

School: SOE	Level: BE	Invigilator's Sign:
Program: BEEE	Year/Part: III/I	Superintendent's Sign:
Subject: Signals and Systems (EG604EX)		Code No.

- i. Answers should be given by filling the Multiple-Choice Questions' Answer Sheet.
ii. The main answer sheet can be used for rough work.

Code No.

GROUP A (Multiple-Choice Questions)	[10x1=10]	Time: 20 Minutes
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1. Energy signal has
 - a) $E = 0$ and $P = 0$
 - b) $0 < E < \infty$ and $P = 0$
 - c) $0 < P < \infty$ and $E = \infty$
 - d) $E = \infty$ and $P = \infty$
2. Fourier series is defined for.....
 - a) periodic signal
 - b) aperiodic signal
 - c) periodic and aperiodic signal
 - d) non-periodic signal
3. Compression or expansion of signal in time is called.....
 - a) level shifting
 - b) folding
 - c) scaling
 - d) inversion
4. Fourier transform of rectangular function is.....
 - a) sine function
 - b) signum function
 - c) unit step function
 - d) sinc function
5. Fourier transform of discrete time aperiodic signal is.....
 - a) continuous
 - b) discrete
 - c) aperiodic
 - d) infinite
6. The impulse response of two LTI systems connected in cascade has overall impulse response which is equal to
 - a) sum
 - b) difference
 - c) convolution
 - d) multiplication
7. Original signal can be reconstructed from sampled signal if.....
 - a) $f_s < 2B$
 - b) $f_s \geq 2B$
 - c) $f_s < B$
 - d) $f_s = B$
8. The impulse response of low pass filter is.....
 - a) causal
 - b) non-causal
 - c) anti-causal
 - d) infinite
9. Inverse Fourier transform of $\delta(n)$ is.....
 - a) $1/(2\pi)$
 - b) π
 - c) 2π
 - d) 1
10. Which of the following is process of aliasing?
 - a) peaks overlapping
 - b) phase overlapping
 - c) amplitude overlapping
 - d) spectral overlapping

Multiple Choice Questions' Answer Sheet

Marks Secured: _____

In Words: _____

Examiner's Sign: _____ Date: _____

Scrutinizer's Marks: _____

In Words: _____

Scrutinizer's Sign: _____ Date: _____

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Manmohan Technical University
Office of the Controller of Examinations
Exam Year: 2081, mangsir

School: SOE	Level: BE	Time: 3 Hours
Program: BEEE	Year/Part: III/I	Full Marks: 50
Subject: Signals and Systems (EG604EX)		

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

GROUP A (Multiple-Choice Questions in separate paper)

[10×1=10]

GROUP B (Short Answer Questions - **Attempt Any Eight**)

[8×2=16]

1. Find even and odd component of the signal $x(n) = 2 + \cos(\omega_0 n) + \sin(2\omega_0 n)$.
2. Write rectangular pulse in terms of unit step signals.
3. What are the conditions for existence of Fourier series?
4. Explain periodicity property of DTFS.
5. What is modulation property of Fourier transform?
6. What is the difference between ESD and PSD?
7. Find frequency response of RC filter.
8. What is convolution sum? Explain its use.
9. Find impulse response of ideal LPF.

GROUP C (Long Answer Questions (**Attempt any six questions**))

[6×4=24]

10. Find Fourier series coefficient for the signal $x(t) = \sin \omega_0 t + \cos 3\omega_0 t$ and plot magnitude and phase spectrum.
11. Find CTFT for the signal $x(t) = e^{-2t} u(t)$ and plot the spectrum.
12. State and prove Parseval's relation for discrete time aperiodic signal.
13. Find convolution of two signals $x(t) = e^{-at} u(t)$ and $h(t) = u(t-3)$.
14. What are the properties of discrete time LTI systems? Explain.
15. Find Nyquist sampling rate and interval for the signal $x(t) = \sin(2000t) \sin(3000t)$.
16. For the signal $x(n) = \{1, 2, 3\}$, sketch $x(n-1)$ and $x(2n)$.

THE END