) + u(t-3)$.

ii) $x_2(t) = r(t) - r(t-1) - r(t-3) + r(t-4)$. **(10 Marks)**

OR

2 a. Determine whether the system $y(t) = e^{x(t)}$ is i) Causal ii) Time Invariant iii) Linear iv) Stability v) Memoryless. Justify your answer. **(10 Marks)**

b. For the signal shown in Fig. Q2(b), sketch and label each of the following signals :

i) $y_1(t) = x(t-2)$ ii) $y_2(t) = x(2t-2)$ iii) $y_3(t) = x(\frac{1}{2}t + 2)$

iv) $y_4(t) = x(-2t-1)$ v) $y_5(t) = 3x(2t)$. **(10 Marks)**

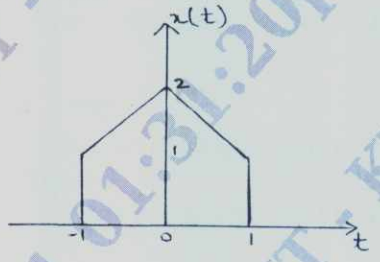

Fig. Q2(b)

Module-2

3 a. Evaluate the convolution integral for a system with input x(t) and impulse response h(t). Given $x(t) = u(t-1) - u(t-3)$; $h(t) = u(t) - u(t-2)$. Also sketch y(t). **(10 Marks)**

b. Represent the direct form I and form II realization for the system described by

i) $y[n] + \frac{1}{4}y[n-1] + \frac{1}{8}y[n-2] = x[n] + x[n-1]$.

ii) $\frac{d^2}{dt^2}y(t) + 5\frac{d}{dt}y(t) + 4y(t) = x(t) + 3\frac{d}{dt}x(t)$. **(10 Marks)**

OR

4 a. Determine the complete response of the system describe by the differential equation.

$\frac{d^2}{dt^2}y(t) + 5\frac{d}{dt}y(t) + 4y(t) = \frac{d}{dt}x(t)$ with $y(0) = 0$; $\frac{d}{dt}y(t)\big|_{t=0} = 1$;

For input $x(t) = e^{-2t}u(t)$. **(10 Marks)**

b. Investigate the causality , stability and memory of the LTI system described by the impulse response i) $h(t) = e^{-2|t|}$ ii) $h[n] = 2^n u[n-1]$. **(10 Marks)**

Module-3

5 a. Prove the following properties related to continuous – time Fourier transform :
i) Convolution ii) Parseval's theorem. **(10 Marks)**

b. Determine the Fourier Transform of the following signals :
i) $x(t) = e^{at}\, u(-t)$ ii) $x(t) = e^{-a|t|}$ iii) $x(t) = e^{-a|t|}\, \text{sgn}(t)$. **(10 Marks)**

OR

6 a. Determine the Inverse Fourier Transform of the following :
i) $X(jw) = \dfrac{2jw+1}{(jw+2)^2}$ ii) $X(jw) = \dfrac{1}{(a+jw)^2}$. **(10 Marks)**

b. Determine the Fourier transform of the signal $x(t) = e^{-3|t|} \sin(2t)$ using appropriate properties. **(10 Marks)**

Module-4

7 a. Determine the Inverse DTFT of the following :
i) $X(e^{j\Omega}) = 1 + 2\cos\Omega + 3\cos 2\Omega$ ii) $Y(e^{j\Omega}) = j\,(3 + 4\cos\Omega + 2\cos 2\Omega)\sin\Omega$. **(10 Marks)**

b. Using appropriate properties, determine the DTFT of
i) $x[n] = \left(\dfrac{1}{2}\right)^n u[n-2]$ ii) $x[n] = \sin\left(\dfrac{\pi}{4}n\right)\left(\dfrac{1}{4}\right)^n u[n-1]$. **(10 Marks)**

OR

8 a. Prove the following properties related to DTFT :
i) Frequency differentiation ii) Modulation. **(10 Marks)**

b. Compute the DTFT of the following signals :
i) $x[n] = 2^n\, u[-n]$ ii) $x[n] = a^{|n|}$; $|a| < 1$. **(10 Marks)**

Module-5

9 a. Determine the Inverse Z – transform if

$$X(z) = \frac{(z^3 - 4z^2 + 5z)}{(z-1)(z-2)(z-3)},$$

with ROCs i) $2 < |z| < 3$ ii) $|z| > 3$ iii) $|z| < 1$. **(10 Marks)**

b. Use Unilateral Z – transform to determine the forced response, natural response and complete response of system described by $y[n] - \frac{1}{2}y[n-1] = 2x[n]$

with input $x[n] = 2\left(\dfrac{-1}{2}\right)^n u[n]$. The initial conditions are $y[-1] = 3$. **(10 Marks)**

OR

10 a. Explain the properties of ROC. **(08 Marks)**

b. A LTI discrete – time system is given by system function

$$H(z) = \frac{3 - 4z^{-1}}{1 - 3.5z^{-1} + 1.5z^{-2}}.$$ Specify ROC of H(z).

Determine h[n] for the following conditions : i) Stable ii) Causal. **(12 Marks)**

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18EE55

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Electrical Machine Design

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Assume any missing data.

Module-1

1 a. Describe the modern trends in electrical machine manufacturing industries. **(10 Marks)**

b. What are the fundamental requirements of high conducting materials? **(07 Marks)**

c. What are the classification high resistivity materials according to their purpose? **(03 Marks)**

OR

2 a. Explain the classification of magnetic material related to the value of permeability and distinguish between soft and hard magnetic materials. **(06 Marks)**

b. Describe the classification of insulating materials based on their thermal consideration. **(08 Marks)**

c. List out the desirable properties of magnetic materials. **(06 Marks)**

Module-2

3 a. Explain the specific loadings of D.C. machine and what are advantages and disadvantages of higher values of specific loadings (Base & q). **(08 Marks)**

b. Determine the external diameter and gross core length of armature for a 7.5kW, 220V, 1000rpm shunt motor. Select he number of poles considering the frequency of flux reversal ≯ 50Hz. Assume average gap density as 0.63wb/m^2, ampere conductors per metre as 30000, ratio of pole arc to pole pitch is 0.7 and the friction windage and iron loss to be 600watts. Check the design for following constraints peripheral speed < 15m/s, armature mmf per pole < 2500. Considering the maximum gap density, $B_q = B_{avg}/0.75$ and mmf required for air gap is 60% of armature mmf and gap contraction factor is 1.15 calculate air gap length. **(12 Marks)**

OR

4 a. Explain the factors to be consider for selecting the number of poles of D.C. machines and write any three advantages of higher values of number of poles of D.C. machine. **(08 Marks)**

b. Design a 4 pole, 10kW, 220V, 1000rpm, d.c. shunt motor, giving following details:

i) The diameter and length of armature
ii) Number of armature conductors
iii) Number of slots
iv) Size of conductor

Assume following design data:
Specific magnetic loading = 0.45T, specific electric loading = 17500 amp cond/m, ratio of pole arc to pole pitch = 0.68, slot pitch = 2.2cm, constant losses = 8% of output, armature voltage drop = 10% of terminal voltage armature is wave wound. **(12 Marks)**

Module-3

5 a. Derive the following design equations for a 3-phase transformer, relating the output to the specific loading and main dimensions, i) EMF per turn ii) Output equation. **(08 Marks)**

b. Design the magnetic frame of 3-phase 250kVA, 6600/400 volts, 50Hz, core type distribution transformer with respect to the following: i) Core section ii) Diameter of circumscribing circle iii) Window area iv) Dimensions of window v) Yoke section and flux density in yoke vi) Yoke dimensions.
Assume; cruciform core section with $A = 0.56d^2$ and $a = 0.85d$, the constant K, in emf per turn is 0.45, maximum flux density in core is 1.2 wb/m^2 and current density is 2.2A/mm^2, the window space factor = 0.3, the ratio of window height to width = 3, yoke section is 10% higher than core section. **(12 Marks)**

OR

6 a. Explain the design of tank with cooling tubes for the transformer, giving the equation to calculate number of tubes to limit temperature rise. **(10 Marks)**

b. Calculate the active and reactive component of no-load current of a 15000kVA, 33.3/6.6kV, 3-phase, star-delta, core type transformer having following data:
net iron area of each limb = 0.15m^2 net iron area of yoke = 0.18m^2, Mean length of each limb = 2.3m, mean length of each yoke = 1.6m, number of turns in h.v. winding = 450. Take maximum flux density same for both limb and yoke, as = 1.2wb/m^2. At this flux density, ampere-turns per meter of the material is 420 AT and specific iron loss is = 1.9w/kg, density = $7.8 \times 10^3 kg/m^3$ Neglect mmf for joints. **(10 Marks)**

Module-4

7 a. Discuss the factors that affect the
i) Choice of average flux density in air gap
ii) Choice of ampere conductors per meter in the design of 3-phase Induction Motor. **(08 Marks)**

b. Determine the main dimensions, turns per phase number of slots, conductor cross section and slot area of a 250h.p, 3-phase, 50Hz, 400V 1410rpm, slip-ring induction motor. Assume B_{av} = 0.5 wb/m^2, ac = 30000A/m, efficiency = 0.9 and p.f = 0.9, winding factor = 0.955, current density = 3.5A/mm^2, slot space factor is 0.4 and ratio core length to pole pitch = 1.2 take 5 slots per pole per phase motor is delta connected. **(12 Marks)**

OR

8 a. Explain the step-by-step procedure of wound rotor design. **(08 Marks)**

b. During the stator design of a 3-phase, 50Hz, 30kW, 400V, 6 pole, squirrel cage induction motor, the following informations were obtained gross length = 0.17m, internal diameter = 0.33m, number of slots = 45, number of conductors per slot = 12, stator winding is star connected based on above, design a cage rotor giving i) diameter of rotor ii) number of rotor slots iii) rotor bar current iv) size of rotor bar v) end-ring current and section of end ring. Assume: p.f. = 0.86, efficiency = 0.88, k_w = 0.955 current density in bar = 6A/mm^2; current density in end ring = 6.5A/mm^2, take length of air gap = 0.67mm. **(12 Marks)**

Module-5

9 a. Derive the output equation of synchronous machine, that relates output to main dimensions. **(08 Marks)**

b. Determine the main dimensions, number of stator slots, conductors per slot, and conductor area of a 75000kVA, 13.8kV, 50Hz, 187.5rpm, 3-phase, star connected synchronous alternator peripheral speed should be about 60m/sec. Assume average flux density = 0.65wb/m^2, ampere conductors per meter = 40,000 and current density = 6A/mm^2, k_w = 0.955, number of slots per pole per phase = 2.5. **(12 Marks)**

OR

10 a. Define Short Circuit Ratio (SCR) and its effect on machine performance. **(10 Marks)**

b. A 3000rpm, 50Hz, 3-phase, turbo alternator has a core length of 0.94m, the average gap density = 0.45wb/m^2, and ampere conductors per meter = 25000. The peripheral speed of rotor is 100m/s, and length of air gap is 20mm. Find kVA output of the machine when

i) Winding factor k_w = 0.955

ii) Winding factor k_w = 0.827

What is the relation between winding factor and kVA output. **(10 Marks)**

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18EE56

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
High Voltage Engineering

Time: 3 hrs. Max. Marks: 100

Note:1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Assume missing data suitably.

Module-1

1 a. Mention the desired properties of gaseous dielectric for HV applications. Give any three examples of gaseous dielectric. **(06 Marks)**

b. Derive an expression for the current in the air gap, that is $I = I_0 e^{\alpha d}$, considering Townsend's first ionization coefficient. **(08 Marks)**

c. In an experiment in a certain gas, it was found that the steady state current is 5.5×10^{-8} A at 8 kV at a distance of 0.4 cm between the plane electrodes. Keeping the field constant and reducing the distance to 0.1 cm results in a current of 5.5×10^{-9} A. Calculate Townsend's primary ionization coefficient α. **(06 Marks)**

OR

2 a. State and explain Paschen's law. **(06 Marks)**

b. Explain the following breakdown mechanism in solid:
(i) Streamer breakdown (ii) Electro mechanical breakdown. **(14 Marks)**

Module-2

3 a. Explain the need for generation of very high voltages in the laboratory. **(06 Marks)**

b. Explain with a neat sketch, how cascade transformers generates high ac voltages (show 3 stages). **(08 Marks)**

c. Explain the principle of operation of a resonant transformer. **(06 Marks)**

OR

4 a. With a neat sketch, explain the Marx circuit arrangement for multistage impulse generator. **(08 Marks)**

b. What is a Tesla coil? How are damped high frequency oscillations can be obtained using the Tesla coil? **(06 Marks)**

c. A cock craft Walton type voltage multiplier has eight stages with capacitances, all equal to 0.05 μF. The supply transformer secondary voltage is 125 kV at a frequency of 150 Hz. If the load current to be supplied is 5 mA, find (i) Percentage ripple (ii) The regulation. **(06 Marks)**

Module-3

5 a. Explain the principle of operation of an electrostatic voltmeter for measurement of very high dc and ac voltages. **(10 Marks)**

b. With a schematic diagram, explain the principle of operation of a generating voltmeter. What are its advantages and limitations? **(10 Marks)**

OR

6 a. Explain how Chubb and Fortescne circuit can be used to measure the peak value of ac voltages. **(08 Marks)**

b. Explain the factors influencing the sparkover voltages of sphere gaps. **(06 Marks)**

c. With a neat sketch, explain the working of Rogowski coil for high impulse current measurement. **(06 Marks)**

Module-4

7 a. Explain different theories of charge formation in clouds. **(10 Marks)**

b. What is a surge arrestor? Explain its function as a shunt protective device, with a neat sketch. **(10 Marks)**

OR

8 a. Explain the following :

(i) Rod gaps used as protective devices.

(ii) Ground wires for protection of overhead lines. **(10 Marks)**

b. Explain with suitable figures the principle and functioning of,

(i) Expulsion gaps

(ii) Protector tubes. **(10 Marks)**

Module-5

9 a. Explain the method of measuring capacitance and tan delta using Schering bridge. **(10 Marks)**

b. Discuss the method of discharge detection using straight detector method. **(10 Marks)**

OR

10 a. What are the various tests done on transformers? Explain in detail impulse testing of transformer. **(10 Marks)**

b. Explain in detail the testing of, (i) Circuit breaker and (ii) Insulators. **(10 Marks)**

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CBCS SCHEME

18CIV59

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Question Paper Version : C

Fifth Semester B.E Degree Examination, Jan./Feb. 2021
Environmental Studies
(COMMON TO ALL BRANCHES)

Time: 2 hrs.] [Max. Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the hundred 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 primary source of Green House Gases (GHG) is
   a) Wind b) Fossil fuel c) Water d) Green plants

2. The Kyoto protocol was adopted at the
   a) Third conference of UNFCC in 1997
   b) Convention on the trans boundary effects of industrial accidents
   c) United nations framework convention on climate change in 1992
   d) convention on Biological diversity

3. Which one of following is not a green house gas?
   a) Water vapour b) Oxygen c) Methane d) Carbon monoxide

4. E.T.S stands for
   a) Emission Tracking system b) Europe Trading System
   c) Environmental Tracking System d) Engine Tracking System

5. The primary cause of acid rain around the world is due to
   a) Carbon dioxide b) Sulphur dioxide c) Carbon monoxide d) Ozone

6. Ozone layer is present in
   a) Troposphere b) Stratosphere c) Mesosphere d) Thermosphere

7. Sustainable development means
   a) Meeting present needs without compromising on future needs
   b) Progress in human well beings
   c) Balance between human needs and ability of earth to provide the resources
   d) All the above

8. Which of the following element make e-waste hazardous in nature?
a) Lead b) Glass c) Plastic d) Iron

9. What is the hazardous pollutant released from LED?
a) Arsenic b) Barium c) Cobalt d) Cadmium

10. Cyotoxic and expired drugs are disposed off by
a) Dumping b) Autoclave
c) Incineration d) Chemical disinfection

11. Eco-toxicology is study of
a) Chemical interaction of organism and environment
b) Physical interactions of organism and environment
c) Thermal interaction of organism and environment
d) Biological interaction organism and environment

12. What is the 1st step in primary treatment plants?
a) Fine screening b) Course screening c) Chlorination d) Oxidation

13. What are the sources of air pollutants in the atmosphere?
a) Coal fired power station b) Vehicle exhaust
c) Industries d) Coal

14. Which of the following chemicals damage the ozone layer?
a) Polyvinyl chloride b) Chlorofluorocarbons
c) DDT d) Hydroflurocarbons

15. Which of these energy source is renewable?
a) Wind b) Nuclear c) Coal d) Oil

16. Which one of the following is a great achievement of the Chipko movement?
a) More trees are planted b) Development in Himalayan region
c) Successfully resisted deforestation d) Soil erosion gets declined

17. The percentage of forest cover in India is
a) 14.69% b) 15.39% c) 19.39% d) 19.67%

18. GIS stands for
a) Geographic Information System b) Generic Information System
c) Geological Information System d) Geographic Information Sharing

19. The effect of Acid Rain is
a) Reduces soil fertility b) Increases atmospheric temperature
c) Causing respiratory problem d) Skin cancer

20. Environmental protection is reasonability of
a) Government of India b) NGO
c) Individual d) All of these

21. People who are exposed to radon in drinking of water may have risk of getting
a) Cancer b) Typhoid
c) Blue baby syndrome d) Cholera

22. Remote sensing uses which of the following waves in its procedure.
a) Sonar waves b) Electromagnetic waves
c) Gamma ray d) None of these

23. What is called for the practice of regulating forest resources to meet the society and industry while preserving forest health?
a) Environmental Protection b) Sustainable forest management
c) forest policy d) Unsustainable forest management

24. Soil erosion is prevented by
a) Deforestation b) Afforestation
c) Overgrazing d) Removal of vegetation

25. Which one of the following states is the leading produce of iron ore?
a) Chhattisgarh b) Jharkhand c) Karnataka d) Madhya Pradesh

26. Prevention and Control of Air Pollution Act in India was passed
a) 1970 b) 1975 c) 1981 d) 1990

27. An important NGO involved in Global Environmental Protection.
a) UNICEF b) Green Peace c) WHO d) CPCB

28. Which one of the following is a source of sulphur dioxide in atmosphere?
a) Volcanoes b) Thermal power station
c) H_2SO_4 manufacturing d) All of these

29. The important non-metallic resource is
a) Petroleum b) Bauxite c) Sidertile d) None of these

30. Which of the following reservoirs contain most water?
a) Atmosphere b) biosphere c) Ground water d) Lakes and rivers

31. Which of the following is not the meaning of ecosystem?
i) Unit where in all organisms live a healthy life
j) A small unit that can be self sufficient
k) Co-existence of diverse things by mutual adjustment
l) A unit which includes all the organisms in a given area interacting with physical environment to from a natural unit of stability

32. The factors responsible for stable ecosystem are balance between
a) Predators and prey b) Vegetation, herbivores and carnivores
c) Competing species and biotic factors d) All of these

33. Which of it is not an example of ecosystem?
a) Forest b) Desert c) Water d) Grassland

34. E.I.A can be expanded as
a) Environment and Industrial Act b) Environment and Impact Activities
c) Environmental Impact Assessment d) Environmentally Important Activity

35. Earth day is held every year on
a) 5th June b) 23rd Nov c) 22nd April d) 26th Jan

36. Soil erosion removes surface soil which contains
a) Organic matter b) Plant nutrients c) Both a and b d) None of these

37. Mineral resources are
a) Renewable b) Non-renewable c) Equally distributed d) None of these

38. Fluoride though is an effective agent to prevent dental caries has a permissible limit of
a) 0.5 mg/lit of water b) 1.5 mg/lit of water
c) 5 mg/lit of water d) 1.0 mg/lit of water

39. Deforestation means
a) Maintenance of forest for recreation
b) Creating land for habitant of wild life
c) Conversion of forest land to agricultural land homes etc
d) Planting trees

40. Decrease of oxygen level in water mainly causes
a) Fluorosis b) Death of aquatic life
c) Water purification d) All of these

41. Select the correct statement about biodiversity.
a) The desert animals of Rajasthan and Gujrat have a very high of animal species as well as rare animals.
b) Large scale planting of biodiversity cotton has no adverse effect on biodiversity
c) Western Ghats have a very high degree of species richness and endemism
d) Conservation biodiversity is just a fad pursued by developing countries

42. Global warming can be controlled by
a) Reducing deforestation and cutting down the use of fossil fuel
b) Reducing afforestation and increasing the use of fossil fuel
c) Increasing the deforestation and increasing the growth of human population
d) Increasing deforestation and increasing the use of fossil fuels

43. Bhopal Gas Disaster is a kind of
a) Natural disaster b) Man-made disaster c) None of these d) Water leakage

44. The instrument which records earthquake wave is called
a) Climograph b) Seismograph c) Hyther graph d) None of these

45. Which of the following diseases appeared as public health concern in the last quarter of 20^{th} century?
a) HIV b) Ebola virus c) Corona Virus d) All of these

46. The National Disaster Management Authority (NDMA) is headed by
a) President of India b) Prime minister of India
c) Governor of States d) Chief Minister of States

47. Cloud seeding is process of
a) Adding chemical material to cloud to obtain precipitation
b) To get more rainfall
c) It is artificial process to get rainfall during drought
d) All the above

48. Which of the following has been used to seed clouds?
a) Silver iodide b) Silver chromate
c) Sodium Chloride d) Potassium chromate

49. The scientist who experimented cloud seeding first time
a) Isaac Newton b) Vincent Schaefer c) Rutherford d) C.V. Raman

50. Carbon trading deals
a) Carbon emissions b) Acid rain
c) Sulphur dioxide emissions d) None of these

51. Extensive planting of trees to increase forest cover is called
a) Afforestation b) Deforrestation c) Agro forestation d) None of these

52. The percentage of geographical area of country under forest cover is
a) 23% b) 43% c) 13% d) 33%

53. What is the permissible range of pH for drinking water as per Indian standards?
a) 6 to 9 b) 6.5 to 7.5 c) 6 to 8.5 d) 6.5 to 8.5

54. Forest rich area in Karnataka is found in
a) Western Ghats b) Bandipur c) Nagarhole d) Mangalore

55. Major sources of fluoride is
a) River water b) Tooth paste c) Ground water d) food products

56. The oceans are the largest storage of water on earth containing
a) 95% of earths water b) 85% of earths water
c) 97% earths water d) 75% of earths water

57. Solar energy is an ideal energy source because of
a) Unlimited supply b) No air and water pollution
c) No hazardous byproducts d) All of these

58. The only disadvantages of hydrogen energy source
i) Takes more energy to produce hydrogen than the energy that could be obtained from it.
j) Causes air and water pollution
k) Releases toxic byproducts
l) Hazardous effect due to risk of leakage

59. Wind energy generation depends on
a) Directions of wind b) Velocity of wind
c) Humidity d) All of these

60. 'OTEC' is an energy technology that converts
a) Energy in large tides of ocean to generate electricity
b) Energy in ocean waves to generate electricity
c) Energy in ocean due to thermal gradient to generate electricity
d) Energy in fast moving ocean currents to generate electricity

61. The Environmental Protection Act 1986 deals with
a) Water b) Air c) Soil d) All of these

62. How to remove leachate from landfill?
a) By gravity
b) By pumping from low points
c) Both a and b
d) None of these

63. Ground water is a source of trouble at which place
a) Plains
b) Slopes
c) Rivers
d) Lakes

64. The hot spots of biodiversity are characterized by
i) Low endemicity and low threat of extinction
j) Low endemicity and high threat of extinction
k) High endemicity and low threat of extinction
l) High intensity and threat of extinction

65. The world environment day is on
a) 5^{th} June
b) 3^{rd} October
c) 25^{th} December
d) 11^{th} July

66. Fossil fuels are converted into energy by
a) Burning
b) Cooling
c) Sublimation
d) Melting

67. Which place in India the tidal energy has been experimented?
a) Goa
b) Karnataka
c) Kerala
d) Tamil Nadu

68. India has the largest share of
a) Manganese
b) Mica
c) Copper
d) Diamond

69. Which of the following are major environmental issues involved in mining?
a) Air pollution from dust
b) Water pollution
c) Soil degradation
d) all of these

70. In an ecosystem the flow of energy is
a) Bidirectional
b) Cyclic
c) Unidirectional
d) Multidirectional

71. COD is
a) Chemical Oxygen Demand
b) Measure of dissolved impurities in water
c) Amount of oxygen required to oxidize organic and organic impurities
d) All the above

72. Which of the following compounds may be toxic to human beings?
a) Amino acids
b) Polychlorinated biphenyl
c) Vitamins
d) Proteins

73. Many rivers polluted due to
a) Heavy flux of sewage
b) Industrial effluents
c) Agricultural and domestic waste
d) All of these

74. The sound intensity in measured in
a) dB
b) NB
c) Horse power
d) MB

75. Air Pollution from automobiles can be controlled by fitting
a) Electrostatic precipitator
b) Wet Scrubber
c) Catalytic converter
d) All of these

76. Sound above what level are considered hazardous noise pollution
a) above 75 dB b) above 30 dB c) above 150 dB d) above 120 dB

77. Noise pollution at residential area
a) 45 dB b) 80 dB c) 55 dB d) 90 dB

78. Which of the following is not a man-made hazard?
a) Leakage of toxic waste b) Wars and civil strife
c) Drought d) Environmental pollution

79. The Bhopal gas tragedy was caused due to
a) Methyl isocyanate leakage b) Nitrous oxide leakage
c) Acid rain d) Radioactive poisoning

80. The Kyoto protocol is
a) The response to treat the climate change
b) To reduce the emission of green house gases
c) a and b
d) To give permission to emit green house gases

81. World Summit on sustainable development was held at
a) Johansberg in 2002 b) Rio de Janerio in 1992
c) Kyoto in 1994 d) Stockhom in 2000

82. Ozone layer thickness is measured in
a) PPM b) PPB c) Decibels d) Dobson units

83. Which of following related to GIS?
a) Euclidean space b) Ramanujan space c) Pythagorean space d) None of these

84. Remote sensing techniques make use of the properties of following radiation by the sensed objects
a) Electric waves b) Sound waves
c) Electromagnetic waves d) Wind waves

85. What is the fullform of NGOs?
a) Non Governmental Organization b) Null Governmental Organizations
c) Nice Governmental Organization d) None of these

86. Which one of the following has maximum genetic diversity in India?
a) Tea b) Teak c) Mango d) Wheat

87. The carbon "credit is permit" is permit representing the right to emit
a) One tone of Carbon Dioxide b) 10 tonnes of Carbon Dioxide
c) 5 tonnes of Carbon Dioxide d) 15 tonnes of Carbon Dioxide

88. What is the role of NGOs in natural resource management?
a) Creating awareness among the public on current environmental issues and solution
b) Being involved in the protection of human rights to a clean environment
c) Data generation on natural resources time line and history
d) Making profit from Government

89. The primary objective of ISO14001 is
   i) An internationally agreed standard sets out the requirements for an environmental manage system
   j) It helps organizations to improve their environmental performance through more efficient use of resources
   k) It helps organization for the reduction of waste gaining competitive advantage and trust of stakeholders
   l) All the above

90. Which one of the following in not a renewable exhaustible natural resource?
a) Aquatic animals b) Wild life c) Soil fertility d) Minerals

91. Excess fluoride in drinking water is likely to cause
a) Blue babies b) Fluorosis c) Fever d) Cough and chill

92. All the following waste can be incinerated except
a) Reactive Chemical Waste b) Vaccine
c) Mutilated parts d) Discarded drugs

93. Which Vaccination should be given to workers who deals with biomedical waste?
a) Hbs Ag b) Tetanus c) Rabies d) Both a and b

94. Nickel is released from
a) Alloys b) Display c) Calculators d) Circuit boards

95. Which of the following solid wastes describes the term 'Municipal Solid Waste'?
a) Toxic b) Hazardous c) Non toxic d) Non-hazardous

96. The blue baby syndrome is caused by the contamination of water due to
a) Phosphates b) Sulphur c) Arsenic d) Nitrates

97. The organic material of solid waste will decompose
a) By the flow of water b) By filtration
c) By drying d) By the oxidation in presence of oxygen

98. The pH value of the acid rain water is
a) 5.7 b) 7.0 c) 8.5 d) 7.5

99. The global warming may bring about the following changes in atmosphere
a) Increase in temperature of earth b) Drought
c) direct impact on human health d) All of these

100. Which agency deals with the health effect that may occur from environmental exposure to toxic chemicals?
a) Environmental Protection Agency
b) The Center for Disease Control and Prevention
c) The Agency for Toxic Substances and Disease Registry
d) The Nuclear Regulatory Commission

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