GATE 2025 Electronics and Communication Engineering (EC) – Sample Paper

Time: 3 hours

Marks: 100

Question types: MCQ (negative marking), MSQ (no negative), NAT (no negative)

Total questions: 65 (GA: 10; EC core: 55)

Marking scheme

- MCQ: +1/−1/3 for 1-mark; +2/−2/3 for 2-mark
- MSQ: +1 or +2; no negative; no partial
- NAT: +1 or +2; no negative

Sections

- General Aptitude (GA): 10 questions, 15 marks
- EC Core: 55 questions, 85 marks across Engineering Mathematics, Networks, Signals & Systems, Electronic Devices, Analog, Digital, Control, Communications, EM, plus allied topics

Note: Attempt all questions. For NAT, enter answers to the precision indicated (default: integer or two decimals).

General Aptitude (GA) – 10 questions, 15 marks

Q1 (MCQ, 1m) If $4x-3y=11$ and $2x+y=5$, then $x-y$ equals

A. 1 B. 3 C. 5 D. 7

Q2 (MCQ, 1m) Choose the correct antonym of “proliferate”.

A. Diminish B. Expand C. Multiply D. Propagate

Q3 (MCQ, 1m) The average of seven consecutive integers is 18. The smallest integer is

A. 12 B. 14 C. 15 D. 16

Q4 (MCQ, 1m) A completes a job in 8 days; B in 12 days. Working together with a 25% efficiency reduction for B, they finish in

A. 4 days B. 4.8 days C. 5 days D. 6 days

Q5 (MCQ, 1m) If the statement “All consultants are engineers” is true, which must be true?

A. Some engineers are not consultants.

B. Some consultants are not engineers.

C. No engineer is a consultant.

D. Every consultant is an engineer.

Q6 (MSQ, 2m) Select all grammatically correct sentences.

P. Neither of the plans is acceptable.

Q. Each of these circuits have faults.

R. The data are being analyzed carefully.

S. Little time remains before the test.

Q7 (MCQ, 2m) A price is increased by 20% and then decreased by 20%. Net change is

A. 0% B. −4% C. +4% D. −2%

Q8 (NAT, 2m) If log10 a = 0.8 and log10 b = 1.2, compute log10(a2/b) (two decimals).

Q9 (MCQ, 2m) A dataset has mean 40 and SD 6. After multiplying each value by 1.5 and adding 5, the new mean and SD are

A. 65, 14 B. 65, 9 C. 65, 6 D. 45, 9

Q10 (NAT, 2m) A 150m train passes a pole in 6s and a 450m platform in T seconds at constant speed. Enter T.

EC Core – 55 questions, 85 marks

Engineering Mathematics

Q11 (MCQ, 1m) Let A be 2×2 with eigenvalues 2 and −1. The eigenvalues of A2+I are

A. 5, 2 B. 5, 1 C. 4, 1 D. 3, 2

Q12 (NAT, 1m) Evaluate $\int_0^\infty e^{-2t}\cos(3t)\,dt$ (two decimals).

Q13 (MCQ, 2m) If X and Y are independent with Var(X)=2, Var(Y)=3, then Var(2X−Y+5)=

A. 7 B. 11 C. 13 D. 17

Q14 (MSQ, 2m) For the sequence $x[n]=u[n]-u[n-5]$, its DTFT $X(e^{j\omega})$ has

P. Real and even magnitude.

Q. Zeros periodically in ω.

R. Phase discontinuities.

S. Linear phase.

Select all true.

Networks, Signals and Systems

Q15 (MCQ, 1m) A series RLC has R=10Ω, L=100mH, C=100μF. Resonant frequency (rad/s) is approximately

A. 100 B. 316 C. 1,000 D. 3,162

Q16 (NAT, 1m) A causal LTI with $H(s)=10/(s+5)$. For unit-step input, steady-state value of output is?

Q17 (MCQ, 2m) A two-port has y-parameters: y11=1, y12=−0.5, y21=−0.5, y22=2 (S). Input port short-circuited. The short-circuit current gain Isc2/Isc1 is

A. y21/y11 B. −y21/y22 C. −y12/y11 D. y12/y22

Q18 (MSQ, 2m) For an LTI CT system with impulse $h(t)=e^{-2t}u(t)$:

P. Stable.