




Giảng viên ra đề: (Chữ ký và Họ tên)	Ngày: 20-12-2022	Người phê duyệt: (Chữ ký và họ tên)	Ngày: 20-12-2022
			
TS. Lê Trọng Nhân		PGS. TS. Phạm Quốc Cường	

 Bách Khoa University (BKU) Computer Science - Engineering	FINAL TERM EXAM		Học kỳ / Năm học		1	2021-2022
			Ngày thi		20-12-2022	
	Môn học	Application based on IoTs				
	Mã môn học	CO3037				
	Thời lượng	30 minutes	Mã đề	2022		
Notes: - There is no reference for this exam!!! - Both answer sheet and exam papers are required to submit.						

- MCQ 1.** [L.O.3] In gateway, to send a sensor value to the IoT Server server, which protocol is used?
 (A) MQTT Publish (B) MQTT Subscribe (C) FTP Upload (D) FTP Download
- MCQ 2.** [L.O.1] ——— control in the data link layer is based on automatic repeat request, which is the re-transmission of data.
 (A) Flow (B) Error (C) Transmission (D) none of the above
- MCQ 3.** [L.O.3] Both Go-Back-N and Selective-Repeat Protocols use a ———.
 (A) sliding frame (B) sliding window (C) sliding packet (D) none of the above
- MCQ 4.** [L.O.1] What is the right statement concerning the Internet of Things networks?
 (A) Numerous devices, wireless communications and sharing/exchanging data
 (B) Network topology is normally stable, communications are based on TCP/IP architecture
 (C) All are correct (D) All are wrong
- MCQ 5.** [L.O.1] Protocols such as Stop-And-Wait ARQ, Go-Back-N ARQ and Selective Repeat ARQ are designed in order to applying for:
 (A) Noiseless communication channels (B) Noisy communication channels
 (C) For both noiseless and noisy channels (D) None of them are correct
- MCQ 6.** [L.O.2] Concerning some wireless modules, such as Wifi, GPRS, Zigbee and Lora, what is the most supported interface?
 (A) UART (B) SPI (C) I2C (D) RF
- MCQ 7.** [L.O.3] For a monitoring application based on IoTs architecture, what are the typical components?
 (A) Sensor nodes and Smart phone app (B) Sensor nodes, gateway and Server
 (C) Sensor nodes, gateway, Server and Smart phone app (D) None of the above
- MCQ 8.** [L.O.1] In Stop-and-Wait ARQ, the acknowledgment number always announces in ——— arithmetic the sequence number of the next frame expected.
 (A) modulo-2 (B) modulo-4 (C) modulo-m (D) none of the above
- MCQ 9.** [L.O.2] What is the asynchronous protocol?
 (A) UART (B) SPI (C) I2C (D) All are correct
- MCQ 10.** [L.O.2] What is (are) advantage(s) of the Edge Computation?
 (A) Improve the system autonomous (B) Reduce the processing delay of the system
 (C) The system is more smarter with AI model at the Edge (D) All are correct

MCQ 11. [L.O.3] For the Internet of Things architecture proposed by Timothy Chou, how many layers are presented?

- (A) 2 (B) 3 (C) 4 (D) 5

MCQ 12. [L.O.1] Which layer in TCP/IP architecture be in-charge of communications between 2 nodes in the same network?

- (A) TCP (B) IP (C) Data link (D) Physical layer

MCQ 13. [L.O.3] MQTT pub/sub mechanism at the gateway belongs to which layer of the IoT Architecture?

- (A) Things layer (B) Connect Layer (C) Collect Layer (D) Do Layer

MCQ 14. [L.O.3] In the ——— protocol we avoid unnecessary transmission by sending only frames that are corrupted.

- (A) Stop-and-Wait ARQ (B) Go-Back-N ARQ (C) Selective-Repeat ARQ (D) None of the above

MCQ 15. [L.O.3] Serial connections between the microcontroller (YoloBit or STM32) and the Python Gateway belongs to which layer of the IoT Architecture?

- (A) Things layer (B) Connect Layer (C) Collect Layer (D) Do Layer

MCQ 16. [L.O.1] One of drawbacks of embedded systems having the operating system (OS) compared to micro-controller systems is:

- (A) Resource management is limited (B) The real-time operations are not guaranteed
(C) Embedded systems are not flexible (D) All are not correct

MCQ 17. [L.O.2] Select the best answer for a sensor node in an IoT network.

- (A) A sensor node is normally based on a micro-controller
(B) Sensors and Actuators are connected to a sensor node
(C) Sensor node is normally equipped with a wireless transceiver (D) All are correct

MCQ 18. [L.O.1] For some applications based on IoTs require a large cover area (e.g. larger than 1km range), what is the best wireless standard for communications?

- (A) Wifi connection (B) Zigbee (C) LoRa (D) Bluetooth 5.0

MCQ 19. [L.O.1] ——— control refers to a set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgment.

- (A) Flow (B) Error (C) Transmission (D) none of the above

MCQ 20. [L.O.3] In order to control an IoT device (ON/OFF for an LED or a Motor), which protocol bellow is the most suitable?

- (A) HTTP (B) FTP (C) MQTT (D) All are correct

MCQ 21. [L.O.1] Stop-and-Wait ARQ is a special case of Go-Back-N ARQ in which the size of the send window is 1.

- (A) 1 (B) 2 (C) 4 (D) 8

MCQ 22. [L.O.2] What is the sensor can be used to monitor the air temperature and humidity?

- (A) DHT11 (B) YoloBit (C) DS1037 (D) All of the above

MCQ 23. [L.O.3] Control an LED of a YoloBit (or STM32) platform belongs to which layer of the IoT Architecture?

- (A) Things layer (B) Connect Layer (C) Collect Layer (D) Do Layer

MCQ 24. [L.O.3] What is the best platform listed bellow can be used to implement an IoT Gateway?

- (A) Arduino Uno (B) YoloBit (C) ESP8266 (D) Raspberry PI v4

MCQ 25. [L.O.3] In the ——— protocol, if no acknowledgment for a frame has arrived, we resend all outstanding frames.

- (A) Stop-and-Wait ARQ (B) Go-Back-N ARQ (C) Selective-Repeat ARQ (D) None of the above

MCQ 26. [L.O.2] Among following communication techniques, which one has the lowest communication speed?

- (A) UART (B) SPI (C) I2C (D) All of above

MCQ 27. [L.O.3] It is assumed that a gateway has to collect data from 2 different nodes. What is the data format can be used in this case?

- (A) !TEMP=xx#, where xx is the temperature value (B) !ID=x#, where x is the ID of a node
(C) !ID=x,TEMP=yy#, where x is the ID of a node, yy is the temperature value (D) All are correct

MCQ 28. [L.O.2] According to following protocol, which one has the best communication distance?

- (A) UART (B) SPI (C) I2C (D) USB

MCQ 29. [L.O.1] ——— protocol is the improvement of ——— protocol by adding error flow control mechanism

- (A) Selective Repeat ARQ, Go-Back-N ARQ (B) Go-Back-N ARQ, Stop-And-Wait
(C) Stop-And-Wait ARQ, Stop-And-Wait (D) None of them



MCQ 30. [L.O.1] According to a proposed architecture for Internet of Things, there are FIVE different layers, what are they?


- (A) Physics, Network Access, TCP/IP, Transport and Application layers
(B) Physic, Network Access, TCP, IP and Application layers
(C) Things, Connect, Collect, Learn and Do layers (D) All are correct

MCQ 1. A
MCQ 2. B
MCQ 3. B
MCQ 4. A
MCQ 5. B
MCQ 6. A
MCQ 7. C
MCQ 8. A
MCQ 9. A
MCQ 10. D

MCQ 11. D
MCQ 12. C
MCQ 13. C
MCQ 14. C
MCQ 15. B
MCQ 16. B
MCQ 17. D
MCQ 18. C
MCQ 19. A
MCQ 20. C

MCQ 21. A
MCQ 22. A
MCQ 23. A
MCQ 24. D
MCQ 25. B
MCQ 26. A
MCQ 27. C
MCQ 28. B
MCQ 29. B
MCQ 30. C

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- MCQ 4.** [L.O.3] In the ——— protocol we avoid unnecessary transmission by sending only frames that are corrupted.
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MCQ 1. B

MCQ 2. B

MCQ 3. A

MCQ 4. D

MCQ 5. C

MCQ 6. C

MCQ 7. D

MCQ 8. B

MCQ 9. D

MCQ 10. C

MCQ 11. D

MCQ 12. C

MCQ 13. C

MCQ 14. D

MCQ 15. D

MCQ 16. A

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MCQ 22. B

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MCQ 24. A

MCQ 25. D

MCQ 26. D

MCQ 27. B

MCQ 28. B

MCQ 29. A

MCQ 30. B