

CBCS Scheme

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15EE51

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Management and Entrepreneurship

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Distinguish between:
i) Management and administration
ii) Management as science and management as art. (06 Marks)
- b. What are managerial skills? How are they linked to levels of management? (05 Marks)
- c. Explain briefly nature and characteristics of management. (05 Marks)

OR

- 2 a. Explain the importance and purpose of planning in a large organization. (06 Marks)
- b. Name and explain various categories of standing plans and single-use plans. (06 Marks)
- c. Write a chart depicting a typical decision making process in an organization and explain the need for decision making. (04 Marks)

Module-2

- 3 a. What is organizing? Explain the important steps in the process of organizing. (06 Marks)
- b. Explain: (i) Decentralization of authority, (ii) Staffing. (06 Marks)
- c. Explain briefly the process of recruitment in an organization. (04 Marks)

OR

- 4 a. Discuss leadership styles and role of a leader. (06 Marks)
- b. Name and explain any two motivation theories. (06 Marks)
- c. What is 'coordination'? What is the importance? What are the techniques? (04 Marks)

Module-3

- 5 a. Explain: (i) Social audit, (ii) Business ethics, (iii) Corporate governance, briefly. (06 Marks)
- b. What is meant by 'social responsibilities of business towards different groups'? Explain with examples drawn from Indian business groups. (06 Marks)
- c. Explain briefly the concept of entrepreneurship. (04 Marks)

OR

- 6 a. What is importance of 'entrepreneurship' to a nation? How to classify 'Entrepreneurs'? Explain. (06 Marks)
- b. Explain few problems faced by entrepreneurs. How to overcome them? What are the myths about entrepreneurship? (06 Marks)
- c. Explain: (i) Entrepreneurial development model
(ii) Capacity building for entrepreneurship. (04 Marks)

Module-4

- 7 a. Define ancillary and tiny industries and discuss the role of small scale industries in the development of nation like India. (06 Marks)
- b. How government policies have developed growth of small scale industries sector on India? What is the impact of WTO/GATT on the sector? Explain. (06 Marks)
- c. Discuss performance SSIs under the impact of Globalization. (04 Marks)

OR

- 8 a. Discuss the problems faced by small scale industries and the strategies to overcome them. (06 Marks)
- b. Discuss the policies of schemes of central-level institutions than support small sized or medium sized business enterprises. (06 Marks)
- c. Discuss state-level institutional supports to small scale industries sector. (04 Marks)

Module-5

- 9 a. Explain:
(i) Significance of project report
(ii) Formulation of project report. (06 Marks)
- b. Describe:
(i) Project identification and selection
(ii) Project life cycle. (06 Marks)
- c. Explain:
(i) Capital budgeting,
(ii) Generating investment with reference to a project undertaken. (04 Marks)

OR

- 10 a. Explain the importance of network analysis. (05 Marks)
- b. Discuss the different steps involved in PERT analysis. (05 Marks)
- c. Write about the differences between PERT and CPM and limitation of PERT and CPM. (06 Marks)

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15EE52

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Microcontroller

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Discuss the need for stack memory in microcontroller. How stack is operated in 8051 μ c? What is the default location of stack? (06 Marks)
- b. With an example explain the various addressing modes used in 8051 μ c (any four). (06 Marks)
- c. Compare RISC and CISC micro controllers. (04 Marks)

OR

- 2 a. Explain the bit pattern of program status word. (06 Marks)
- b. With a neat diagram, explain the steps to interface 8K bytes of program ROM and 6 K bytes of data ROM to 8031 based system. (06 Marks)
- c. Identify the addressing modes of the following instructions:
 - i) MOV C, A, @ A+DPTR
 - ii) MOV DPTR, #1234
 - iii) MOV A, 4
 - iv) CLR C(04 Marks)

Module-2

- 3 a. Write a program to find the square root of a given number. (06 Marks)
- b. With a neat diagram explain the range of JUMP and CALL instructions. (08 Marks)
- c. Explain the following instructions: i) DA A, ii) ANL C, P2.5 (02 Marks)

OR

- 4 a. What are assembler directives? Explain any four of them with an example. (06 Marks)
- b. Assume that register 'A' is loaded with number 'N' (any integer value from 0 to 255). Write a program to count the number of ones in even numbered bits of accumulator. (05 Marks)
- c. Write a program to complement the content of accumulator 62500 times. (05 Marks)

Module-3

- 5 a. Explain the different data types supported by 8051C microcontroller. (08 Marks)
- b. Write a program to create a square wave of 100 Hz with a duty cycle of 80% on port 1.1. Use timer '0' and operate that timer '0' in mode '1'. Assume XTAL f_{mov} = 12 MHz. (08 Marks)

OR

- 6 a. A switch is connected to pin P1.2. Write an 8051 C program to monitor 'SW' and create the following frequencies on pin P1.7.
SW = 0 : 500 Hz
SW = 1 : 750 Hz
Use timer '0', mode '1' for both of them. Assume crystal frequency = 11.0592 MHz. (08 Marks)
- b. Write an 8051C program to turn bit P1.5 ON and OFF 50000 times. (03 Marks)
- c. Write a program for counter '1' in mode '2' to count the clock pulse and display the state of the TL, count on P2. (05 Marks)

Module-4

- 7 a. Write a program to retrieve the data serially and put them in P1. Set the band rate at 4800, 8-bit data and one stop bit. (06 Marks)
- b. Write an 8051C program to transfer the message "INDIA" serially at 9600 band rate, 8 bit data and one stop bit, continuously. (06 Marks)
- c. Explain the importance of TI and RI flags. (04 Marks)

OR

- 8 a. What is an interrupt? List the various interrupts of the 8051 with their corresponding vector address. (06 Marks)
- b. Write a program that continuously gets 8-bit data from 'P0' and sends it to 'P1' where simultaneously creating a square wave of 200 μ s period on pin P2.1. Use timer '0' to create square wave. Assume $K_{TAL} = 11.0952$ MHz. (07 Marks)
- c. Explain simplex, half duplex and full duplex serial data transfer. (03 Marks)

Module-5

- 9 a. A switch is connected to pin P2.7. Write a 'C' program to monitor the status of 'SW' and perform the following:
 i) If SW = 0 : the stepper motor moves clock wise.
 ii) If SW = 1 : the stepper motor moves counter clock wise. (10 Marks)
- b. Explain the control word format of 8255. (06 Marks)

OR

- 10 a. Explain the various modes of 8255 and find the control word for following configurations:
 i) All ports of A, B and C are O/P ports (mode '0')
 ii) PA = IN, PB = OUT, PCL = OUT and PCH = OUT. (08 Marks)
- b. Explain the steps to interface ADC 0808 to the 8051 microcontroller. (08 Marks)

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15EE53

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Power Electronics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- With the help of circuit diagram, input and output waveforms explain working of different types of power electronic converters. (08 Marks)
 - The reverse recovery time of a diode is $5\mu\text{s}$ and rate of fall of diode current is $80\text{A}/\mu\text{s}$. Calculate : i) the storage charge Q_{RR} ii) Peak reverse current I_{RR} . (04 Marks)
 - List the parameters on which the performance of rectifier is evaluated. (04 Marks)

OR

- Briefly explain different types of power diodes. (06 Marks)
 - Explain the peripheral effects of power electronic equipments. (06 Marks)
 - The bridge rectifier has an AC source with $V_m = 100\text{V}$ at 60Hz and a series load (RL) with $R = 10\Omega$ and $L = 10\text{mH}$. Calculate :
 - Average current in the load
 - Average currents in the diodes. (04 Marks)

Module-2

- Explain the switching characteristics of MOSFET. (05 Marks)
 - Explain the anti-saturation control of BJT. (05 Marks)
 - The β of bipolar transistor varies from 12 to 75. The load resistance is 1.5Ω . The supply voltage $V_{\text{CC}} = 40\text{V}$ and base input voltage is 6V . If $V_{\text{CE(sat)}} = 1.2\text{V}$, $V_{\text{BE(sat)}} = 1.6\text{V}$ and $R_B = 0.7\Omega$, calculate : i) ODF ii) Forced β iii) total power loss in transistor. (06 Marks)

OR

- List and explain the switching limits of power BJT. (08 Marks)
 - The base drive circuit of anti-saturation control has supply voltage 400V , collector resistance 4Ω , $V_{\text{d1}}=3.6\text{V}$, $V_{\text{d2}} = 0.9\text{V}$, $V_{\text{BE(sat)}} = 0.7\text{V}$. The voltage to the base circuit is 15V . $R_B = 1.1\Omega$ and $\beta = 12$. Find : i) Collector current without clamping ii) collector clamping voltage V_{CE} and ii) Collector current with clamping. (08 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.

Module-3

- 5 a. Explain the V-I characteristics of SCR. Also define : i) holding current and ii) Latching current. (06 Marks)
- b. Explain different methods of turning on of thyristor. (06 Marks)
- c. For the SCR shown in Fig.Q5(c), has a latching current of 20mA and is fired by a pulse width of 50 μ s. Determine whether the SCR turns on as not and comment on the result obtained. (04 Marks)

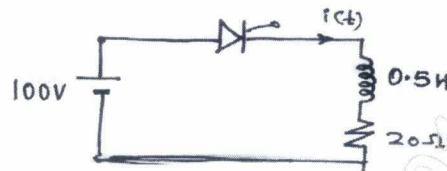


Fig.Q5(c)

OR

- 6 a. With the help of two transistor model, derive an expression for anode current of a thyristor and explain why gate loses its control over the device once thyristor is turned on. (08 Marks)
- b. A string of SCRs are connected in series to withstand a DC voltage of 15KV. The maximum leakage current and recovery charge difference of thyristor are 10mA and 150 μ C respectively. A derating factor of 20% is applied for steady state and transient state voltage sharing's of thyristors. If the maximum steady state voltage sharing is 1000V. Calculate : i) steady state voltage sharing resistance R for each thyristor ii) transient voltage capacitance C_1 and iii) string efficiency. (08 Marks)

Module-4

- 7 a. With the help of circuit diagram and waveforms, explain the working of single – phase full converter with R-L load. (08 Marks)
- b. A single –phase full wave AC voltage controller has an input voltage of 150V (rms) and a load of 8 Ω . The firing angle of thyristor is 60°. Find : i) average output voltage ii) rms output voltage iii) output power and iv) input P.F. (08 Marks)

OR

- 8 a. Explain the working of single – phase full wave AC voltage controller with resistive load. Draw relevant circuit, waveforms. Derive an expression for rms output voltage. (08 Marks)
- b. A single – phase circulating current dual converter is fed by 230V, 50Hz supply. The load is resistive. The peak current of converter 1 is 39.7A. The firing angles are 45° and 135° respectively. If peak – circulating current is 11.5A, Find : i) inductance of current limiting reactor ii) load resistance. (08 Marks)

Module-5

- 9 a. Explain the working of step-up chopper. Draw the relevant waveforms. Derive an expression for average output voltage. (06 Marks)
- b. A step-down chopper has an input voltage of 200V and a load of 8 Ω resistance. The voltage drop across thyristor is 2V and the chopping frequency is 800Hz. The duty cycle is 0.4. Find : i) average output voltage ii) rms output voltage iii) chopper efficiency. (06 Marks)
- c. Briefly explain the factors that influence the performance of inverter. (04 Marks)

OR

- 10 a. Explain the voltage control of single –phase inverter using : i) multiple pulse width modulation ii) sinusoidal pulse width modulation. (08 Marks)
- b. With the help of circuit diagram, explain the operation of different types of choppers. (08 Marks)

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15EE54

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Signals and Systems

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the classification of signals. (06 Marks)
- b. Find the even and odd components of the signal $x(t) = (1 + t^3) \cos^3(10t)$. (04 Marks)
- c. Sketch the signal $y(t) = [x(t) + x(2-t)] u(1-t)$, where $x(t)$ is shown in Fig.Q1(c). (06 Marks)

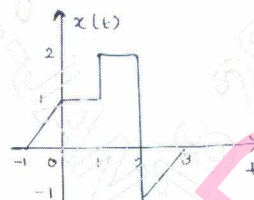


Fig.Q1(c)

OR

- 2 a. Find the overall operator the system $y(n) = \frac{1}{3}[x(n+1) + x(n) + x(n-1)]$. (04 Marks)
- b. Find the average power of square wave show in Fig.Q2(b). (07 Marks)

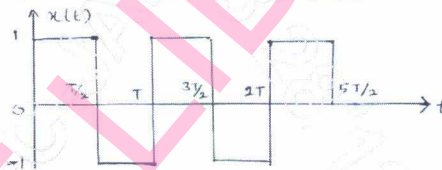


Fig.Q2(b)

- c. Determine whether the system $y(t) = x\left(\frac{t}{2}\right)$ is, i) Linear ii) Time-invariant iii) Memory iv) Causal v) Stable. (05 Marks)

Module-2

- 3 a. A continuous time LTI system with unit impulse response, $h(t) = u(t)$ and input $x(t) = e^{-at} u(t)$; $a > 0$. Find the output $y(t)$ of the system. (08 Marks)
- b. Find the step response for the LTI system represented by the impulse response $h(n) = \left(\frac{1}{2}\right)^n u(n)$. (04 Marks)
- c. Consider a continuous time LTI system is represented by the impulse response $h(t) = e^{-3t} u(t-1)$. Determine whether it is (i) Stable ii) Causal. (04 Marks)

OR

- 4 a. Solve the differential equation :

$$\frac{d^2 y(t)}{dt^2} + 3 \frac{dy(t)}{dt} + 2y(t) = 2x(t) \text{ with } y(0) = -1 ; \left. \frac{dy(t)}{dt} \right|_{t=0} = 1 \text{ and } x(t) = \cos t u(t). \quad (08 \text{ Marks})$$

- b. Draw the direct form I and II implementation for the difference equation :

$$y(n) + \frac{1}{5}y(n-1) - y(n-3) = 2x(n-1) + 7x(n-2). \quad (08 \text{ Marks})$$

Module-3

- 5 a. Find the Fourier transform of $x(t) = \sum_{k=0}^{\infty} \alpha^k f(t - kT)$; $|\alpha| < 1$. (06 Marks)
- b. Find the inverse Fourier transform of $k(j\omega) = \frac{j\omega}{(2 + j\omega)^2}$. (04 Marks)
- c. The impulse response of a continuous time LTI system is given by $h(t) = \frac{1}{RC} e^{-t/RC} u(t)$. Find the frequency response and draw its spectrum. (06 Marks)

OR

- 6 a. Find the frequency response and impulse response of the system having $y(t) = e^{-2t} u(t) + e^{-3t} u(t)$, for the input $x(t) = e^{-t} u(t)$. (08 Marks)
- b. Find the frequency response and the impulse response of the system described by differential equation: $\frac{d^2 y(t)}{dt^2} + 3 \frac{dy(t)}{dt} + 2y(t) = 4 \frac{dx(t)}{dt} + x(t)$. (08 Marks)

Module-4

- 7 a. State and prove Parseval's theorem in discrete time domain. (06 Marks)
- b. Find the DTFT of the signal $x(n) = a^{|n|}$; $|a| < 1$. (05 Marks)
- c. Find the inverse DTFT of the signal, $X(e^{j\Omega}) = \frac{3 - \frac{1}{4} e^{-j\Omega}}{-\frac{1}{16} e^{-j2\Omega} + 1}$. (05 Marks)

OR

- 8 a. Find the impulse response of the system having output $y(n) = \frac{1}{4} \left(\frac{1}{2}\right)^n u(n) + \left(\frac{1}{4}\right)^n u(n)$ for the input $x(n) = \left(\frac{1}{2}\right)^n u(n)$. (08 Marks)
- b. Obtain the difference equation for the system with frequency response: $H(e^{j\Omega}) = 1 + \frac{e^{-j\Omega}}{\left(1 - \frac{1}{2} e^{-j\Omega}\right)\left(1 + \frac{1}{4} e^{-j\Omega}\right)}$. (08 Marks)

Module-5

- 9 a. Determine the z-transform of $x(n) = -u(-n-1) + \left(\frac{1}{2}\right)^n u(n)$. Find the RoC and poles-zeros locations of $x(z)$. (06 Marks)
- b. Find the z-transform of $x(n) = n^2 \left(\frac{1}{2}\right)^n u(n-3)$ using appropriate properties. (04 Marks)
- c. Find the inverse z-transform of $x(z)$ using partial fraction method,

$$x(z) = \frac{1 + 2z^{-1} + z^{-2}}{1 - \frac{3}{2}z^{-1} + \frac{1}{2}z^{-2}}; |z| > 1 \text{ as RoC.} \quad (06 \text{ Marks})$$

OR

- 10 a. A system has impulse response $h(n) = \left(\frac{1}{2}\right)^n u(n)$. Determine the input to the system if the output is given by, $y(n) = \left(\frac{1}{3}\right)^n u(n) + \frac{2}{3} \left(-\frac{1}{2}\right)^n u(n)$. (08 Marks)
- b. Solve the following difference equation using z-transform, $y(n) - \frac{3}{2} y(n-1) + \frac{1}{2} y(n-2) = x(n)$ for $n \geq 0$, with $y(-1) = 4$, $y(-2) = 10$ and $x(n) = \left(\frac{1}{4}\right)^n u(n)$ (08 Marks)

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15EE553

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018

Electrical Estimation and Costing

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Write the necessity of Estimation and Costing. (05 Marks)
- b. Explain the following : i) Catalogues ii) Purchase system. (05 Marks)
- c. Mention the different mode of Tendering and explain them. (06 Marks)

OR

- 2 a. State the important factors which an estimator should know for preparing an internal wiring estimation. (06 Marks)
- b. Explain i) Overhead charges ii) Profit. (04 Marks)
- c. Write any four rules of Indian Electricity. (06 Marks)

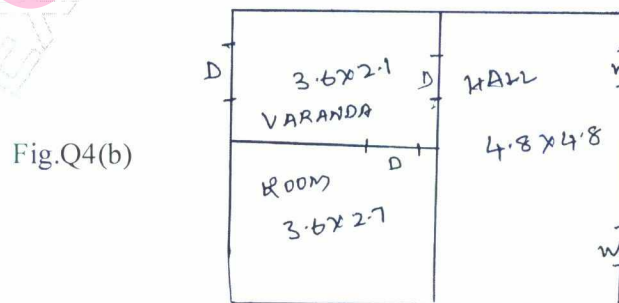
Module-2

- 3 a. List the general rules guide lines for residential installation. (05 Marks)
- b. Estimate the Quantity of material required for wiring a newly constructed building where plan is shown in fig.Q3(b). Assume the details of load. All dimensions are in meters. (11 Marks)



OR

- 4 a. Describe the various types of cables or wires used in internal wiring of building. (04 Marks)
 - b. Draw the Electrical installation plan and estimate the Quantity of material required for the wiring system. Chosen in a house plan shown in fig. Q4(b). The height of the ceiling as 3.6m and one plug point (60 W) has to be provided in each room. (12 Marks)
- All dimensions in meter.

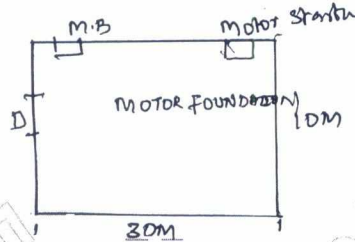


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2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-3

- 5 a. Write a short note on Service lines? (04 Marks)
 b. Write the reasons for excess recording of energy meter. (04 Marks)
 c. A 10HP, 415V, 3 ϕ , 50 Hz induction motor is to be installed in a workshop the plan of which is shown in fig.Q5(c). Show the single line diagram and estimate the quantity of material required. (08 Marks)

Fig.Q5(c)



OR

- 6 a. List any eight important consideration regarding motor installation. (04 Marks)
 b. Explain the determination of input power, size of conduit, distribution board, main switch and starter. (04 Marks)
 c. Find the materials for 1 ϕ overhead service lines of house located 10 meter away from pole with following :
 Load lighting = 300W ; Heating = 2500W. Assume safety factor = 2. (08 Marks)

Module-4

- 7 a. Explain the following : i) Cross Arms ii) Guys and Stays iii) Lighting Arrestor. (06 Marks)
 b. A pole for an overhead 11 kv, 3 phase 50Hz line is required to be earthed and a stay is to be provided. Make a neat sketch, how it should be done. Prepare a list of materials required. (10 Marks)

OR

- 8 a. Write note on Conductor erection. (08 Marks)
 b. Estimate the cost of adding 132 KV bay at 132 KV grid substations. (08 Marks)

Module-5

- 9 a. Describe briefly the equipment that must be available in a substation. (06 Marks)
 b. Prepare a list of material required for the installation of a 400 KVA indoor type 11/0.433 KV transformer. (10 Marks)

OR

- 10 a. Write short notes on Substation auxiliary supply. (06 Marks)
 b. Estimate the Quantity of material required for the augmentation of 33KV grid substation of 500 KVA to 1000 KVA 33/11 KV grid substations. (10 Marks)

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15EE563

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018

Renewable Energy Sources

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Define Energy and Energy resources. Discuss different ways of their classification with examples in each category. (06 Marks)
b. Write a short note on layers of the sun. (05 Marks)
c. Calculate Zenith angle of the sun at Lucknow (26.75°N) at 9:30am on February 16, 2012. (05 Marks)

OR

- 2 a. Discuss about causes of Energy scarcity. (05 Marks)
b. List Solar Thermal Energy Applications. (05 Marks)
c. Define : i) Hour angle ii) Latitude angle iii) Day length equation. (06 Marks)

Module-2

- 3 a. With a neat schematic diagram, explain working of a Stirling Engine. (06 Marks)
b. Write short note on : Solar Air heating. (05 Marks)
c. Discuss about Efficiency of Solar cells and fill factor. (05 Marks)

OR

- 4 a. Discuss about different solar cell materials. (05 Marks)
b. List the applications of solar cell systems. (05 Marks)
c. With a neat schematic diagram, explain working of a solar water heating system. (06 Marks)

Module-3

- 5 a. Explain Electrolytic production technologies used to produce hydrogen. (06 Marks)
b. Discuss about the factors or guidelines for wind turbine site selection. (05 Marks)
c. With a neat diagram, explain single – flash geo – thermal electric power plant. (05 Marks)

OR

- 6 a. List the advantages and disadvantages of Hydrogen energy. (05 Marks)
b. Discuss about wind characteristics. (05 Marks)
c. With a neat diagram, explain Binary cycle based geothermal electric power plant. Also list the disadvantages of geo – thermal power plants. (06 Marks)

Module-4

- 7 a. Using a schematic diagram, explain the co-operating Two – basin systems. (06 Marks)
b. Explain briefly Anaerobic digestion. (05 Marks)
c. Brief about the working of Cross – draft type of gasifiers. (05 Marks)

OR

- 8 a. Discuss about the problems faced in exploiting tidal energy. (05 Marks)
b. Brief on sources and types of wastes. (05 Marks)
c. With a neat schematic diagram, explain fixed – dome type of Bio – gas plant. (06 Marks)

15EE563

Module-5

- 9 a. With a neat diagram, explain OTEC Rankine cycle. (06 Marks)
b. Discuss about devices used for harnessing sea wave energy. (05 Marks)
c. List the benefits as a measure of the value of OTEC. (05 Marks)

OR

- 10 a. List the applications of OTEC. (05 Marks)
b. Brief on advantages and disadvantages of sea wave power. (05 Marks)
c. Explain the working principle of closed cycle OTEC, with a neat diagram. (06 Marks)
