Code No. 3090

FACULTY OF ENGINEERING

B.E. 2/4 (EEE/Inst.) II-Semester (Main) Examination, May / June 2017

Subject : Electronic Engineering-II

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

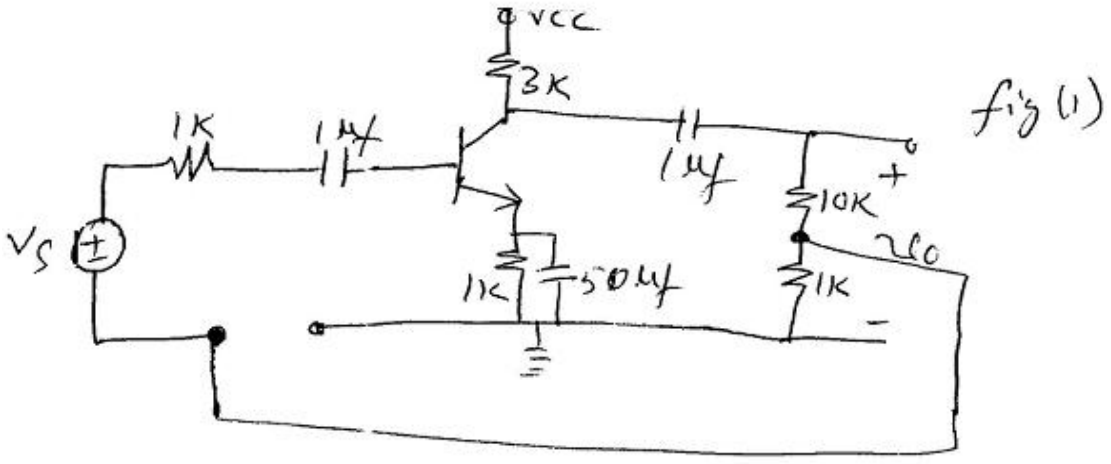
PART – A (25 Marks)

1	Write briefly on classification of amplifiers.	2
2	What is the effect of cascading on gain and bandwidth of amplifier?	3
3	What are the characteristics of –ve feedback in amplifiers?	2
4	What is the effect of current series feedback on input and output resistance of amplifier?	3
5	What is Barkhausen's criterion-explain briefly?	2
6	What is Crystal? How it functions?	3
7	What is class-D amplifier-explain briefly.	2
8	What is cross-over distortion in power amplifiers?	3
9	State and explain clamping theorem.	2
10	Explain how low pass RC circuit is used as Integrator.	3

PART – B (50 Marks)

11 Derive expressions for mid band gain and lower cut-off frequency of a single stage RC coupled BJT amplifier. 10

12 For the amplifier shown find R_{msf}, A_{vsf}, R_{of} and R_{if}. Given hie = 2K, hfe = 100, hre = hoe = 0. 10



13 Derive expressions of frequency of oscillations and condition of oscillations for Hartly oscillator. 10

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1607 OU - 1607

14 Explain the working of class-B push-pull power amplifier. Derive its efficiency. 10

15 Obtain and sketch the output waveform of RC high pass circuit for square wave input? Derive % tilt of output waveform. 10

16 a) Write about frequency stability of oscillators. 5
b) Explain local and global feedbacks. 5

17 Write short notes on :
a) Harmonic distortion in power amplifiers 5
b) Two level clipper 5

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OU - 1607 OU - 1607

Code No. 3100

FACULTY OF ENGINEERING

B.E. 2/4 (ECE) II-Semester (Main) Examination, May / June 2017

Subject : Switching Theory and Logic Design

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	State and prove consensus theorem.	3
2	Convert the following octal numbers into binary and hexadecimal $(5436.15)_8$ = (_____)$_2$ = (_____)$_{16}$.	3
3	Define Prime implicant.	2
4	Realize two input XOR gate using only NAND gates.	3
5	List out the applications of multiplexer and demultiplexer.	3
6	Define Static hazards.	2
7	Convert D flipflop into JK flip flip.	3
8	Draw the state diagram for Jk flip flop.	2
9	What is meant by the 'lock out' in counter?	2
10	Write the applications of shift registers.	2

PART – B (50 Marks)

11 a) Construct an even parity seven bit hamming code to transmit the data 0100. 6

b) Determine the Canonical SOP representation of the following function F(x, y, z) = Z+ $(x' + y)(x + y')$. 4

12 Minimize the following function using Quine Mc Cluskey method F(v, w, x, y,z) = $\sum m(0,7,8,9,12,13,15,16,22,23,30,31)$. 10

13 Implement the following boolean function using IC 74151 F(A,B,C,D) =. $\Sigma m(2,3,4,5,7,10,14)$ 10

14 Explain in detail how master slave JK flip flop avoids the race around condition. 10

15 Design a mod 128 counter using 7493 IC's. 10

16 a) Realize full adder using only two input NAND gates and verify its functionality using truth table. 5

b) Define set up and hold time. Explain in detail how to avoid meta stable state of sequential logic circuit? 5

17 Write short notes on : 10

a) Hazard free circuit
b) Shift registers
c) Parity code

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OU - 1607 OU - 1607

Code No. 3103

FACULTY OF ENGINEERING

B.E. 2/4 (M/P/CSE) II-Semester (Main) Examination, May / June 2017

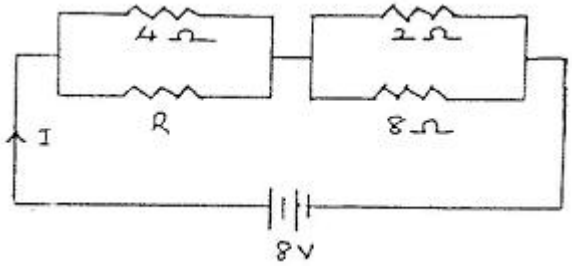
Subject : Electrical Circuits and Machines

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 The total power consumer by the network shown in below is 24 W. Find R and I. 3



2 Define R.M.S. value of current. 2

3 Write the relation between the power factor and wattmeter readings in two-wattmeter method of power measurement. 2

4 Define the regulation and all day efficiency of transformer. 3

5 Explain the different types of de generators. 3

6 What is the significance of back emf of a dc motor? 2

7 Explain why it is not advisable to start a 3 phase induction motor by directly connecting it across the supply. 3

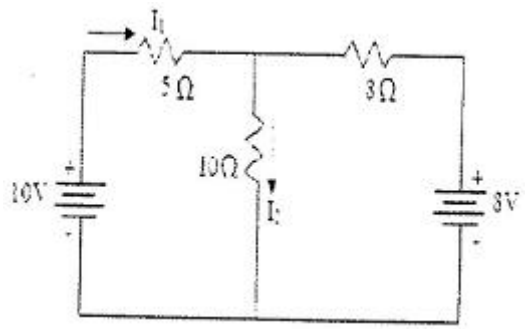
8 Define slip in an induction motor. 2

9 Why singe phase induction motor has low power factor. 3

10 Compare BLDC motor and conventional DC motor. 2

PART – B (50 Marks)

11 a) For the network shown below find the branch current I_1 and I_2 are marked in it. 5



b) State and explain the Norton's theorem. 5

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12 Derive the expression for impedance, phase angle, power factor, current, voltage, reactance, apparent power, real power and reactive power for RC series circuit. 10

13 a) Three 100 Ω resistors are connected first in star and then in delta across 415V, 3-phase supply. Calculate the line and phase currents in each case and also the power taken from the source. 5

b) Derive the relation between the line and phase value of voltage and current in a balanced star connected load. 5

14 a) A 25 kVA transformer has an efficiency of 97% both at FL and 96.5% at half load at 0.8pf lagging both cases. Determine full load iron and copper loss. 5

b) What the losses in a transformer. On what factors do they depend. How are losses reduced in a transformer by construction? 5

15 a) Explain the constructional details and principle operation of DC motor. 5

b) A 25 kW, 250V, de shunt generator has armature and field resistances of 0.06 Ω 100 Ω respectively . Determine the total armature power developed when working i) as a generator delivering 25 kW output and ii) as a motor taking 25 kW. 5

16 a) A 25 HP, 400 V, 50 Hz, 6-pole 3-phase induction motor runs at 960 rpm on full load. The stator loss is 350 W and full load efficiency is 89%, Calculate full load slip and rotor cupper losses. 5

b) Explain slip-torque characteristics of an 3-phase induction motor. 5

17 a) Explain constructional details and principle operation of single phase split phase induction motor. 5

b) Explain the principle operation of stepper motor with help of neat schematic diagram. 5

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OU - 1607 OU - 1607

Code No. 3109

FACULTY OF ENGINEERING

B.E. 2/4 (AE) II-Semester (Main) Examination, May / June 2017

Subject : Automotive Petrol Engines

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1		Write the drawbacks of 2 stroke powered engines when compared to 4 stroke powered engines.	3
2		What is meant by fring order? Mention the possible firing order used in 4 and 6 cylinder engines?	2
3		What is meant by rich mixture and learn mixture?	3
4		Mention factors affecting carburetion.	2
5		Brief about engine parameters affected the ignition timing.	3
6		Define dwell angle.	2
7		What are the factors controlling combustion chamber design?	3
8		How detonation occurs in petrol engine?	2
9		Mention types of cooling systems in SI engine.	3
10		Write merits of magneto ignition system.	2

PART – B (50 Marks)

11	a)	Explain the working principle of four stroke spark ignition engine.	6
	b)	What is significance of port and valve timing of petrol engine? Explain with diagram.	4
12	a)	Briefly explain essential parts of carburetor with sketch.	6
	b)	How MPFI advantageous over conventional carburetion?	4
13	a)	Explain battery ignition system.	6
	b)	Discuss various factors which affect the ignition timing.	4
14	a)	Briefly explain the stages of combustion in SI engines elaborating the flame front propagation.	6
	b)	Define knock in petrol engine and explain effect of engine variables on knock.	4
15	a)	Explain evaporative cooling system.	6
	b)	With sketches explain piston and cylinder temperature distribution of petrol engine.	4
16	a)	Explain about wet sump lubrication in spark ignition engine.	6
	b)	Compare liquid and air cooling systems.	4
17	a)	Explain centrifugal advance mechanism	6
	b)	Brief about Otto cycle with line diagram.	4

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OU - 1607 OU - 1607

Code No. 3114

FACULTY OF INFORMATICS

B.E. 2/4 (I.T.) II-Semester (Main) Examination, May / June 2017

Subject : Signals and Systems

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

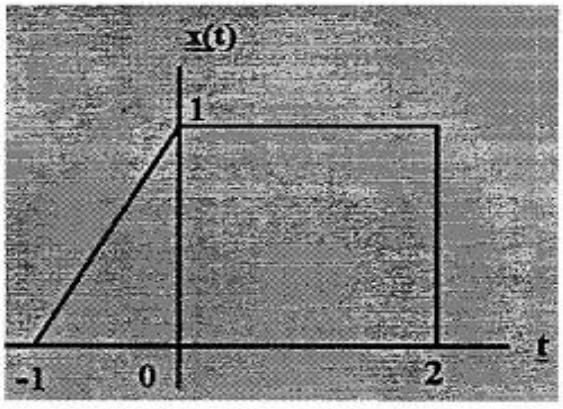
PART – A (25 Marks)

1	What are the basic operations on signals?	2
2	Find the even and odd components of u(t).	2
3	How do you obtain Exponential Fourier series coefficients from Trignometric Fourier series coefficients?	3
4	Explain the effect of symmetry on coefficients of Fourier series.	3
5	Draw the characteristics of ideal filters.	3
6	Write initial value and final value theorems of Laplace Transform.	2
7	When aliasing does occur? How can it beavoided?	2
8	Define and sketch. a) $¢(n)$ b) u(n)	3
9	What is Region of convergence with respect to Z-Transfrom?	2
10	Find Z-Transform of x[n] = n.u(n).	3

PART – B (50 Marks)

11 a) For the signal shown in figure, sketch the following : 6

i) x(t+3)
ii) x(t/2)
iii) x(2-t)
iv) x(2t-2)



b) Check whether the following systems are linear or not. 4

i) y(t) = t.x(t+2)
ii) $y(t) = x(t-2) + e^{x(t)}$

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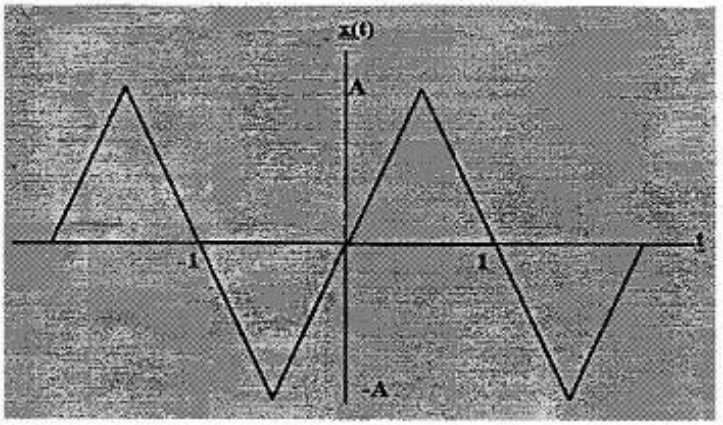
OU - 1607 OU - 1607

12 Find the Cosine and Trigonometric Fourier series for the signal x(t) shown in figure and sketch magnitude, phase spectra. 10



13 a) Explain any three properties of Fourier Transforms with suitable examples. 6

b) Find the Inverse Laplace Transform of $X(S)=\frac{(3S+4)}{(S+1)(S+2)^2}$. 4

14 Solve the second order linear differential equation 10

$$\frac{d^2}{dt^2}y(t)+5\frac{d}{dt}y(t)+6y(t)=\frac{d}{dt}x(t)+x(t)$$

For the initial conditions $y=(0)=2, \dot{y}(0)=1$ and the input $x(t)=e^{-4t}.u(t)$

15 a) State and explain sampling theorem for band limited signals. 7

b) Find the Nyquist Rate Nyquist Interval for the signal 3

$x(t) = \text{sinc}(100\pi t) + 2\ \text{sinc}(50\pi t)$

16 a) Find Z-Transform of the following

i) $\cos\left(\frac{\pi}{2}n\right)\cdot u(n)$ ii) $2^{-n}\cdot u(n)+3^{n}\cdot u(-n-1)$ 5

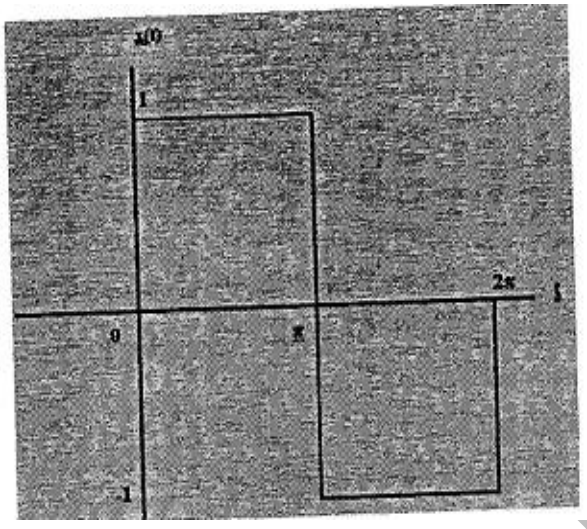
b) Find Inverse Z-Transform by power series method. 5

$$X(Z)=\frac{Z}{2Z^2-3z+1}\quad |Z|>1$$

..3

OU - 1607 OU - 07

17 a) Approximate the signal x(t) shown in figure in terms of sin(t). 4



b) Find canonic direct realization and its transpose for the Transfer Function 6

$$H(Z) = \frac{Z+3}{Z^2+7Z+10}$$

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OU - 1607 OU - 1607