

M.Sc. 4th Semester Examination, 2021
PHYSICS
(Advanced Electronics-III)
Course Code: 405ME(A)
Course ID: 42455

Time: 2 Hours

Full Marks: 40

*The figures in the right hand side margin indicate full marks.
Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer any five of the followings:

2×5=10

- (a) What is TDM and FDM?
- (b) Name different types of Pulse modulation techniques.
- (c) What is PAM?
- (d) What is guard band?
- (e) What is On-Off keying?
- (f) What is through-put?
- (g) Write down full forms of FDMA, TDMA and CSMA.

2. Answer any four of the followings:

5×4=20

- (a) State and prove sampling theorem.
- (b) State and explain principle of three different process of modulation methods of digital signal.
- (c) State and explain channel capacity theorem.
- (d) What is power spectral density? State and explain Weiner-Kheinchin theorem.
- (e) Write and explain Shanon's source coding theorem.
- (f) Prove that $0 \leq H(x) \leq \log_2 M$, where $H(x)$ is the entropy and M is total number of events.

1+3=4

3. Answer any one of the followings:

10×1=10

- (a) What is BASK? Briefly describe the principle of modulation and demodulation technique of BASK.
- (b) Write short notes on (any two):
 - i. Pulse RADAR,
 - ii. Slotted ALOHA Protocol,
 - iii. Random Process,

2+4+4=10

5+5=10
