Total No. of Questions—**8**] [Total No. of Printed Pages—**4**

| Seat No. | |
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# [5152]-538

**S.E. (Electronics/E&TC) (Second Semester)**

**EXAMINATION, 2017**

**ANALOG COMMUNICATION**

**(2015 PATTERN)**

**Time : Two Hours** **Maximum Marks : 50**

***N.B.*** **:—** (*i*) Attempt Q. No. **1** or Q. No. **2**, Q. No. **3** or Q. No. **4**, Q. No. **5** or Q. No. **6** and Q. No. **7** or Q. No. **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Your answers will be valued as a whole.

(*v*) Use of logarithmic tables, slide rule, mollier charts, electronic pocket calculator and steam table is allowed.

(*vi*) Assume suitable data, if necessary.

**1.** (*a*) Distinguish clearly between Baseband communication and carrier communication. [6]

(*b*) Sketch AM signal for the given periodic triangle signal $m(t)$ corresponding to : [6]

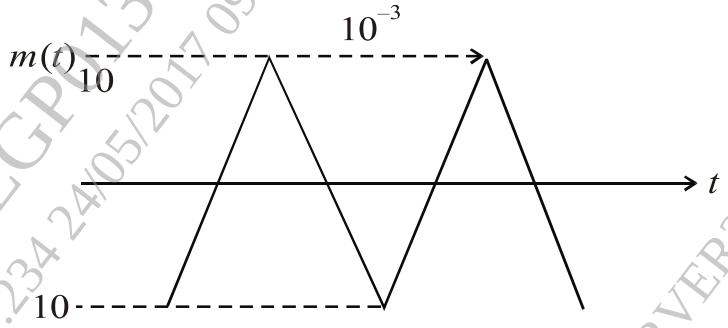
(*i*) $m = 0.5$

P.T.O.

(*ii*) $m = 1$

(*iii*) $m = 2$

(*iv*) $m = \infty$ ?




*Or*

**2.** (*a*) Explain the following performance characteristics of receiver with response curve ? [6]

(*i*) Sensitivity

(*ii*) Selectivity

(*iii*) Fidelity

(*iv*) Image frequency rejection.

(*b*) A receiver tunes signal from 3 MHz to 30 MHz with an IF of 455 kHz. Find the frequency tuning ranges and capacitor tuning ranges for the oscillator section and RF section. [6]

**3.** (*a*) Give comparison between FM and PM ? [6]

(*b*) Describe Armstrong method for Indirect FM generation of wideband angle modulation signals. [6]

*Or*

**4.** (*a*) Discuss principle working of FM detection. Briefly explain any *one* FM detector method. [6]

(*b*) Justify "Ratio detector acts as Detector as well as limiter" ? [6]

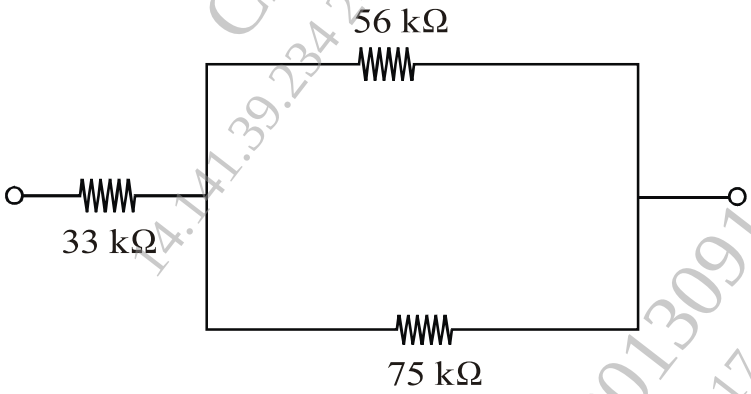
**5.** (*a*) Draw equivalent sources for thermal noise (voltage and current) and derive the expression for rms noise voltage and rms noise current. [6]

(*b*) Three resistors of 33 kΩ, 56 kΩ and 75 kΩ are at 310.5 ºK temperature. For a B.W. of 100 kHz, calculate thermal noise voltage generated by : [7]

(*i*) Each resistor

(*ii*) The three resistors in series

(*iii*) Resistor combination as shown ?




*Or*

**6.** (*a*) Derive expression for Friss formula for noise factor of amplifier in cascade. [7]

(*b*) A mixer stage has noise figure of 28 dB, and these is preceded by an amplifier that has noise figure of 7 dB and an available power gain of 20 dB. Calculate the overall noise figure referred to the input. [6]

**7.** (*a*) State and prove sampling theorem for band limited signal. [7]

(*b*) Compare PAM, PWM and PPM. [6]

*Or*

**8.** (*a*) Describe with suitable block diagram pulse code modulation. [7]

(*b*) What is meant by "Aperture Effect" ? How can it be reduced ? [6]