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**PESURU MODEL PAPER ⑦****20 E I**

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**General Certificate of Education (Adv. Level) Examination****Information & Communication Technology I****Two hours****Instructions**

- Answer all the questions
- In each of the questions 1 to 50 pick one of the alternatives from (1), (2), (3), (4), (5) which is correct or most appropriate.
- Use of calculators is **not allowed**

- (01) What does EDVAC stands for,  
 1) Electronic discrete variable automatic computer.  
 2) Electrical dynamic variable automatic computer.  
 3) Electronic dynamic variable automatic calculator.  
 4) Electrical discrete variable automatic computer.  
 5) Electronic dynamic variable automatic computer.
- (02) From the following answers choose an equivalent to  $5171_8$ .  
 1)  $2671_{10}$       2)  $3681_{10}$       3)  $101001111001_2$       4)  $B79_{16}$       5)  $A78_{16}$
- (03) Which of the following is/are I/O device(s)?  
 A. Monitors      B. Punched cards      C. Scanner      D. Touch screen  
 1) A and C only.      2) A and D only.      3) A, B and C only.  
 4) A, C and D only.      5) All (A, B, C, D).
- (04) Which of the following is not true about water fall model.  
 1) Its linear - sequential.  
 2) Its non- iterative.  
 3) Phases of this model in order are requirement analysis system design, development, testing, implementation, maintenance.  
 4) Phases can be overlapped.  
 5) Suitable when the requirements are very clear and fixed.
- (05) The place where large amount of data stored outside the CPU is called,  
 1) Peripheral      2) CU      3) ALU      4) RAM      5) Backing storage
- (06) What is the answer to following addition  $AB_{16} + 657_8$ .  
 1)  $101011010_2$       2)  $15A_{16}$       3)  $1122_8$       4)  $25A_{16}$       5)  $100101101_2$
- (07) What is largest and smallest decimal number 8 - bit two's compliment representation can have respectively,  
 1) 128, 0      2) 128, - 128      3) 127, (-127)      4) 127, (-128)      5) 128, (-127)
- (08) What is considered as the first computing device?  
 1) Difference Engine      2) ENIAC      3) Slide ruler      4) Napier's Bones      5) Abacus

- (09) Which of the following input device is used to mark MCQ answer sheets.  
 1) OMR      2) OCR      3) MICR      4) Scanner      5) None of the above.
- (10) Convert the following decimal number to octal number  $19.734375_{10}$ ,  
 1) 23.2632247      2) 23.578      3)  $19.57_8$   
 4)  $19.2632247_8$       5)  $25.2632247_8$
- (11) What is the result, when converting,  $X + \bar{Y}Z$  SOP expression into standard sop expression,  
 1)  $X + \bar{Y}Z$     2)  $XYZ + X\bar{Y}\bar{Z} + X\bar{Y}Z + X\bar{Y}Z$     3)  $XYZ + XY\bar{Z} + X\bar{Y}Z + X\bar{Y}\bar{Z} + X\bar{Y}Z + X\bar{Y}Z$   
 4)  $X\bar{Y}Z + X\bar{Y}\bar{Z} + X\bar{Y}Z + X\bar{Y}\bar{Z} + X\bar{Y}Z + X\bar{Y}\bar{Z}$     5)  $XYZ + XY\bar{Z} + X\bar{Y}\bar{Z} + X\bar{Y}\bar{Z} + X\bar{Y}Z + X\bar{Y}Z$
- (12) Convert the following SOP expression in standard SOP form to an equivalent standard POS expression.  

$$ABC + A\bar{B}\bar{C} + A\bar{B}C + A\bar{B}\bar{C} + \bar{A}\bar{B}C$$
 1)  $(\bar{A} + \bar{B} + C)(\bar{A} + B + C)(\bar{A} + B + C)$     2)  $(A + B + C)(A + \bar{B} + C)(A + \bar{B} + \bar{C})$   
 3)  $(\bar{A} + \bar{B} + \bar{C})(A + \bar{B} + C)(A + \bar{B} + \bar{C})$     4)  $(A + B + C)(\bar{A} + B + \bar{C})(A + \bar{B} + C)$   
 5)  $(A + B + C)(\bar{A} + \bar{B} + \bar{C})(\bar{A} + \bar{B} + C)$
- (13) Meta data are defined within.  
 1) <body> tags    2) <p> tags    3) <dl> tags    4) <head> tags    5) <hI> tags
- (14) . . / in a folder structure of html is used to access.  
 1) Current directory    2) Child directory    3) Root directory  
 4) Child directory's child directory    5) Parent directory
- (15) What is the correct way of defining a text area of 3 rows and 2 columns.  
 1) <textarea name = "ta" rows = "3" cols = "2">  
 2) <textarea name = "ta" rows = "3" columns = "2">  
 3) <textarea name = "ta" rows = "3" columns = "2">  
 4) <input type = "textarea" name = "ta" rows = "3" cols = "2">  
 5) <input type = "textarea" name = "ta" rows = "3" columns = "2">
- (16) How to select element with ID name "test" using CSS.  
 1) \*test    2) test    3) .test    4) #test    5) @test
- (17) Which of following is not an advantage of full duplex data transmission mode over half duplex data transmission mode.  
 1) Enables two way communication.    2) Allows fast communication.  
 3) Is cheaper than half duplex.    4) Easy to communicate.  
 5) Efficient.
- (18) What is the type of analog modulation where the frequency or the phase of the carrier signal is not changes.  
 1) ASK    2) PSK    3) AM    4) FM    5) PM
- (19) What is fastest guided transmission media.  
 1) Fiber optics    2) Twisted pair    3) Coaxial cable    4) UTP    5) STP
- (20) Which layer of ISO-OSI seven layers is responsible establishing a connection between processes in end systems.  
 1) Presentation layer    2) Network layer    3) Transport layer  
 4) Physical layer    5) Session layer



- (21) "An attendance system should be efficient" which of the following best describe the above requirement.  
 1) Non-functional, essential    2) Non-functional, nice to have    3) Functional, essential  
 4) Functional, nice to have    5) Functional, essential or nice to have
- (22) Which of the following is true about data flow diagramming.  
 A. Shows how data is passed around a system.  
 B. Shows how data is processed in the system.  
 C. Shows how data is stored in the system.  
 D. Shows how other systems interact with the system.  
 E. Shows the relationships of the entities.  
 1) A only.                                2) A, B, C only.                                3) D, E only.  
 4) A, B, D only.                                5) All of the above.
- (23) Which of the following is not a main component of an IS.  
 1) Hardware.    2) Software.    3) Stored data.    4) Personnel.    5) Firm ware.
- (24) Which of the following is not an advantage of TCP over UDP.  
 1) Very reliable.  
 2) Guarantees that data is arrived in the same order.  
 3) Does error checking.  
 4) Guarantees that the data transferred remains intact.  
 5) Does error recovery.
- (25) What is the type of server that performing dynamic IP assign.  
 1) DNS server                                2) Proxy server                                3) File server  
 4) DHCP server                                5) Web server
- (26) What symbol is used to represent output in a flowchart?  
 1) Square    2) Circle    3) Parallelogram    4) Triangle    5) Rectangle
- (27) Kavin bought a watch for his use using a website of a watch selling company. Which of the following is the correct type of e-business for the above scenario  
 1) B2E    2) C2B    3) B2C    4) C2C    5) B2B
- (28) Which of the following is a back end component or an activity of a E-market place.  
 1) Seller portal  
 2) Packaging  
 3) Shopping cart  
 4) Search engine  
 5) Electronic catalogs
- (29) Which of the following is/are not parts of Expert systems.  
 A - A knowledge base  
 B - A machine language  
 C - A user interface  
 D - An interference engine  
 1) C only    2) B only    3) B & D only    4) A & C only    5) A,B & D only
- (30) Agents that stay between users and information agents are known as  
 1) Collective agents                                2) Rational agents                                3) Multi agents  
 4) Repository agent                                5) Broker agent

- (31) An entity where the existence of that of that entity depends on other is known as  
 1) Weak entity      2) Variable entity      3) Variant entity      4) Constant entity  
 5) Strong entity
- (32) `SELECT * FROM employee WHERE dept_name="Paleontology";`  
 Identify the part of the above SQL statement that will cause an syntax error.  
 1) SELECT      2) \*      3) employee      4) dept\_name      5) "Paleontology"
- (33) Which of the following statements creates a new table temp instructor that has the same schema as instructor.  
 1) create table temp\_instructor;  
 2) create table temp\_instructor like instructor;  
 3) create Table as temp\_instructor;  
 4) create table like temp\_instructor;  
 5) None of the above
- (34) An entity in A is associated with at most one entity in B. An entity in B, however, can be associated with any number (zero or more) of entities in A.  
 Cardinality ratio of the relation A-B is?  
 1) one to one      2) one to many      3) many to one      4) many to many      5) one to more
- (35) Which one of the following is not a candidate key  
 1) Phone number      2) Home address      3) E-mail address  
 4) NIC number      5) Driving licence number
- (36) Which of the following area of feasibility is responsible for checking whether proper staff or employees will be available with adequate set of skills to use the system.  
 1) Organizational feasibility      2) Legal feasibility      3) Operational feasibility  
 4) Technical feasibility      5) Social feasibility
- (37) Which type of implementation of SDLC is trying out a new system at one site and using the experience to decide if and how the new system should be deployed throughout the organization.  
 1) Direct      2) Parallel      3) Phased      4) Pilot      5) None of 1, 2, 3, 4
- (38) What is the correct order of the main tasks of the boot program.  
 A) Builds a configuration structure.  
 B) Check the essential hard ware components and examine the machine configuration.  
 C) Loads the OS and provide it the configuration structure.  
 1) A      2) B      3) B      4) C      5) C  
     C      C      A      A      B  
     B      A      C      B      A
- (39) Which of the following cannot be a variable?  
 1) `__init__`      2) in      3) it      4) on      5) at
- (40) Which of the following values 8-bit two's complement is the same as the original.  
 1) 10011001      2) 11111111      3) 00000000      4) 10000001      5) 10000000
- (41) Operators with the same precedence are evaluated in which manner?  
 1) Left to Right      2) Right to Left  
 3) Middle to both ends      4) Depends on the set of operators  
 5) Both ends to middle





**PESURU MODEL PAPER ⑦**

<b>20</b>	<b>E</b>	<b>II</b>
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**General Certificate of Education (Adv. Level) Examination**

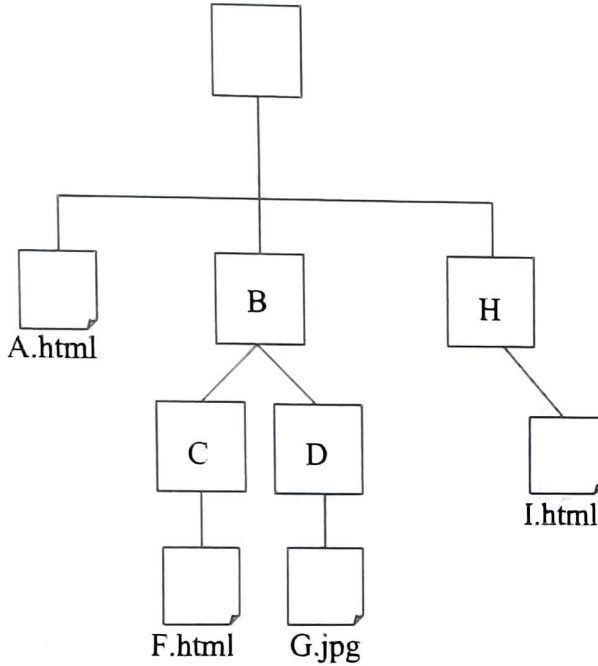
**Information & Communication Technology II**

**Three hours**

**Part A – Structured Essay**

Answer all four questions on this paper itself

(1) a)



Above is a folder structure used for a website. Write linking addresses to do the following

1. Access G.jpg from F.html
2. Access I.html from F.html
3. Access I.html from A.html
4. Access G.jpg from A.html
5. Access A.html from I.html

1. ....
2. ....
3. ....
4. ....
5. ....

b) Write the appropriate html code to do the following to an image.

- Access image from the url-"/images/elephant.jpg".
- Set alternative text as Picture of an elephant.
- Set height and width to 25% of the webpage.
- Align it to the right.
- Set a border of size 3.

.....

(2) a) A computer stores number in 8-bit two's compliment binary number format. Calculate the decimal equivalents for the following numbers. (Show steps and workings clearly.)

i)  $0110010_2$

.....  
.....  
.....  
.....  
.....

ii)  $1110010_2$

.....  
.....  
.....  
.....  
.....  
.....  
.....

b) Show the calculation for adding the above numbers  $0110010_2 + 1110010_2$  (Show all your working clearly.)

.....  
.....  
.....  
.....  
.....

c) Name the following between operator symbols of python.

- $\wedge$  - .....
- $|$  - .....
- $\sim$  - .....
- $\gg$  - .....

(3) a) Name two devices from each of following eras of computing.

- i) Electromechanical era- .....
- ii) Mechanical era - .....

b) Name the three common file allocation methods and briefly describe them.

.....  
.....  
.....  
.....  
.....

c) A computer system uses can have maximum of  $2^{32}$  pages where maximum usable RAM is 512MB. Size of a page is 1 byte.

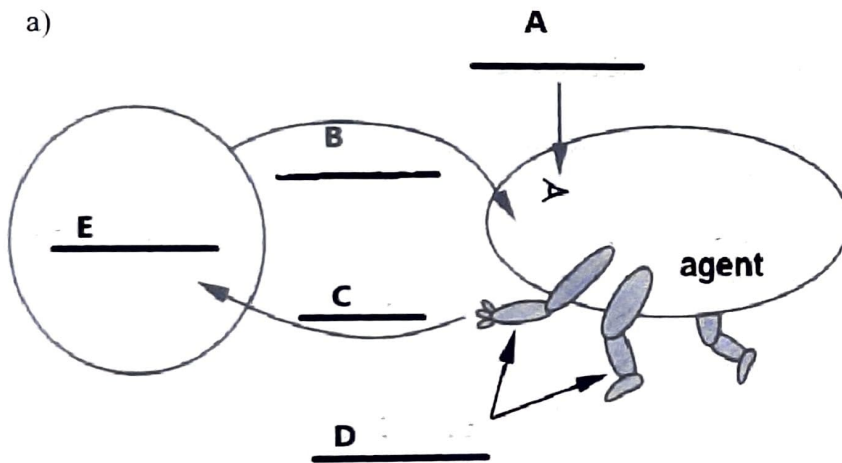
i) Calculate the minimum frame number field size in bits.(Show your workings clearly)

.....  
 .....

ii) Calculate the minimum virtual address field size in bits.(Show your workings clearly)

.....  
 .....

(4) a)



Write down the most suitable term for each letter

- A- .....
- B- .....
- C- .....
- D- .....
- E- .....

b) List five characteristics of an agent

.....  
 .....



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20 E II

**General Certificate of Education (Adv. Level) Examination****Information & Communication Technology II****Part B – Essay***Answer any four questions only*

- (1) A car has a system to give a warning if the driver or the passenger in front seat is not wearing the seat belt. The system has two outputs to warn the driver(D) and warn the passenger(P).The inputs are
- Car is moving or not= A (logical value 1 if moving)
  - Is driver wearing seatbelt =B(logical value 1 if wearing)
  - Is there a passenger on the passenger seat =C(logical value 1 if there is)
  - Is the passenger wearing seatbelt=E (logical value 1 if wearing)
- Below are the conditions where either driver or passenger is warned
- If the car is moving and driver is not wearing seat belt, driver will be warned.
  - If the car is moving and there is a passenger on the seat wearing no seatbelt, passenger will be warned
- a) Draw a truth table for the above scenario for both two outputs.
  - b) Derive the SOP formed boolean expressions from the above truth table for both outputs.
  - c) Simplify the above boolean expressions using laws of boolean algebra.(Clearly show the rules you used)
  - d) Construct the logic circuit for the above boolean expressions.
- (2) a) A company has two separate LANs named LAN1 and LAN2 in a building.And each LAN has 13 computers. Network addresses of the above two networks are  
LAN1-181.54.20.0  
LAN2-181.54.22.128  
These two LANs should be able to communicate with each other.
- i) Write down a suitable subnet mask for each of the networks.
  - ii) Draw a network diagram for the above network and assign IP addresses for the devices.
- b) Write down the commands you use to the following tasks.
    - i) To view the active TCP connections
    - ii) To view the path to a remote host-google.com
    - iii) Check the connectivity to google.com
    - iv) Display all current TCP/IP network configurations
  - c) State two causes for 100% packet loss.

- (3) a) Sasika went online to buy a bag for his use. He went to a website and searched for a bag .The site had different kinds of bags from different kinds of sellers. And all the sellers placed there bid. Sasika chose the most suitable bag for him at a reasonable price and bought it by paying from his credit card. The bag was delivered within 5 days.
- What is the type of e-commerce transaction in the above scenario. Justify your answer.
  - From what type of a auction did Sasika buy his bag?
  - State three advantages of the above type of auctions
  - State two risks of buying online products
- b) State the three business methods in digital economy

- (4) A gliding competition has different teams with a name and each team has members who are person with a name and an experience level. One person can only be in one team. There 8 gliders in the competition which any team can use. A team send one or more members to fly the glider and complete tasks . A task has a name and a height which the player(s) will start from. First team to complete all the tasks wins.

Draw a ER diagram for the above scenario. State any assumption you make

- (5) A program is used to calculate BMI ( Body Mass Index) and prints when user inputs his/her body weight and height. Formula for BMI is if height(in meters) and weight(in kg) is given
- $$\text{BMI} = \frac{\text{weight}}{\text{height}^2}$$

And also a status is printed according to the following table.

BMI	Status
Less than 18.5	Underweight
(including)18.5 to 25	Healthy weight
(including)25 to 30	Above ideal
30 and above	Obese

- Draw a flowchart for the above program
- Write down a python code for the above program

- (6) Draw a context diagram for the following scenario. State any assumptions you make.

A pizza order system passes pizza menu to the customer. Customer then decide what to order and give the pizza order to the system. Then customer gives the payment to the system. Customer pass coupons to the system to receive discounts upto 20%.This discount is calculated by the type of the coupon. If the customer is new to the shop customer details are collected and stored in the customer details file. System the pass the order to the chef along with the inventory info. Chef then passes the ordered pizza along with inventory usage details. Manger of the company requests for reports from the system and system generates reports and passes them to the manager.