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SARDAR PATEL UNIVERSITY

M.Sc. (Electronics and Communication) (Sem – III) Examination - 2017

SC

Day & Date : 2-11-2017, Thursday

Time : Subject : Satellite Communication

Subject Code : PS03CELC01

Instructions :
[a] *Figure to the right indicates full marks.*
[b] *All questions are compulsory.*

Total Marks : 70

Q-1 **Choose the correct answers** **[08]**

1 _____provides an accurate time reference for the burst position in frame
a) BCW b) SIC c) CBR d) None of above

2 An orbit in which the satellite moves in the same direction as the earth moves is known as a_____.
a) Prograde orbit b) Retrograde orbit c) Inclination d) Line of apsides

3 The no. of bits transmitted as burst is given by_____
a) bit rate * buffer capacity b) buffer capacity * frame time c) bit rate * frame time d) None of above

4 SCPC systems are used on lightly loaded routes, this type of service being referred to as a ____*service.*
a) Preamble b) Postamble c) Thick route d) Thin route

5 Calculate the radius of a circular orbit from kepler's third law for which period is 1 day.
a) 46,241 km b) 42,241 km c) 24,421 km d) 46,000 km

6 SIC is used for_____
a) Overlap signal b) Transmitting signal c) Transmitting station d) Both [b] & (c)

7 A burst at the beginning of each frame is termed as a _____.
a) CBR b) Reference burst c) Guard time d) All of above

8 The mutual information I(X; Y) is defined as_____
a) r Cs b/symbol b) H(X) – H(X/Y) b/symbol c) H(X) b/symbol d) r Cs b/sec

Q-2 **Attempt <u>Any Seven</u> out of the followings** **[14]**

1. Determine which of the following years are leap years: [a] 1987, [b] 1988, [c] 2000 & [d] 2100
2. Explain Back-off loss and EIRP.
3. Differentiate between TDMA & FDMA.
4. Define the following terms :
   [a] CBR & [b] BCW
5. Draw a neat labeled diagram of Frame and burst format for TDMA system.
6. Find out the Julian day for 13 hr UT on 18 Dec 2000. (Jan 0.0 2000 = 2451543.5 Julian day)
7. Represent the data 10111101 using the following digital data formats with the help of neat figures
   [a] Unipolar RZ, [b] Unipolar NRZ & (c) Split phase Manchester
8. Give the transponder channel assignment for the earth station in FDMA.
9. Calculate the average length of the civil year in the Gregorian calendar.

Q-3 **[a]** State the Kepler's laws and also discuss the various terms of earth orbiting satellite. **[06]**

[b] For a total transmit power (p_t) of 1000w, determine the energy per bit (E_b) for transmission rate of 80Mbps. **[06]**

OR

[b] Explain the following terms : **[06]**
[a] Calendar [b] Geo-stationary satellite

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