

國立中山大學 113 學年度 碩士班暨碩士在職專班招生考試試題

科目名稱：科技英文【精準所碩士班、生藥所碩士班、生醫所碩士班、醫科所碩士班甲組、乙組、生醫科學與工程領域聯合碩士班】

— 作答注意事項 —

考試時間：100 分鐘

- 考試開始鈴響前不得翻閱試題，並不得書寫、劃記、作答。請先檢查答案卷（卡）之應考證號碼、桌角號碼、應試科目是否正確，如有不同立即請監試人員處理。
- 答案卷限用藍、黑色筆(含鉛筆)書寫、繪圖或標示，可攜帶橡皮擦、無色透明無文字墊板、尺規、修正液（帶）、手錶(未附計算器者)。每人每節限使用一份答案卷，請衡酌作答。
- 答案卡請以 2B 鉛筆劃記，不可使用修正液（帶）塗改，未使用 2B 鉛筆、劃記太輕或污損致光學閱讀機無法辨識答案者，後果由考生自負。
- 答案卷（卡）應保持清潔完整，不得折疊、破壞或塗改應考證號碼及條碼，亦不得書寫考生姓名、應考證號碼或與答案無關之任何文字或符號。
- 可否使用計算機請依試題資訊內標註為準，如「可以」使用，廠牌、功能不拘，唯不得攜帶書籍、紙張（應考證不得做計算紙書寫）、具有通訊、記憶、傳輸或收發等功能之相關電子產品或其他有礙試場安寧、考試公平之各類器材入場。
- 試題及答案卷（卡）請務必繳回，未繳回者該科成績以零分計算。
- 試題採雙面列印，考生應注意試題頁數確實作答。
- 違規者依本校招生考試試場規則及違規處理辦法處理。

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每題 2.5 分，共 40 題，單選，答錯不倒扣。

1. The professor told the students that the primary _____ of the project was to work together successfully as a team.
(A) objective
(B) remedy
(C) entry
(D) heap
2. The discovery of penicillin has saved many lives. It was _____ one of the most significant advances in medical history.
(A) lately
(B) indeed
(C) anyhow
(D) immediately
3. From my elementary understanding of rechargeable batteries, they _____ less energy over time.
(A) uphold
(B) discard
(C) retain
(D) abandon
4. If you feel ill after eating, touching, or breathing in a particular substance, you are _____ to it.
(A) insensitive
(B) afraid
(C) vulnerable
(D) allergic
5. According to the research, second-hand smoke is almost as _____ as smoking itself.
(A) efficient
(B) aggressive
(C) edible
(D) harmful
6. Human beings should look for _____ sources of energy to make the earth sustainable for the future generations.
(A) commercial
(B) unreliable
(C) renewable
(D) agreeable
7. The new vaccine was made available after months of _____ research.
(A) subjective
(B) extensive
(C) conducive
(D) productive

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8. Choose the statement which is true about Python and SPSS.
 - (A) Both Python and SPSS are statistical software
 - (B) Python is a programming language and SPSS is a statistical software
 - (C) Python is a statistical software and SPSS is a non-parametric paired t-test
 - (D) Python is a programming language and SPSS is a non-parametric paired t-test
9. Which of the following computer language is used for artificial intelligence?
 - (A) FORTRAN
 - (B) COBOL
 - (C) PROLOG
 - (D) C
10. Which of the following is not a bioinformatics method to study gene expression?
 - (A) t-SNE
 - (B) PCA
 - (C) Hierarchical Clustering
 - (D) MALDI-TOF
11. What does the abbreviation “ADCC” stand for in the field of immune therapy?
 - (A) A Programmed Death in Cellular Composition
 - (B) Area Dispatch Control Center
 - (C) Antibody-Dependent Cell-Mediated Cytotoxicity
 - (D) Antibody-Dependent Cell-Mediated Phagocytosis
12. Which of the following locations is the place of protein glycosylation?
 - (A) Nucleus
 - (B) Ribosome
 - (C) Endoplasmic reticulum/Golgi apparatus
 - (D) Lysosome
13. Which of the following ligand-receptor pairings is correct?
 - (A) S-pike protein/ ATP-binding cassette (ABC) transporters
 - (B) Hemagglutinin/Sialic acid
 - (C) PD-L1/Platelet-Derived Growth Factor Receptor (PDGFR)
 - (D) CD8/CD4
14. Which of the following amino acids is able to generate N-linked glycosylation?
 - (A) Alanine (Ala, A)
 - (B) Asparagine (Asn, N)
 - (C) Aspartic acid (Asp, D)
 - (D) Arginine (Arg, R)
15. What is the main mechanism for disease prevention through vaccination?
 - (A) Mast cells degranulation
 - (B) Complement dependent enhancement
 - (C) Adaptive immunity generation
 - (D) Innate immunity generation

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16. Which of the following antibodies used in cancer treatment is an immune checkpoint therapy?
- (A) Avastin (anti-VEGF antibody)
 - (B) Ipilimumab (anti-CTLA4 antibody)
 - (C) Trastuzumab (anti-HER2/neu antibody)
 - (D) Rituximab (anti-CD20 antibody)
17. Since 2017, Novartis receives first ever FDA approval for a chimeric antigen receptor (CAR) T-cell cell therapy, Kymriah™ (tisagenlecleucel, CTL019), for the treatment of lymphomas and leukemias. A modified T cell receptor with _____ domain that can recognize the unique tumor antigens in cancer cells.
- (A) fibronectin
 - (B) Fc
 - (C) scFv
 - (D) fibroblast growth factor receptors (FGFRs)
18. Which of the following treatments is NOT immunotherapy?
- (A) Immune checkpoint therapy
 - (B) Tyrosine kinase inhibitor therapy
 - (C) Cytokine therapy
 - (D) Immune cell therapy
19. Which of the following epitopes is expressed on red blood cells to determine the A, B, O blood group?
- (A) Protein epitopes
 - (B) DNA epitopes
 - (C) Glycan epitopes
 - (D) RNA epitopes
20. Hyperglycemia affects people who have diabetes. Which of the following substances is too high in blood stream?
- (A) Sodium chloride (NaCl)
 - (B) Oxygen (O₂)
 - (C) Glucose
 - (D) Urea
21. Which of the symptoms you may **not** experience if you got COVID-19?
- (A) Sore throat
 - (B) Constipation
 - (C) Runny nose
 - (D) Chills
22. The 2023 Nobel Prize in Physiology or Medicine went to Katalin Karikó and Drew Weissman for their contribution to the development of effective _____ vaccines against COVID-19.
- (A) viral vector
 - (B) live-attenuated
 - (C) toxoid
 - (D) messenger RNA

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23. Preventive vaccines could spark your body's immune response to defend foreign invaders (e.g. viruses and bacteria). Please choose the one that does **not** belong to this conventional vaccine type.
- (A) Influenza vaccine
 - (B) Hepatitis B vaccine
 - (C) Melanoma vaccine
 - (D) Chickenpox vaccine
24. A great number of commonly used drugs are metabolized by the CYP2D6 enzyme. CYP2D6 is a highly polymorphic gene that induces different phenotypes. Which of the CYP2D6 phenotypes is responsible for the lowest enzyme activity?
- (A) Poor metabolizers
 - (B) Intermediate metabolizers
 - (C) Normal metabolizers
 - (D) Ultra-rapid metabolizers
25. Please choose the organ which has the most regenerative capacity.
- (A) Kidney
 - (B) Pancreas
 - (C) Liver
 - (D) Stomach
26. When a segment of one chromosome breaks and attaches to another non-homologous chromosome, it is called a _____.
- (A) translocation
 - (B) substitution
 - (C) inversion
 - (D) deletion
27. Which type of cancer treatment is most often utilized in precision medicine?
- (A) Radiotherapy
 - (B) Surgery
 - (C) Targeted therapy
 - (D) Chemotherapy
28. The term P4 medicine is thought to be the basis of precision medicine. _____ medicine, as patients are well informed about their health conditions through digital platforms.
- (A) Predictive
 - (B) Personalized
 - (C) Preventive
 - (D) Participatory
29. Please choose the lifestyle change that may **not** improve your cholesterol.
- (A) Increase soluble fiber
 - (B) Enhance saturated fats
 - (C) Eliminate trans fats
 - (D) Add whey protein

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30. Model organisms are non-human species widely used to study biological processes. They are easy to maintain and breed in a laboratory. Which one is not the model organism we often utilize in a laboratory?
- (A) Fruit fly
 - (B) Zebrafish
 - (C) Mouse
 - (D) Monkey
31. Usually, phase 1 clinical trial is to evaluate the _____ of the drug candidate.
- (A) safety
 - (B) efficacy
 - (C) composition
 - (D) appearance
32. Usually, phase 2 clinical trial is to evaluate the _____ of the drug candidate.
- (A) safety
 - (B) efficacy
 - (C) composition
 - (D) appearance
33. Usually, how many clinical trial phases are needed to be completed before a pharmaceutical company gets drug licenses granted by the US FDA?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
34. Which regulatory authority is responsible for the safety and quality of food, drug, medical service and cosmetics manufactured and sold in Taiwan?
- (A) Pharmaceuticals and Medical Devices Agency
 - (B) Taiwan Food and Drug Administration
 - (C) National Medical Products Administration
 - (D) Medicines and Healthcare products Regulatory Agency
35. Which animal species are the most commonly used in animal studies during small-molecule drug development?
- (A) Rodents
 - (B) Macaques
 - (C) Swines
 - (D) Canines
36. Usually, how long is an innovation patent valid for after it is approved?
- (A) 10 years
 - (B) 15 years
 - (C) 20 years
 - (D) 30 years

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37. Which organ plays the major role in metabolizing small molecular drugs in our body?
(A) Liver
(B) Stomach
(C) Intestine
(D) Colon
38. Which protein is the most abundant in blood circulation that causes plasma protein binding?
(A) Albumin
(B) Peptidase
(C) Proteinase
(D) Nuclease
39. _____ are the active components in a pharmaceutical drug that produce the required effect on the body to treat a condition.
(A) Active pharmaceutical ingredients
(B) Active adjuvants
(C) Active excipients
(D) Active preservatives
40. Studying mechanism of action of a pharmaceutical drug belongs to the category of _____?
(A) pharmacodynamics
(B) pharmacokinetics
(C) toxicology
(D) toxicokinetics