NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

TEL – GSM transmission system operations

T135

Friday, 23/7/2021

08:30 – 11:30 AM

Names: .....

Index number: .....

TVET NATIONAL EXAMINATIONS, RTQF LEVEL 5, 2020-2021

QUESTIONS and ANSWERS BOOKLET

OPTION/TRADE: **TELECOMMUNICATION**

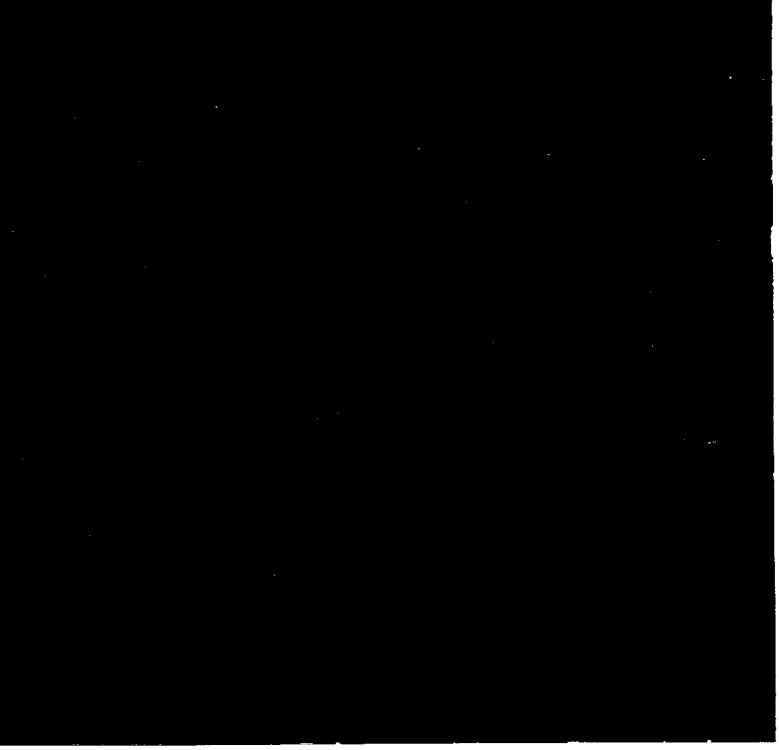
SUBJECT: **GSM transmission system operations**

ACADEMIC YEAR: **2020-2021**

Read carefully the instructions on page (i) & (ii).

FOR EXAMINER'S USE ONLY

QUESTIONS	1	2	3	4	5	6	7	8	9	10	Total
Marks											
QUESTIONS	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**Total**
Marks											
QUESTIONS	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Marks											



TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

INSTRUCTIONS TO CANDIDATES: PART I (Answer Booklet)

1. A candidate should fill in the actual names and the index number on the cover of this questions and answer booklet on the provided place (Black Box).

2. It is illegal for a candidate to write any of his/her names, index number or a school name inside the answer booklet.

3. A candidate should check if all pages of the answer booklet are complete. No candidate should remove or tear any pages or part of it from the answer booklet.

4. A candidate should answer in the language in which the examination is set. (See page ***(ii)***)

5. A candidate should sign on the sitting plan when submitting the answer booklet. He/she has also to check if the answer booklet is well sealed.

6. No extra paper is allowed in the examinations room. If a candidate is caught with it his/her results will be nullified.

7. No candidate is allowed to write answers not related to the subject being sat for, otherwise it will be considered as a cheating case.

8. Write your answers on the 12 lined pages (From page 1 of 12 to page 12 of 12).

9. Use the last non-lined pages as draft.

10. Results for any candidate who is caught in examination malpractices are nullified. The cheating can be recognized during examinations administration, marking exercise or even thereafter.

TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

OPTION/TRADE: TELECOMMUNICATION

SUBJECT: GSM transmission system operations

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES: PART II (Question paper)

The paper is composed of two (2) Sections as follows:

Section I: Attempt all the Twelve (12) questions	**(60 marks)**
Section II: Attempt any Four (4) questions out of Six (6)	**(40 marks)**

Allowed materials:

- Ruler or square
- Calculator

Note:

Every candidate is required to carefully comply with the provided assessment instructions.

Section I : Attempt all the Twelve (12) questions **(60 marks)**

01. Which of the following does not come under the teleservices of GSM? **(5 marks)**

a) Standard mobile telephony
b) Mobile originated traffic
c) Base originated traffic
d) Packet switched traffic

02. Give and explain methods that can be used to transmit packets over a network. **(5 marks)**

03. Which of the following is the world's first cellular system to specify digital modulation and network level architecture? Explain. **(5 marks)**

a) GSM
b) AMPS
c) CDMA
d) IS-54

04. Which of the following memory device stores information such as subscriber's identification number in GSM? Explain. **(5 marks)**

a) Register
b) Flipflop
c) SIM
d) SMS

05. Which of the following feature makes impossible to eavesdrop on GSM radio transmission? Explain. **(5 marks)**

a) SIM
b) On their privacy
c) SMS
d) Packet switched traffic

06. What is an advantage of using frequency reuse? **(5 marks)**

07. What is "a snag"? **(5 marks)**

08. a) Define the term encryption

b) A GSM technician needs to use one encryption algorithm during configuration. As Technician give four (4) types of encryption algorithms and give the origin of them. **(5 marks)**

09. In configuration of GSM network, a technician needs to know types of protocol to be used. As technician give five (5) types of protocols and explain them. **(5 marks)**

10. Outline the five (5) Generations of Mobile telephone system. **(5 marks)**

11. Identify five (5) GSM transmission equipment employed during its system Configuration. **(5 marks)**

12. Choose the best answer from the following given answers in {....}

a) Which of the following is the world's first cellular system to specify digital modulation and network level architecture? {**GSM, AMPS, CDMA, IS-54**}

b) Which of the following does not come under subsystem of GSM architecture? (**BSS, NSS, OSS, Channel**)

c) Who set the standards of GSM? {**ITU, AT&T, USDC, ETSI**}

d) Which of the following does not come under the teleservices of GSM? {Standard **mobile telephony, Mobile originated traffic, Base originated traffic, Packet switched traffic**}

e) Which of the following memory device stores information such as subscriber's identification number in GSM? {**Register, Flip-Flop, SMS, SIM**}. **(5 marks)**

Section II: Attempt any Four (4) questions out of Six (6) **(40 marks)**

13. Localise the following essential Components of Mobile Phone. Give their respective functions: **(10 marks)**

a) Charging IC
b) Antenna Point
c) RAM
d) VCO
e) RX filter & TX filter
f) P.F.O
g) Flash IC
h) CPU
i) 26 MHz Crystal Oscillator
j) ROM

14. **a)** Describe the main subsystems of GSM architecture. **(5 marks)**

b) Mention the basic propagation mechanisms, which impact propagation of signal in GSM transmission System. **(5 marks)**

15. A technician would like to measure the channel power for GSM by using spectrum analyzer. As technician, give steps of measuring channel power for GSM by using spectrum analyzer. **(10 marks)**

16. The following concern GSM Architecture and GSM services.

a) A GSM consists of three subsystems. Select any three sub-systems from the list given below:

i) The network and switching subsystem (NSS).

ii) Mobile stations (MS).

iii) The operation subsystem (OSS).

iv) Base Transceiver Stations (BTS).

v) The radio subsystem (RSS). **(6 marks)**

b) A GSM System can provide supplementary services. Select two services from the given list.

i) Filling of the acceptance documents

ii) User identification

iii) Blocking messages

iv) Call redirection (or forwarding). **(4 marks)**

17. Draw a simplified block diagram of a mobile telephone system/GSM Structure. **(10 marks)**

18. Explain the range of TCP/IP classes. **(10 marks)**