

# CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE51

## 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. What is Planning? Explain the various steps involved in planning. (08 Marks)  
b. Mention the levels of management. Bring out its nature and characteristics. (06 Marks)  
c. Is management a science, art or profession? Explain. (06 Marks)

OR

- 2 a. Briefly explain the functional areas of management. (07 Marks)  
b. Explain the process of decision making. (07 Marks)  
c. Elaborate the various roles of a manager. (06 Marks)

### Module-2

- 3 a. What is coordination? Explain the various techniques of coordination. (08 Marks)  
b. What is staffing? Explain the importance and need for proper staffing. (06 Marks)  
c. What are committees? Explain the different types of committees. (06 Marks)

OR

- 4 a. Explain the various principles of organization. (08 Marks)  
b. With a neat diagram, explain Maslow's Hierarchy of needs theory for motivation. (06 Marks)  
c. Explain the different leadership styles used in an organization. (06 Marks)

### Module-3

- 5 a. Explain the social responsibilities of business towards different groups. (08 Marks)  
b. What are the various myths of entrepreneurship? (06 Marks)  
c. Define corporate governance. Explain the benefits of corporate governance? (06 Marks)

OR

- 6 a. What are the various barriers and problems faced by entrepreneurs? (08 Marks)  
b. Explain social audit and business ethics. (06 Marks)  
c. Explain the main functions of an entrepreneur. (06 Marks)

### Module-4

- 7 a. Explain the various problems faced by small scale industries. (08 Marks)  
b. Define the following:  
i) Small scale industry  
ii) Ancillary industry  
iii) Tiny industry. (06 Marks)  
c. Explain the role of TECSOK (Technical Consultancy Services Organization of Karnataka). (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Explain the impact of globalization on small scale industries in India. (08 Marks)  
b. Explain the government policy for the development of small scale industries in India. (06 Marks)  
c. What is the role and importance of small scale industries? (06 Marks)

Module-5

- 9 a. Define a Project. What are the characteristics of a project? (08 Marks)  
b. Explain the sequential stages of project formulation. (06 Marks)  
c. Explain the PERT control technique for project management. (06 Marks)

OR

- 10 a. Define and differentiate PERT and CPM. (08 Marks)  
b. Explain the three main phases of project life cycle. (06 Marks)  
c. Explain the contents of a project report. (06 Marks)

\*\*\*\*\*

# CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE52

## 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. Give the basic block diagrams of a microprocessor and a microcontroller. Justify that a microcontroller is an on chip computer. (06 Marks)
- b. Show the stack contents, SP contents and contents of any register affected after each step of the following sequence of operations:  
MOV SP, #70H  
MOV R5, #30H  
MOV A, #44H  
ADD A, R5  
MOV R4, A  
PUSH 4  
PUSH 5  
POP 4 (06 Marks)
- c. Explain the internal RAM section of 8051 microcontroller with required diagrams. (08 Marks)

**OR**

- 2 a. Explain the function of following pins of 8051:  
i)  $\overline{EA}$  ii) ALE iii)  $\overline{PSEN}$  iv) RST (08 Marks)
- b. For the following microcontroller ICS, determine the ROM memory address of AT89C51 with 4KB, DS89C420 with 16KB and DS5000 with 32KB. (06 Marks)
- c. With the help of timing diagram, explain how to interface 8K EPROM and 4K RAM to 8051. (06 Marks)

### Module-2

- 3 a. Write a program to load accumulator with the value of 55h and complement the content of accumulator 900 times. (06 Marks)
- b. Explain the operation of following instructions of 8051 with examples:  
i) RLC A ii) DA A iii) DJNZ R3, next iv) XCHD A, @Ri (08 Marks)
- c. Explain the following assembler directives: i) DB ii) ORG iii) EQU (06 Marks)

**OR**

- 4 a. Explain the different types of conditional and unconditional jump instructions of 8051. Specify the different ranges associated with jump instructions. (08 Marks)
- b. Write a program to convert hexadecimal number to decimal. Include suitable comment. (06 Marks)
- c. With the relevant figure, write a sequence of events that occur in 8051 microcontroller when the CALL and RET instructions are executed. (06 Marks)

Module-3

- 5 a. What are the various data types supported by 8051C? Mention the range of representation in each case. (06 Marks)
- b. Write an 8051C program to toggle all the bits of P<sub>0</sub>, P<sub>1</sub> and P<sub>2</sub> continuously with a 250ms delay. Use the EX-OR operator. (06 Marks)
- c. Write an 8051C program to realize a square wave of frequency 2kHz on P2.0. Use timer 1, mode 1 for the operation. Take crystal frequency as 11.0592 MHz. (08 Marks)

OR

- 6 a. Write an 8051 'C' program to convert packed BCD 0X29 to ASCII and display bytes on P<sub>1</sub> and P<sub>2</sub>. (06 Marks)
- b. Explain TMOD-SFR with necessary format. (06 Marks)
- c. A switch is connected to pin P1.2. Write an 8051C program to monitor 'SW' and create the following frequencies on Pin P1.7:  
SW = 0 : 500Hz  
SW = 1 : 750Hz  
Use timer '0', mode '1' for both of them. Assume crystal frequency = 11.0592 MHz. (08 Marks)

Module-4

- 7 a. Explain the bit pattern of SCON register. (06 Marks)
- b. Write an 8051 program to send the data message "MICROCONTROLLER" serially at 9600 band rate, 8 bit data and one stop bit, continuously. (06 Marks)
- c. Compare polling and interrupt. Explain the six interrupt of 8051 with interrupt vector table. (08 Marks)

OR

- 8 a. Write an 8051 C program to do the following:  
i) Continuously read the status of switch SW connected to pin P1.2 and send it to pin P2.1 in the main program.  
ii) Generate a square wave of 100µsec delay on pin P2.3 and send character '\*' continuously serially using timer and serial interrupt routines respectively.  
Use XTAL = 11.0592MHz and 8 data bits, 1 stop bit, 4800 baud rate format. (08 Marks)
- b. Write an ALP for 8051 to transfer the letter 'A' serially at 4800 baud rate continuously. Use 8-bit data and 1 stop bit. Use timer 1 in mode 2. (06 Marks)
- c. Explain the bit status of IP register. (06 Marks)

Module-5

- 9 a. Explain the steps to interface ADC 0808 to the 8051 microcontroller. (08 Marks)
- b. Explain the Registers and pins of LCD and write an ALP to display "VTU" on LCD display. (08 Marks)
- c. Explain the control word format of 8255. (04 Marks)

OR

- 10 a. Write a program to rotate a stepper motor 64° in the clockwise direction. The motor has a step angle of 2°. (06 Marks)
- b. Find the control word for the following configurations:  
i) All ports of A, B and C are output ports (mode 0)  
ii) PA = 1N, PB = OUT, PCL = OUT and PCH = OUT (06 Marks)
- c. Show a simple keyboard interface with port of 8051 and explain its operation. (08 Marks)

\*\*\*\*\*

# CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE53

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

- With a neat circuit diagram Input and Output waveform, explain the different types of Power Electronic Converters. (10 Marks)
  - With neat circuit diagram and waveforms, explain the operation of single phase full wave rectifier with RL Load. Derive the expression for rms output current for continuous load current. (10 Marks)

OR

- Discuss the peripheral effects of power electronic equipments and mention the Industrial applications of power electronic converter circuits, explain briefly. (10 Marks)
  - With the help of a neat wave form, explain the reverse recovery characteristic a power diode and also explain the VI characteristics of Power Diode. (10 Marks)

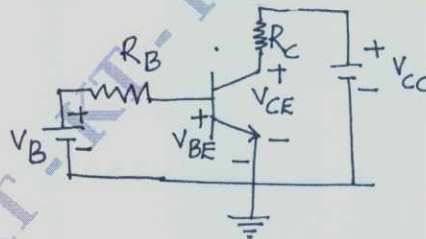
### Module-2

- Explain the important characteristics features of power transistors. With the aid of output and transfer characteristics, discuss the different operating regions of a power BJT. (10 Marks)
  - With a neat sketch, explain the transfer and output characteristics of MOSFET and compare the characteristics of MOSFET with IGBT. (10 Marks)

OR

- What is the necessity of base drive control in a power transistor? List and explain the base drive control methods. (10 Marks)
  - The beta ( $\beta$ ) bipolar transistor shown in Fig. Q4(b), below varies from 12 to 75. The load resistance  $R_C = 1.5\Omega$ . The DC supply voltage is  $V_{CC} = 40V$  and input voltage to the base circuit  $V_B = 6V$ . If  $V_{CE} = 1.6V$ ,  $R_B = 0.7\Omega$ , determine
    - Over drive factor
    - The forced  $\beta$  and
    - Power loss in the transistor ( $P_T$ ). (10 Marks)

Fig. Q4(b)



### Module-3

- Explain VI characteristics of SCR also define holding current and latching current. (06 Marks)
  - Explain different methods of turning ON of Thyristor. (06 Marks)
  - Derive an expression for the anode current of thyristor with the help of 2 transistor analogy. (08 Marks)

OR

- 6 a. With a neat circuit diagram and waveforms, explain the resistance triggering circuit to turn on SCR in the phase control circuit. (06 Marks)
- b. With the help of neat circuit diagram and wave forms, explain RC firing circuit used with half controlled rectifier. (06 Marks)
- c. Discuss the need of protection against  $\frac{di}{dt}$  and  $\frac{dv}{dt}$ . Explain how it is achieved with suitable circuit diagrams. (08 Marks)

**Module-4**

- 7 a. With necessary waveforms, explain the operation of a single phase AC voltage controller with RL load. Derive the expression for rms output voltage. (10 Marks)
- b. A single phase half wave controlled rectifier is used to supply power to  $10 \Omega$  load from 230V, 50Hz supply at a firing angle of  $30^\circ$ . Calculate i) Average output voltage  
ii) Effective output voltage iii) Average load current. (10 Marks)

OR

- 8 a. With the help of a circuit diagram and waveforms, explain the working of  $1 \phi$  full controlled converters for continuous load current. Derive expression for  $V_o$  and  $V_{rms}$ . (10 Marks)
- b. With circuit diagram and waveforms, explain the operation of a Three phase dual converter and what are the significance of circulating current in dual converters. (10 Marks)

**Module-5**

- 9 a. Explain the principle of operation of a step up chopper. A step up DC chopper has an input of 200V and an output of 250V, the blocking period in each cycle of operation of  $0.6 \times 10^{-3}$  secs. Find the period of conduction in each cycle. (10 Marks)
- b. With the help of circuit diagrams, explain the operation of different types of Choppers. (10 Marks)

OR

- 10 a. With a circuit diagram and waveforms, explain single phase bridge inverter and mention the advantages and disadvantages of full bridge inverter. (10 Marks)
- b. With a neat circuit diagram and waveforms, explain anyone mode of operation of a Three phase bridge inverter. (10 Marks)

\*\*\*\*\*

# CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE54

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. Explain Classification of Signals. (06 Marks)
- b. A signal  $x(t) = u(t)$ , unit step function. Sketch and label each of the following signals :  
i)  $x(t-2)$     ii)  $x(-t)$     iii)  $x(t+2)$     iv)  $s(t/2)$ . (08 Marks)
- c. Determine whether the following signals are periodic, if periodic determine the fundamental period :  
i)  $x(t) = \cos 2t + \sin 3t$     ii)  $x(n) = \cos (1/5 \pi n) \sin (\frac{1}{3} \pi n)$ . (06 Marks)

OR

- 2 a. What are different elementary signals? Explain them, with neat sketch. (04 Marks)
- b. For the system given below, determine whether or not the system is linear causal, time invariant, BIBO stable : i)  $y(t) = e^{x(t)}$     ii)  $y(n) = x(n)u(n)$ . (10 Marks)
- c. Find even and odd part of following signal :  
i)  $x(t) = \cos(t) + \sin(t) + \sin(t) \cos(t)$     ii)  $x(n) = u(n)$ . (06 Marks)

### Module-2

- 3 a. Consider a LTI system with unit impulse response  $h(t) = e^{-t} u(t)$ . If the input to the system is  $x(t) = e^{-3t} [u(t) - u(t-2)]$ . Find the output  $y(t)$  of the system. (10 Marks)
- b. Evaluate the discrete time Convolution sum for  $h[n] = u[n]$  and  $x[n] = (\frac{1}{2})^n u[n-2]$ . (06 Marks)
- c. Find the step response for the CTI system represented by the impulse response  $h(n) = (\frac{1}{2})^n u(n)$ . (04 Marks)

OR

- 4 a. A discrete LTI system is characterized by the following difference equation.  
 $y(n) - y(n-1) - 2y(n-2) = x(n)$  with  $x(n) = 6u(n)$  and initial conditions  $y(-1) = -1$ ,  $y(-2) = 4$ .  
Find the zero input response, zero state response and total response. (10 Marks)
- b. Draw the direct Form I and II realization for the following system :  
i)  $y(n) - \frac{1}{2}y(n-1) + \frac{1}{4}y(n-2) = x(n) + 2x(n-1)$ .  
ii)  $2 \frac{d^3y}{dt^3} + \frac{dy}{dt} + 3y(t) = x(t)$ . (10 Marks)

### Module-3

- 5 a. State and prove following properties in continuous Time Fourier Transform :  
i) Time shift    ii) Frequency shift    iii) Convolution. (10 Marks)
- b. Find Fourier transform of following signals :  
i)  $x(t) = e^{at} u(-t)$     ii)  $x(t) = 1$     iii)  $x(t) = \cos \omega_0 t$ . (10 Marks)

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Using Partial fraction expansion, determine the Inverse Fourier transform of
- i)  $X(w) = \frac{5jw + 12}{(jw)^2 + 5jw + 6}$       ii)  $X(w) = \frac{-jw}{(jw)^2 + 3jw + 2}$ .      (10 Marks)
- b. A system produces output of  $y(t) = e^{-2t} u(t) + e^{-3t} u(t)$  for an input  $x(t) = e^{-t} u(t)$  Determine the Impulse response and Frequency response of the system.      (10 Marks)

**Module-4**

- 7 a. State and prove the following properties in DTFT :
- i) Parseval's theorem      ii) Differentiation in frequency domain.      (10 Marks)
- b. Find DTFT of the following signal :
- i)  $x(n) = \left(\frac{1}{2}\right)^n u(n-2)$       ii)  $x(n) = u(n)$ .      (10 Marks)

OR

- 8 a. Find Inverse DTFT of
- $$X(e^{i\Omega}) = \frac{6}{e^{-j2\Omega} - 5e^{-i\Omega} + 6}$$
- (06 Marks)
- b. Determine the difference equation description for the system with following impulse response  $h(n) = \delta(n) + 2\left(\frac{1}{2}\right)^n u(n) + \left(-\frac{1}{2}\right) u(n)$ .      (07 Marks)
- c. Obtain the frequency response and the impulse response of the system described by the difference equation :  $y(n) + \frac{1}{2} y(n-1) = x(n) - 2x(n-1)$ .      (07 Marks)

**Module-5**

- 9 a. What is Region of Convergence? List any five properties of RoC.      (07 Marks)
- b. Determine Z - transform of the following signals :
- i)  $x(n) = n a^n u(n)$       ii)  $x(n) = (0.2)^n \{u(n) - u(n-u)\}$ .      (08 Marks)
- c. State and prove Initial value theorem of Z - transforms.      (05 Marks)

OR

- 10 a. Using Partial Fraction expansion method, find time domain signal.
- $$X(z) = \frac{z^3 - 3z}{z^2 + \frac{3}{2}z - 1} ; \text{RoC} : \frac{1}{2} < |z| < 2$$
- (06 Marks)
- b. Solve the following difference equation  $y(n) + 3y(n-1) = x(n)$ , with  $x(n) = u(n)$  and Initial condition  $y(-1) = 1$ .      (08 Marks)
- c. The output of a discrete time LIT system is found to be  $y(n) = 2\left(\frac{1}{3}\right)^n u(n)$ . When input is  $x(n) = u(n)$ . Find Impulse response  $h(n)$  of the system.      (06 Marks)

\*\*\*\*\*



# CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE553

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

## Estimation and Costing

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Cable rating of Aluminum and copper conductor chart not be permitted.

### Module-1

- 1 a. What is the meaning of estimating? Write the purpose of estimating and costing. (06 Marks)  
b. Write the information required for purchase order. (06 Marks)  
c. Write any four rules of Indian electricity. (08 Marks)

OR

- 2 a. Write the different modes of tender and briefly explain. (08 Marks)  
b. Explain the following :  
i) Contingencies  
ii) Overhead charges  
iii) Profit. (06 Marks)  
c. Write the objectives of purchase system. (06 Marks)

### Module-2

- 3 a. Write the general rule to be consider for wiring system. (08 Marks)  
b. Fig.Q3(b) shows the plan of residential building, which has to be wire up with casing and cupping wiring system calculate the following :  
i) Show the wiring plan  
ii) Propose load calculation  
iii) Find the length of wire for wiring  
iv) List the materials and find the cost.

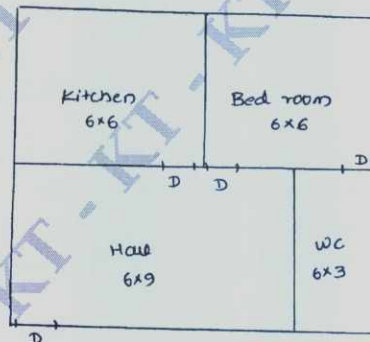


Fig.Q3(b) All dimensions are in meter

(12 Marks)

OR

- 4 a. Write the different types of wiring system explain briefly. (06 Marks)  
b. Fig.Q3(b) shows the plan of residential building which has to be wire up with conduit wiring system calculate the following :  
i) Show the wiring plan with 1KW heating load in WC  
ii) Propose the load calculation for heating and lighting  
iii) Find the length of wire for wiring  
iv) List the material and find the cost. (14 Marks)

Module-3

- 5 a. What are the different types of service connections, list the advantages and disadvantages. (06 Marks)
- b. Prepare materials required for over head service connection to home of 1.5KW load at 230V, 50Hz supply. The supply is to be given from 15m away from the home. Assume diversity factor as 1.66 and future load as 100%. (10 Marks)
- c. Find the input currents for the following machines. (04 Marks)
- 2Hp, 1 $\phi$ AC, 240V at 70% efficiency and 0.8pf
  - 20Hp, 3 $\phi$ AC, 415V at 85% efficiency and 0.85 pf.

OR

- 6 a. Write the important consideration regarding motor installation wiring. (08 Marks)
- b. A 10Hp, 415V, 3 phase, 50Hz induction motor is to be installed in a workshop the plan of which is shown in Fig.Q6(b). Draw the layout of the wiring and estimate the materials required the wiring is to be surface conduct. Assume motor efficiency as 85% and power factor as 0.8 lagging.

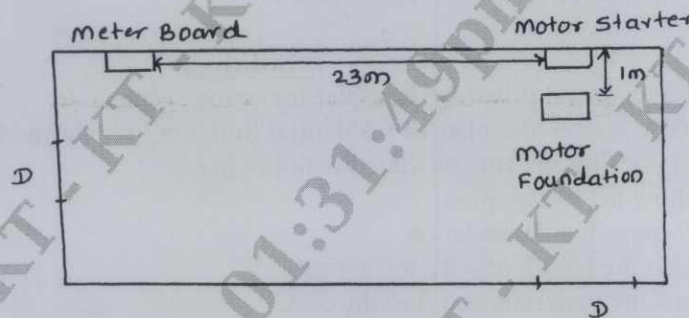


Fig.Q6(b)

(12 Marks)

Module-4

- 7 a. With neat diagram, explain different types of cross arms. (06 Marks)
- b. Write the different types of insulator explain any one of them. (06 Marks)
- c. A pole for an over head 11KV, 3 $\phi$ , 50Hz line is to be earthed and a stay is to be provided prepare a list of material required with quantity required. (08 Marks)

OR

- 8 a. Briefly explain erection of conductor for transmission line. (08 Marks)
- b. A overhead, 3 $\phi$ , 415V distributor is to be laid along a straight route 300meter long. The end supports are terminal poles with 50m span in between prepare the list of material. The following data may be used.  
 Conductor : ACSR 6/1  $\times$  2.11mm for phase, neutral and street light.  
 LT cable : 4 core, 60mm<sup>2</sup>, 1100V grade  
 Distance of first terminal pole form the substation is 12m. (12 Marks)

**Module-5**

- 9 a. Draw the key diagram of 66KV substation with following details and also list the material required :
- 66/33KV out going line : 1 number
  - 66/11KV out going line : 7 number
  - 66/33KV transformer : 16 MVA
  - 66/11KV transformer : 16 MVA.
  - Substation transformer : 1 number capacitor bank : 3.024 MVAR.
  - Missing data may be assumed.
- (12 Marks)
- b. Write the main purpose of substation earthing. (08 Marks)

**OR**

- 10 a. Draw the key diagram of 33KV substation with following details and also list the materials required.
- Double bus bar with outgoing
  - 11KV lines : 3 number each
  - 33KV /11KV transformer : 2 number, 5 MVA
  - Substation transformer : 1 number
  - Capacitor bank : 1.2 MVAR
  - Missing data may be assumed.
- (08 Marks)
- b. Briefly explain instrument transformers used in substation. (12 Marks)

\* \* \* \* \*

# CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE563

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

## Renewable Energy Resources

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Define: (08 Marks)
- Latitude angle
  - Declination angle
  - Hour angle
  - Solar altitude angle.
- b. Write notes on classification of energy resources. (08 Marks)
- c. What are the factors affecting renewable energy development? (04 Marks)

OR

- 2 a. What are the advantages and limitations of renewable energy source? (08 Marks)
- b. Describe thermal energy storage systems. (08 Marks)
- c. Write a short note on layers of the sun. (04 Marks)

### Module-2

- 3 a. With neat sketch, discuss important parts of flat plate collector. (08 Marks)
- b. What are the advantages and disadvantages of concentrating collectors over a flat plate collector? (08 Marks)
- c. Write short note on solar air heating. (04 Marks)

OR

- 4 a. Explain working of a solar water heating system with a neat diagram. (06 Marks)
- b. With neat diagram, explain solar pond and write any two advantage of it. (08 Marks)
- c. Explain working of solar cooker with flat plate box type. (06 Marks)

### Module-3

- 5 a. Explain various factors in wind turbine site selection. (06 Marks)
- b. Explain the various methods of hydrogen energy storage. (08 Marks)
- c. Describe a binary cycle geothermal power plant. (06 Marks)

OR

- 6 a. With a neat diagram, explain working of double flash type geo thermal electric power generation. (08 Marks)
- b. Derive the expression for power developed due to wind. (06 Marks)
- c. Briefly explain tank type electrolyzer of hydrogen energy production. (06 Marks)

### Module-4

- 7 a. Classify and explain methods for obtaining energy from biomass. (08 Marks)
- b. With a neat sketch, explain fixed-dome type of Bio-gas plant. (06 Marks)
- c. Explain briefly advantages of Anaerobic digestion. (06 Marks)

OR

- 8 a. Using a schematic diagram, explain the co-operating two-basin systems. (08 Marks)  
b. Explain fluidized bed gasifier, with a neat diagram. (06 Marks)  
c. List the advantages and limitations of tidal power. (06 Marks)

Module-5

- 9 a. Explain open cycle ocean thermal energy conversion technique. (08 Marks)  
b. With a neat diagram, explain OTEC Ranking cycle. (06 Marks)  
c. Brief on advantage and disadvantage of sea wave power. (06 Marks)

OR

- 10 a. Describe the closed cycle OTEC system, with the help of diagram. (10 Marks)  
b. Briefly discuss about devices used for harnessing sea wave energy. (10 Marks)

\* \* \* \* \*