

T-3

後期日程

平成 28 年度入学者選抜学力検査問題

## 総合テスト

(医学部 医学科)

### 注 意 事 項

1. この冊子は、監督者から解答を始めるよう合図があるまで開いてはいけません。
2. 監督者から指示があったら、解答用紙の上部の所定欄には受験番号、座席番号を、また、下部の所定欄には座席番号をそれぞれ必ず記入しなさい。その他の欄には記入しないこと。
3. この冊子の余白の部分を下書きに使用してもかまいません。
4. 退室の際には、解答用紙は記入の有無にかかわらず机上に置いておくこと。持ち帰ってはいけません。
5. この冊子は持ち帰ってかまいません。
6. 落丁、乱丁または印刷の不備なものがあったら申し出てください。
7. 解答は横書きにしてください。

1 次の文書は、世界保健機関（WHO）が発表した“Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020”のACTION PLANの項からの抜粋である。これを読み、以下の問いに答えなさい。Communicable diseasesとは、結核・エイズ・マラリアに代表される感染症を指しており、noncommunicable diseasesはその対義語にあたる。解答にあたって“noncommunicable diseases”という用語（または日本語訳）を使う場合はNCDsと略して使用しなさい。なお一部の語句(\*)には文末に注を付してあります。

## BACKGROUND

The global burden and threat of noncommunicable diseases constitutes a major public health challenge that undermines social and economic development throughout the world, and inter alia\* has the effect of increasing inequalities between countries and within populations. Strong leadership and urgent action are required at the global, regional and national levels to mitigate inequality.

An estimated 36 million deaths, or 63% of the 57 million deaths that occurred globally in 2008, were due to noncommunicable diseases, comprising mainly cardiovascular\* diseases (48% of noncommunicable diseases), cancers (21%), chronic\* respiratory\* diseases (12%) and diabetes\* (3.5%). These major noncommunicable diseases share four behavioural risk factors: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol.

（中略）

According to WHO's projections, the total annual number of deaths from noncommunicable diseases will increase to 55 million by 2030 if (a) “business as usual” continues. Scientific knowledge demonstrates that the noncommunicable disease burden can be greatly reduced if cost-effective preventive\* and curative actions, along with interventions for prevention and control of noncommunicable diseases already available\*, are implemented\* in an effective and balanced manner.

（中略）

## SCOPE

The action plan provides a road map and a menu of policy options for all Member States\* and other stakeholders\* to take coordinated and coherent\* action, at all levels, local to global, to attain the nine voluntary global targets, including that of a 25% relative reduction in premature

mortality\* from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 2025.

The main focus of this action plan is on four types of noncommunicable disease – cardiovascular diseases, cancer, chronic respiratory diseases and diabetes – which make the largest contribution to morbidity\* and mortality due to noncommunicable diseases, and on four shared behavioural risk factors – tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. It recognizes that the conditions in which people live and work and their lifestyles influence their health and quality of life. There are many other conditions of public health importance that are closely associated with the four major noncommunicable diseases.

(中略)

Noncommunicable diseases and their risk factors also have strategic links to health systems and universal health coverage, environmental, occupational and social determinants of health, communicable diseases, maternal, child and adolescent health, reproductive health and ageing. Despite the close links, one action plan to address all of them in equal detail would be unwieldy. Further, some of these conditions are the subject of other WHO strategies and action plans or Health Assembly resolutions.

(中略)

#### **COST OF ACTION VERSUS INACTION**

For all countries, the cost of inaction far outweighs\* the cost of taking action on noncommunicable diseases as recommended in this action plan. There are interventions for prevention and control of noncommunicable diseases that are affordable\* for all countries and give a good return on investment, generating one year of healthy life for a cost that falls below the gross domestic product (GDP) per person and is affordable for all countries. (中略) The cost of implementing the action plan by the Secretariat\* is estimated at US\$ 940.26 million for the eight-year period 2013-2020. The above estimates for implementation of the action plan should be viewed against the cost of inaction. Continuing “business as usual” will result in loss of productivity and an escalation of health care costs in all countries. The cumulative output loss due to the four major noncommunicable diseases together with mental disorders is estimated to be US\$ 47 trillion. This loss represents 75% of global GDP in 2010 (US\$ 63 trillion).

(中略)

## GLOBAL COORDINATION MECHANISM

The Political Declaration reaffirms the leadership and coordination role of the World Health Organization in promoting and monitoring global action against noncommunicable diseases in relation to the work of other relevant United Nations system agencies, development banks and other regional and international organizations. In consultation with Member States, the Secretariat plans to develop a global mechanism to coordinate the activities of the United Nations system and promote engagement, international cooperation, collaboration and accountability among all stakeholders.

The purpose of the proposed global mechanism is to improve coordination of activities which address functional gaps that are barriers to the prevention and control of noncommunicable diseases.

(中略)

## GOAL

To reduce the preventable and avoidable burden of morbidity, mortality and disability due to noncommunicable diseases by means of multisectoral\* collaboration and cooperation at national, regional and global levels so that (b) populations reach the highest attainable standards of health, quality of life, and productivity at every age and those diseases are no longer a barrier to well-being or socioeconomic development.

(中略)

## OVERARCHING PRINCIPLES & APPROACHES

### *HUMAN RIGHTS APPROACH*

It should be recognized that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being, without distinction of (c) race, colour, ( ), ( ), ( ), ( ), ( ) or other status as enshrined\* in the Universal Declaration of Human Rights.

(中略)

### *NATIONAL ACTION, INTERNATIONAL COOPERATION & SOLIDARITY\**

The primary role and responsibility of governments in responding to the challenge of noncommunicable diseases should be recognized, together with the important role of international cooperation in assisting Member States, as a complement to national efforts.

### *MULTISECTORAL ACTION*

It should be recognized that effective noncommunicable disease prevention and control require leadership, coordinated multistakeholder engagement for health both at government level and at the level of a wide range of actors, with such engagement and action including, as appropriate, health-in-all policies and whole-of-government approaches across sectors such as (d) health, agriculture, communication, ( ), ( ), ( ), ( ), ( ), transport, urban planning and youth affairs and partnership with relevant civil society and private sector entities.

### *LIFE-COURSE APPROACH*

Opportunities to prevent and control noncommunicable diseases occur at multiple stages of life; interventions in early life often offer the best chance for primary prevention. Policies, plans and services for the prevention and control of noncommunicable diseases need to take account of health and social needs at all stages of the life course, starting with maternal health, including preconception\*, antenatal\* and postnatal\* care, maternal nutrition\* and reducing environmental exposures to risk factors, and continuing through proper infant\* feeding practices, including promotion of breastfeeding and health promotion for children, adolescents and youth followed by promotion of a healthy working life, healthy ageing and care for people with noncommunicable diseases in later life.

(後略)

(World Health Organization: Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020, [http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf) より引用, 一部改変)

#### [語注]

inter alia: とりわけ

cardiovascular: 心臓血管の

chronic: 慢性の

respiratory: 呼吸の

diabetes: 糖尿病

preventive: 予防の

available: 利用できる

implement: 実行する

Member States: WHO に加盟している国

stakeholder: 利害関係者

coherent: 首尾一貫した

mortality: 死亡率

morbidity: 罹患率

outweigh: よりまさる

affordable: 入手可能な

Secretariat: World Health Assembly の事務局(長)

multi-: 多数の

enshrine: 公式記録にしるされている

solidarity: 連帯

preconception: 着床前

antenatal: 出生前の

postnatal: 出生後の

nutrition: 栄養

infant: 小児

問1 下線(a)の同義語 (1語)を本文の中から答えなさい。

問2 Noncommunicable diseases (以下 NCDs と記載) には心臓血管病、がん、慢性呼吸器疾患、糖尿病などが含まれる。それら疾患に共通の特徴について 60 字以内で説明しなさい。

問3 NCDs 対策を講じなかった場合の国家に及ぼす影響について、本文中の言葉を日本語に訳して 25 字以内で答えなさい。

問4 下線(b)を 100 字以内で訳しなさい。

問5 下線(c) には人権を脅かす差別が列挙されている。下線内の 5 つの空欄 ( ) にあてはまる差別を考えて英語で答えなさい。

問6 下線(d)には、NCDs 対策における協調作業において重要な領域が述べられている。下線内の 5 つの空欄 ( ) にあてはまる領域を考えて英語で答えなさい。

問7 *LIFE-COURSE APPROACH* に述べられている内容を 120 字以内で説明しなさい。

(下書き用紙・余白)

1

問 2

5					10					15					20				

( $20 \times 3 = 60$  字)

問 3

5					10					15					20				

( $20 + 5 = 25$  字)

問 4

5					10					15					20				

( $20 \times 5 = 100$  字)

問 7

5					10					15					20				

( $20 \times 6 = 120$  字)



**2** 以下の設問に答えなさい。なお設問に指示のある場合を除いて、各問題とも解答の過程を書くこと。解答用紙には裏面にもその表面の解答の続きを記入してよい。

**A.** 以下の(1)~(3)に答えよ。ただし、 $\log x$  は  $x$  の自然対数とする。

(1)  $f(x) = \int_0^{\sqrt{\log x}} e^{t^2} dt$  ( $x \geq 1$ ) とおく。導関数  $f'(x)$  を計算せよ。

(2)  $1 \leq a < b$  とする。

$$\int_a^b \sqrt{\log x} \, dx + \int_{\sqrt{\log a}}^{\sqrt{\log b}} e^{x^2} \, dx$$

の値を、 $a, b$  を用いた式で表せ。ただし、積分記号を含まない式で表すこと。

(3)  $\int_1^e \sqrt{\log x} \, dx < e - \frac{4}{3}$  であることを証明せよ。

**B.** 六角形 ABCDEF が点 O を中心とする半径  $R$  の円に内接していて、

$$FA = AB = BC = a, \quad CD = DE = EF = b$$

である。ただし、 $a > b > 0$  とする。

(1) AE および  $R$  を  $a, b$  を用いて表せ。

(2)  $\sin \angle DOE$  を  $a, b$  を用いて表せ。

(3) 四角形 CDEF の面積を  $a, b$  を用いて表せ。